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More-than-human fluid speculations

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Abstract: This paper shares speculative questions and ideas that emerged from considerations about bodily fluids and other related fluids as materials used for drawing and as materials related to the subject of a drawing. Partly informed by post-humanist perspectives that view human agency as entangled with other non-human material agencies, this paper presents short experiments in drawing that have prompted reflections about the ways in which knowledge is partial, situated and influenced by other forms of knowledge.

Keywords: bodily fluids; fluid speculations; drawing; more-than-human

1. Introduction

“It matters what matters we use to think other matters with”

(Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, 2016)

This paper builds on my previous work of *Fluid Speculations*, which focusses on drawing with watercolour for the speculation and defamiliarization of designed artefacts. *Fluid Speculations* utilises the fluid and evocative materiality of watercolour to invite narrative while subverting the rational precision that certain technological objects are meant to embody (Yurman, 2021). It could be argued that as a non-human drawing partner, watercolour can attract particular types of imaginaries and speculative ideas when used in the visual representation of designed artefacts. This paper shares thoughts and questions that have emerged from considerations about the materials used for drawing and about the things that are drawn with such materials. Despite being readily accessible materials, the use of bodily fluids for creative outputs can be regarded as taboo or a source of contamination concern that has no doubt become more acute with the Covid-19 pandemic. Considering the use of bodily fluids for research would imply complex ethical and practical considerations and this paper speculates about what might potentially emerge when bodily and other interrelated fluid materials might be used in ideational design drawing. Partly informed by posthumanist perspectives that view human agency as entangled with other non-human and material agencies (Wakkary, 2021; Forlano, 2017; Barad, 2007; Puig de la Bellacasa, 2017; Tsing, 2015; Rosner, 2012; Sheldrake, 2020; Dew and Rosner, 2018), this paper presents short experiments in drawing that have helped me reflect on ways in which my knowledge is partial, situated and influenced by other forms of knowledge.



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2. Drawing as a form of sense making and speculation

Drawing has been extensively recognised as a form of knowledge production (Mäkelä, 2014; Rosenberg, 2008; Goel, 1995; Tversky, 2003; Koulidou et al., 2020). For many industrial designers like myself, drawing represents a form of thinking, of working out what things might look like, to visually experiment with ideas before committing to any form of making. I draw an artefact first as an attempt to understand it, to get to know its parts, its forms. I then alter this drawing, mutate it, exaggerate its features, merge it with other artefacts or place it in unlikely contexts. I do this as a form of speculation, of poking and seeing alternative ways in which it might also exist.

I draw a breastfeeding pump. I draw it because it is an awkward item that puzzles me and that I try to understand. It is an artefact that has, as for many others, raised complicated feelings (Wardle et al., 2018; D'Ignazio et al., 2016; Hope et al., 2019). I view some of these feelings as emerging from the problematic, ambivalent relationship between technology (culturally associated with efficiency, precision, the rational, the quantitative) and the maternal (culturally constructed as related to the body, nature, biology, the emotional, the qualitative). Technological artefacts often raise ambivalent responses, they are perceived as both good and bad, as empowering and intrusive (Woolgar and Cooper, 1999; Yurman, 2019), and drawing can provide ways for engaging with such ambivalences. The breastfeeding pump bridges the divide between what is inside and outside the body, extracting and measuring human milk as a quantifiable material, leaving aside the associated intimate and sensitive experiences that are challenging to measure or define with precision. I draw a breastfeeding pump to better understand it, but also to tell of its existence, to present maternal standpoints and speculate about its current uses and its potentials for new functionalities. Drawing a breastfeeding pump with watercolour enables me to subvert its quantifiable aspect and invoke narrative, and highlight the fluidity that this designed artefact is entangled in.

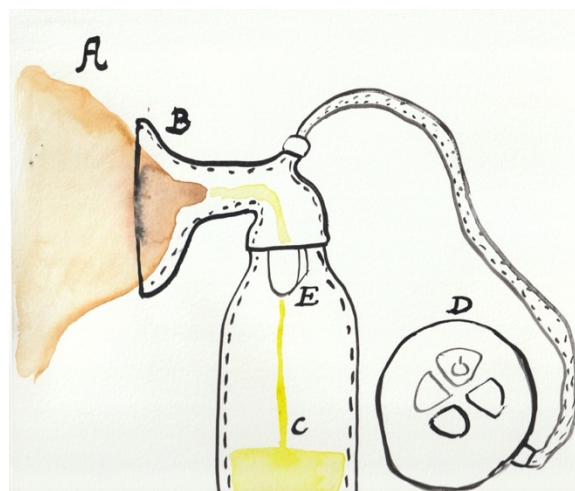


Figure 1. watercolour drawing of a breastfeeding pump

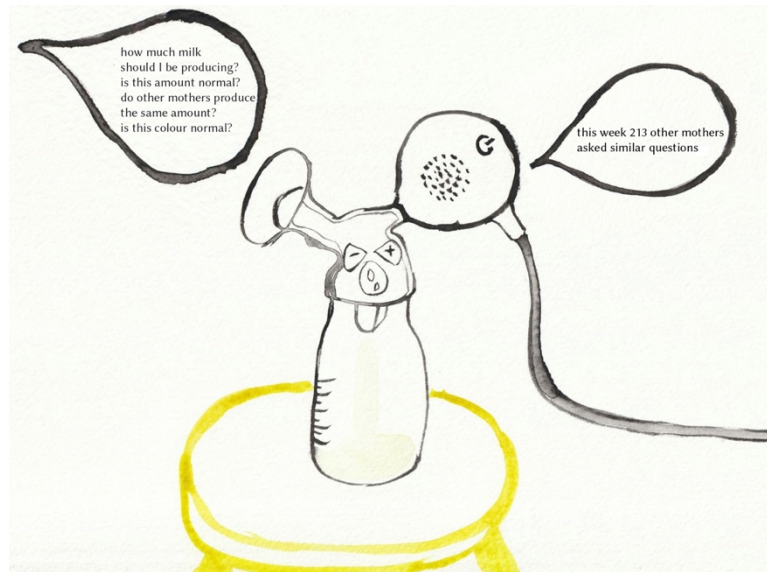


Figure 2. speculative watercolour drawing of a conversational breastfeeding pump

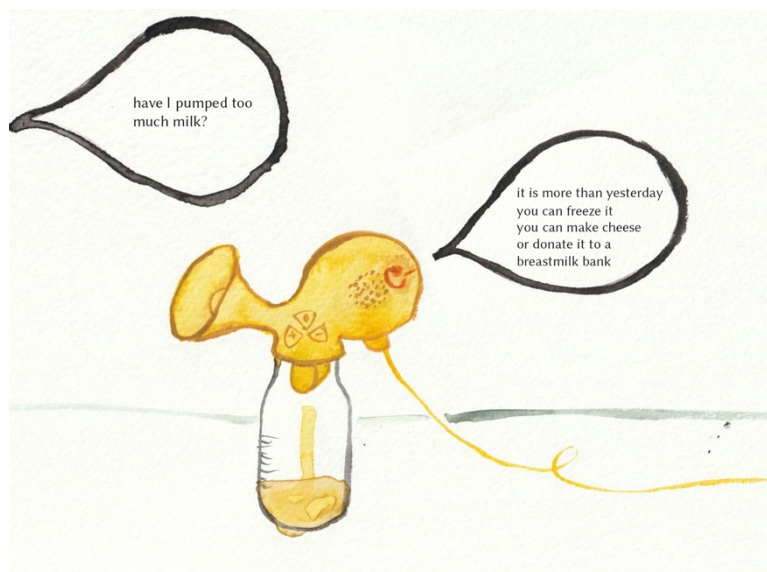


Figure 3. speculative watercolour drawing of a conversational breastfeeding pump

Watercolour's fluid materiality has an impact on the imaginaries that are drawn about artefacts dealing with bodily fluids, its intervention as a material in the drawing has particular effects on the speculative forms and conceptual spaces that emerge. In such drawing explorations with and about fluids, it is inevitable that the question about drawing directly with bodily fluids emerges. What artefacts would I draw if I mixed watercolour with sweat? Or if I used urine, milk or blood? What insights would emerge in considering bodily fluids as materials for generating speculative imaginaries that might lead to the production of knowledge? Before I present some experimentations and speculative ideas that engage with

such questions, I briefly describe related contexts in which bodily fluids have been explored in the arts and in design/HCI research.

3. Background: Bodily fluids in art and in design research

Used to produce a reaction, either biochemical or emotional (Ferguson & Brandes, 2012), bodily fluids have been extensively used by art practitioners in their work. Urine has been historically utilised in the mixing of pigments (Wallert, 1995); Andy Warhol used urine to oxidise copper and gold paint in his *Oxidation Paintings*; Andres Serrano used his urine in a tank to immerse a crucifix. Marc Quinn's *Self* is a sculpture of his head made with ten pints of his frozen blood (Quinn, 1991). Artists Daniela Kostova and Olivia Robinson created batteries powered by their own sweat to explore the relationship between electricity production and its workers while combining knowledge from art and science-based practices (Kiniri, 2010). Sarah Levy's artwork '*Whatever*' (Levy, 2015) consists of a portrait of Donald Trump painted with her menstrual blood and Zanele Muholi's *Isilumo siyaluma* (Muholi, 2011) used her menstrual blood as a plight of lesbians facing hate crimes in South Africa. Levy's and Muholi's artworks are examples of menstrual art, which sees menstruation as an opportunity for creating art as a form of political subversion (Røstvik, 2020 and 2021). Although not comprehensive, this list of artworks illustrates ways in which artists have utilised bodily fluids as subversive and/or catalytic agents where their bodies are understood as sites for producing work that is both material and conceptual, and part of a network of interrelated agencies of social, political and biological dimensions.

In design research, a number of projects have turned their attention to designing for and with bodily fluids. Biomaterial designer Alice Potts has created a series of garments and accessories that incorporate crystallised human sweat (Paterson, 2019). In HCI research, some projects have investigated the potentials for technologies sensitive to saliva, urine, menstrual blood or sweat, with aims to support users' empowerment towards their own bodies (Bhatia et al. 2020; Campo Woytuk et al., 2020; Helms, 2019; Homewood et al., 2020; Koh et al., 2016; Matsui et al., 2013; Narayanan et al., 2019; Oertel et al., 2016; Rey et al. 2018; Søndergaard and Hansen, 2016; Søndergaard et al., 2020). Some speculative design initiatives have created fabulations in which bodily fluids are explored as part of interdependent agencies that go beyond the scale of a singular human body (Helms et al., 2021; Helms, 2021), or focused on the act of touching and looking at menstrual blood, saliva, and cervical mucus as activities for the construction of new knowledge and curiosity towards the changing body (Campo Woytuk et al., 2020). Other related works explore ways in which engagement with fluid materials in drawing can invite speculative ideations around the design of artefacts that deal with bodily fluids (Yurman, 2021), or focus on the sharing of menstrual data on social networks (Søndergaard, 2016).

4. Imaginations around drawing with and about fluids

How might it matter what matters we use to think with (Haraway, 2016) through drawing? What kind of entanglements might exist between the human and non-human materials that become part of the creative and research processes in drawing? How might we design if we were to imagine bodily fluids and interdependent materials as drawing partners in order to pay attention to the possibilities that they invite us to imagine? Here, another recurring question, previously asked by feminist researchers working with bodily fluids emerges: where are the boundaries of the body? (Campo Woytuk et al., 2020; Helms et al., 2021). Once outside these boundaries, are bodily fluids a separate entity altogether? Should the agency of such materials be considered human or non-human once outside the body they emerged from? While I do not attempt to offer an answer to these questions, my aim here is to share some of the ideas that emerged in my experimentations whilst drawing with and about fluid materials, that might contribute to discussions about designing with and for bodily fluids and with more-than human entities. I present four short vignettes that highlight some of the questions and ideas that emerged in my speculative inquiry.

Vignette 1

I collect acorns from an oak tree nearby. I make ink with them and draw medieval birthing stools, pieces of furniture traditionally made in oak. The dark ink looks like dried blood and invites me to consider the entanglements between trees and the act of giving birth. My inquiry leads me to articles that relate how blood can be used as plant fertilizer and that planting placentas by trees is a growing trend, and I find out that a woman in Mozambique had to give birth in a mango tree during floods.

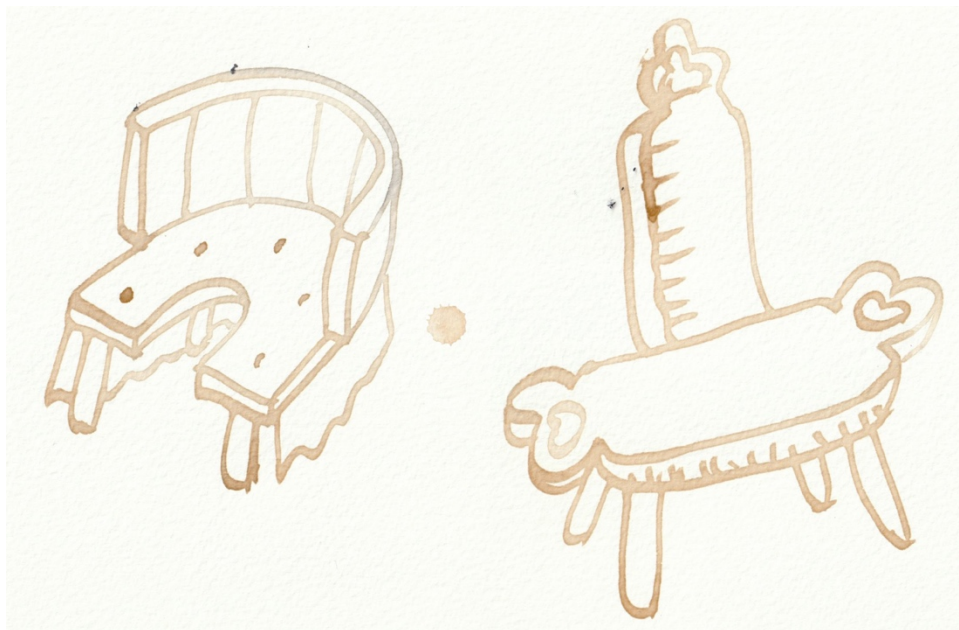


Figure 4. birthing stools drawn with ink made from oak acorns

Vignette 2:

There is a bush in my garden where my dog urinates. I use its leaves to make ink. I draw two artefacts with this ink: a dog grooming tool and a plant pruner. I wonder about the diverse and entangled forms of knowledge that inspire my hand to draw these items.



Figure 5. dog, bush, hand



Figure 6. Dog grooming tool and pruning tool; artefacts drawn with ink made with leaves from the bush where my dog urinates. How far back do things have an influence in our imaginations?

Vignette 3:

A woman conceives a baby with sperm from a sperm bank. She haemorrhages heavily during childbirth and her life is saved thanks to blood from a blood bank. If I used some of her breastmilk to draw designed artefacts, what artefacts would I draw? A sperm container? A blood-bag? A breastfeeding pump? These are the questions I ask myself as I consider using bodily fluids to draw designed objects. I wonder about the entangled influences of human and more than human elements in everything I imagine as a designer.

As in reality I cannot access breastmilk and no longer produce any, I use cow's milk instead, mixing it with some watercolour. What other imaginations can this fluid invite to think? Does it matter what matter I use to draw things with?



Figure 7. baby bottle, drawn with black watercolour and cow's milk

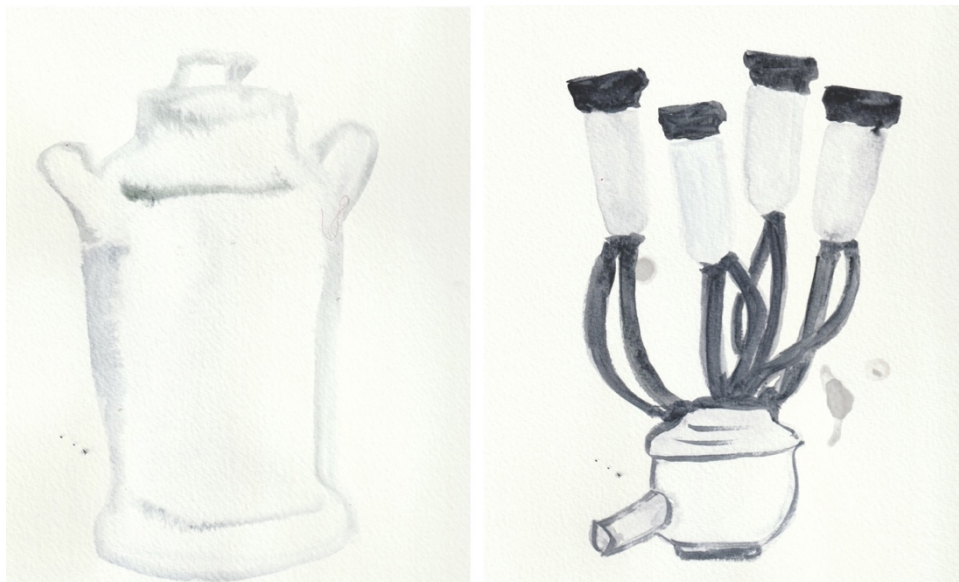


Figure 8. milk churn and milking clusters, drawn with black watercolour and cow's milk

Vignette 4:

I imagine possible artefacts designed for engaging with human milk and I draw these ideas in watercolour.



Figure 9. A breastfeeding pump with an attachment for spray painting. The colour of the painting will change depending on the baby's age and what the mother has ingested. If baked, the painting will turn brown. Here, milk is conceived not only as a source of nourishment, but also as a material for creative work.

5. Discussion

The drawing experiments presented here form part of a conversation between myself, the things about which I drew and the materials I used to draw them, resulting from curiosity and material consciousness (Sennett, 2008) in the process of drawing. Drawing with fluid materials has prompted reflections on whether my knowledge and thoughts are as fluid and interrelated as the materials I used to draw. What kind of entangled agencies took part in this drawing conversation? Martin Sheldrake writes that our bodies are 'dwelling places' where multiple organisms reside, at times affecting our behaviour (Sheldrake, 2020). I could wonder if organisms I might have come into contact with near the oak where I harvested acorns for ink making prompted me to draw oak furniture. Regardless of what an answer might be, I am aware that my knowledge is already influenced by other, multiple forms of knowledge and that the way in which I find meaning in them and create a narrative, such as the one in this paper, is already tinted by my own situated perspective and interests in fluids and in drawing. When I draw dog grooming or pruning tools with ink I made from leaves where my dog urinated, I become aware of our dog-human entanglement (Haraway, 2003), I think of what I fed the dog, of the food it stole from my plate, of the muddy canal water it drank in the marshes nearby, a canal that is often polluted by sewage water (Laville, 2020), carrying fluids that emerged from other organisms. When I draw birthing stools in oak ink, I am aware that I choose to create a connection

between what is being represented and what is being used to represent it and that the inquiries that emerged from those connections led me to find out about relationships between trees, the act of giving birth, blood and other afterbirth materials. The inclusion of fluid materials beyond bodily fluids comes from a consideration of them as part of a larger, interrelated body of flexible boundaries.

A drawing created with bodily fluids can be both illustration and material sample, enabling DNA matter to interact with paper outside the body, and a product at times considered waste, can become artwork. In this paper I have not included drawings made with my own bodily fluids but the ideas that I share here have emerged from my body nonetheless, albeit if affected by other ideas that have dwelled in it as well. Drawings of containers, created with tears or saliva can be barely noticeable on white paper but when drawn mixed with pigment, besides becoming more visible, they can invite other imaginations to enter the drawing space as other materials are also incorporated. Colouration could potentially also take place through the body: beetroot can cause urine to turn red and some vitamins can turn it bright yellow (although these changes might not always be noticeable on paper). Understanding bodily fluids as matter that can be mixed with other elements, rather than conceiving them as pure, uncontaminated substances, can reflect how the body can be considered an entity of flexible boundaries.

Understanding the body as a site of production resonates with the experience of childbirth and lactation, where babies, blood and milk expand bodily boundaries and can, in some cases, become a form of creative agency (Dickinson, 2021; Clayton, 2012). Engrossed in a fascination with what their bodies can produce, many new mothers engage in creative activities aiming to make sense of motherhood. Yet, curiosity towards the leakiness of the body does not start nor end with motherhood: menopause's hot flushes, producing sweat, could also be seen as useful material to inform creative work, and to make menopause more visible. Scholar Margrit Shildrick writes that in western culture, women have been historically understood in science and medicine as *leaky*, their menstruation and other bodily fluids were seen as evidence of their lack of control of their bodies and, by extension, of themselves (Shildrick, 1994). This lack of control of boundaries does not only affect the female body: semen leakage, nocturnal emissions and incontinence are other forms of leakage and some artists have used such bodily materials in their creative work.

I have used watercolour, bovine milk, oak and plant inks to speculate about artefacts and about bodily fluids, more often than not without using the actual bodily fluids I drew about. One question that lingered was if replacing one material with another in drawing became less 'honest' than if I had used the actual material. I used cow milk instead of human milk and in doing so I reflected on its already interrelated link with human milk (Haug et al., 2007; Helms, 2021). I drew about bodily fluids with water and watercolour, and this gave me distance, a separation from the actual things I was drawing about, so that other entities could also enter the conversation.

In this paper, I have reflected on ways in which my knowledge and imaginations are partial, fluid and entangled with other forms of knowledge. The drawings presented are ambiguous representations that prompt multiple interpretations, emerging from what was drawn and what was left out. They invite readers to speculate about ways in which fluid materials and bodily fluids can be conceived as sources of creativity that are interconnected and beyond the boundaries of a single organism, informing design ideations and their potential, interrelated spaces.

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About the Author:

Paulina Yurman is an industrial designer, researcher and lecturer at Central Saint Martins, UAL. Her work is informed by critical, speculative and feminist design research, exploring the ambivalence of designed artefacts and technologies. She uses making and drawing with watercolour and other materials as forms of speculative research.