

Medical Liberation for Monstrous Bodies

Cultural Probes for Gender Justice in Breast
Cancer Screening

Report for Master's Thesis

in Industrial Design Engineering

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1 Introduction

With 2 261 419 cases worldwide in 2020, breasts are the site with the highest incidence of cancer (Sung et al., 2021) (Figure 1). Breast cancer has further the highest prevalence among cancers and the changing demographics are estimated to lead to an increase of 40.8% in total breast cancer cases worldwide by 2040 (Ferlay et al., 2020).

These cases are however distributed unequally amongst the population or rather gender. The WHO subdivision International Agency for Research on Cancer (IARC) considers for breast cancer exclusively the cancer site “female breasts”. They consider breast cancer as a “sex-specific” disease with women being diagnosed 122 times as often as men with breast cancer (Ly, Forman, Ferlay, Brinton, & Cook, 2013).

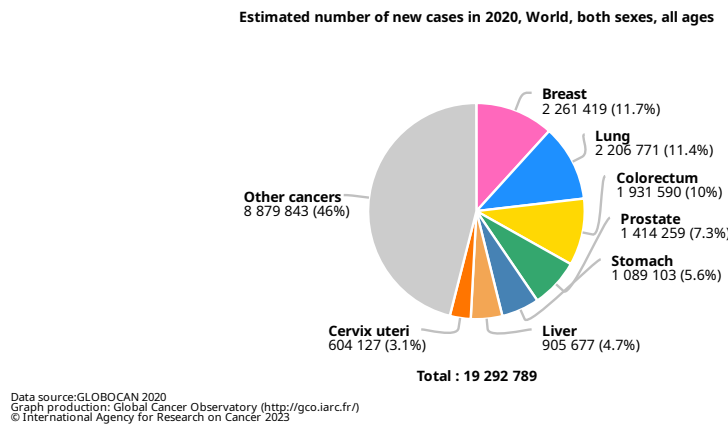


Figure 1: Cancer sites of highest incidence 2020 (Ferlay et al., 2020)

1.1 Breast Cancer Screening Programmes

To lessen the burden of breast cancer many European countries have introduced national breast cancer screening (BCS) programmes since the late 1980s (e.g. Netherlands) or 2000s (e.g. Germany) (Altobelli et al., 2017). Those programmes aim at detecting asymptomatic breast cancer at an early stage, so treatment is more successful, quality of life of patients is increased and mortality decreases (Tabár et al., 2001; WHO, 2020). As potential participants, all people registered as women get send an invitation biennially to participate in a screening examination for breast cancer—starting from 49 to 52 (Netherlands) or 50 (Germany) and ending with 69 (Germany) or 76 (Netherlands) (Kooperationsgemeinschaft Mammographie, 2023b; Stichting Bevolkingsonderzoek Nederland, 2023).

A limited number of research with small sample sizes suggest, that people in hormone replacement therapy (HRT) can have an increased (estrogen and anti-androgens) or lowered risk (testosterone) of being diagnosed with breast cancer (de Blok et al., 2019; Jackson et al., 2021). While all women including trans women or trans people registered as women are

invited in the Dutch screening programme, other genders are not. However, in an additional information folder, the ministry for health advises all trans people registered as men or women to consider participating in screening as long as they have breast tissue (Rijksinstituut voor Volksgezondheid en Milieu, 2021). There is no information on other than cis women and BCS for the German programme (Kooperationsgemeinschaft Mammographie, 2023b).

All use a similar technology, x-ray mammography. In screenings, participants stand up front to an x-ray imager and position one breast on an acrylic glass surface. Another acrylic glass panel compresses the breast from the top while two x-ray exposures are made of each breast. After about two weeks the participant gets informed whether two independent radiologists identified anomalies that could indicate emerging breast cancer. If the result is negative, another invitation follows two years later. If the radiologists suspect breast cancer, another mammogram is made for clarification. Further, MRT, ultrasound or biopsies are taken and in case of breast cancer treatment is started. (Kooperationsgemeinschaft Mammographie, 2023b)

Potential BCS participants are additionally given decision aids, which propose several arguments such as overdiagnosis, relief by negative result, pain, abnormal finding resulting in stress, and radiation dose (G-BA, 2017). Further, gynaecologists in Germany are recommended to start manual examination for women aged 30 as well self-examination and in unclear cases ultrasound examination. (Kooperationsgemeinschaft Mammographie, 2023a)

1.2 Novel Breast Cancer Screening Technologies

Also, at the University of Twente (UT), a novel technology for breast cancer screening and diagnosis is being developed. This “photoacoustic breast imager” (*Figure 2*) is thought to overcome current limitations of x-ray mammography by avoiding ionizing radiation, “(often painful) breast compression” and is targeting the low detection sensitivity in dense breasts (Schoustra et al., 2019). In an IDE student work at the UT, a human machine interface i. e. the lying surface for the third generation of the PAM (PAM₃) has been developed. The design focused on patient comfort and expectations and breast availability to the device (Villamide, 2019).

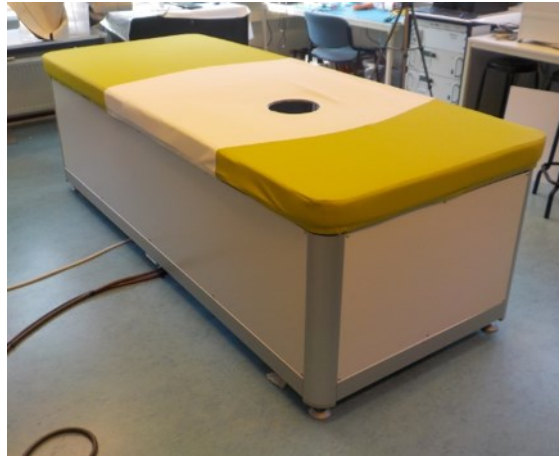


Figure 2: Photo acoustic breast imager PAM₃ at UT (PA Imaging, 2023)

1.2.1 Technologies of Unproven Effectiveness

Many alternative approaches to detect early stages of breast cancer have been proposed by researchers from various fields.

Tactile breast examinations are used by gynaecologists, in self-examination and by vision-impaired examiners, who are proposed to detect breast cancer in early stages (Lux et al., 2019). The study does not conclude an application in screening for early-stage breast cancer.

James Dyson award winning Blue Box by Judit Giro is meant to detect breast cancer based by urinary markers. (James Dyson Foundation, 2020). The technology uses machine learning algorithms or AI. However, has only been tested on a small sample size. (Giró Benet et al., 2022)

While researchers continuously aim to find blood based biomarkers, for reliable and cost effective screening (Loke & Lee, 2018) a publicly advertised blood test has been identified as insufficient for application. Responsible researchers were accused of “extensive and severe scientific misconduct” (Feldwisch-Drentrup, 2019).

Bra-like devices to detect breast cancer are proposed to use microwave imaging (H. Bahramiabarghouei, 2015) or temperature sensors (Fin, JDMP, MLA, & APBL, 2016). The latter has experienced feminist criticism. According to breast cancer screening critic and sociologist Gayle Sulik, magazines would display these devices out of sensationalism, which could make people feel more “anxious about their cancer risk” and warns “that the bra’s efficacy as a breast cancer detection tool would be insufficient to warrant its adoption at any level” (K. Stone, 2016).

1.3 Feminist Irritations and Marginalisation in Medical Practice

Although the nationwide breast cancer screening programmes in the Netherlands and Germany are free and local, only about half of all invited persons actually make use of this offer.

Campaigns such as the National Breast Cancer Awareness Month, that is proclaimed every October in the USA have not only impact on fundraising but also on screening behaviour. The breast cancer awareness month led to higher diagnosis rates in November during the 1990s, however not in later years (Jacobsen & Jacobsen, 2011). Particularly the Pink Ribbon contributes to public breast cancer awareness since 1992 (Terence E. McDonnell, 2017). The frequent use of pink and the pink ribbon are criticised for their commercial use and narration of stereotypical heterosexual womanhood (Sulik, 2011). Sulik (2011) also mentions "Pinkwashing" as the practice by which corporations responsible for emitting potential cancerous substances use breast cancer awareness for own advertisement purposes.

Also breast cancer screening itself is criticised among others by qualitative health researcher Hanson (2000). She problematises that breast cancer screening would be painful, it would promote unnecessary biopsies, it would not be beneficial, and it would have no relevance to the outcome of cancer. As a sociologist she urges to focus less on breasts than on the person and take "a sociological view internal to the workings of biomedicine."

Breast cancer screening is problematised in various dimensions. Practitioners and researchers of medical technology continuously propose novel interventions, which aim to improve cost effectiveness and statistical parameters such as survival rates, sensitivity and specificity.

Novel technology such as the PAM promise to improve current discourses. However, these technologies face similar and additional challenges as current practices. In several cases they generate even more rejection in academic and non-academic communities. Often, feminists regard the commercialisation of awareness campaigns and research, instrumentalization of a life-threatening disease, and construction of normative womanhood as problematic. Further, information for potential trans participants in breast cancer screening are limited or non-existent, such as when a person's gender is beyond the binary.

If the prominent examples of feminist critique and the rough depiction of breast cancer screening programmes are representative, they indicate a marginalisation of non-normative female and other gendered bodies which might lead to an exclusion from health care.

These issues of breast cancer screening seem not solely rooted in the capabilities of a screening technology, but also in screening practice, social structures, public discourse, and academic traditions. Consequently, breast cancer screening is not an isolated case of medical practice. This master's thesis research deals with the multitude of considerations in socio-technological relations in health care for marginalised gender exemplary on breast cancer screening. In order to assess the socio-technological workings and limitations of this technology, a critical perspective is taken on the implementation of sex and gender.

1.4 Research Questions

In order to investigate potential marginalisation of gender and propose an approach to gendered health care and breast cancer screening that reduces irritations, the thesis makes use of a personal and sensitive qualitative design research method called "cultural probes". The rationale behind this decision is explained in Chapter 3 *Methodology: Related Design Research for Marginalised Gendered Bodies*.

To address the problematised irritations in breast cancer screening through cultural probes, this thesis aims to answer the following main research question:

How are cultural probes put into shape and practice for sensitive design research on gender justice in breast cancer screening?

This question is further focused on gender in medicine technology, which leads to three sub questions:

1. How is Breast Cancer Screening governed by gendered assumptions?
2. How are gendered bodies dominated by medicine technology and practice?
3. What interventions for medical liberation and emancipation can be applied by people from affected communities?

1.5 Positionality Statement

The research is carried out in the Netherlands; however, I am based in Germany and consequently have a central and western European cultural background. My academic background stems from mechanical engineering and this MSc thesis project completes the studies through Design as an academic research discipline of engineering. The research is mainly financed by my private expenditures while I live below the lower income limit and am at risk of poverty (CBS, 2021). However, I still experience privileges of not being racialized (or racialised as "white") in European contexts, being mostly able-bodied and having an academic family background.

As an endo transfem genderqueer/nonbinary, researcher, I am currently not personally at risk of developing breast cancer, as I do not have mammary glands. However, through the possibility of starting a hormone replacement therapy, I could potentially become a person with an increased statistical risk of developing breast cancer.

I am aware that this research is situated in a “western” academic context that neglects undisciplined, extra-European and north American, and indigenous knowledges. My previous design research work focuses on gender and queer sensitive design and combines with activism work for self-determination and bodily autonomy rights for women and LGBTIQ*. Further, my German as first language background lacks distinction between sex and gender, there is only one word to describe humans in terms of being, for example man or woman: “Geschlecht”, which neither means sex nor gender but generally a categorisation of humans in my understanding.

For me, in the field of HTR, design research means not just serving industrial production purposes for higher customer acceptance and profit, but rather investigating on socio-technological relations, their influence and interventions on it. That makes design research a multidisciplinary research field involving disciplines and concerned people depending on the research matter. I take the position, that if design research and practice does not include socio-political urges for justice and equality it supports injustice and inequality. As a designer and engineer I am aware of my responsibility about the impact and perpetuation of socio-political values in technology. Translated to the multidisciplinary approach to design research I follow urges such as “nothing about us without us” and “T4T” to include marginalised perspectives in research.

1.6 Thesis Structure

Following this introduction, the subsequent work is presented in six chapters. In chapter 2 *Theoretical Considerations* the background of the subject of this thesis is investigated. The relation between sex, gender and technology is theorised by a literature review.

The 3rd chapter *Methodology: Related Design Research for Marginalised Gendered Bodies* reviews literature of current design research practices. Related work is structured by research into design, research for design and research through design.

In chapter 4 *Method: Cultural Probes on Screening Monstrous Bodies*, the applied method in this thesis is developed and described. First, contradictions between cultural probes and the required research approach for this thesis are bridged. Second, the process of design of

cultural probes is presented. And third, the application of the developed method is described.

Chapter 5 *Results of Cultural Probes and Sessions* describes the generated data of the cultural probes and sessions. The generated data is structured following the design of the set of probes. Additionally, feedback and interactions by participants are presented here.

Following this, chapter 6 *Discussion* relates the obtained data to the research questions. The chapter further discusses contributions to design research and limitations of the method.

The last chapter, 7 *Conclusion* summarises the thesis and presents its main findings. It draws from breast cancer to the liberation of bodies by design.

2 Theoretical Considerations

For design research for breast cancer screening, this thesis shapes a multidisciplinary theoretical understanding. As a first step in this chapter, understandings of sex and gender are elaborated and extended in a second step with research in design and engineering or in other terms, technology. In a third, theoretical concerns that encompass power relations of gendered bodies and technology are presented. Following this, the fourth section gives insight into the workings of gender in the discipline of design. The chapter concludes with a presentation of a theoretical framework applied throughout this research.

2.1 Sex and Gender

Research on gender in medical fields is prone to define “sex” as a binary division of the full or parts and substances of the human body into male and female. As mentioned in *1 Introduction*, conventional perspectives on breast cancer screening are “sex-specific” (Ly et al., 2013) and have little to no consideration of the concerned person’s gender. Depending on the cultural or scientific community, sex and gender experience various meanings.

2.1.1 Sex/Gender as a dichotomy

Finding the origin of binary division of humans into sexes/genders might be impossible, as a “pre-sex/gender age” (German: “vorgeslechtliches Zeitalter”), a time that predates an order of binary sexes/genders does not exist (Voß, 2015). However, Voß (2015) does identify an emergence of a body-mind dualism for sex/gender that was used in the Enlightenment by humanists for political arguments, while both were correspondent to either male or female qualities. The opposing arguments were either supporting an inherent difference or equality of man and women. The author further describes a decline in the 19th century in favour of biologicistic explanations: the mind is controlled by measurable biologisms. Biologicistic researchers however were the reason for the introduction of the term gender. A “psychological sex” in addition to sex in 1955, was introduced when researchers at John Hopkins University argued for non-consensual surgeries on inter and also endo infants (Repo, 2015).

The split of a biological-medical sex and a social gender also enables for modern definitions of what some academics regard as sex. According to Stoller (1984) published in 1966, to “determine sex, one must assay the following physical conditions: chromosomes, external genitalia, internal genitalia (e.g., uterus, prostate), gonads, hormonal states, and secondary sex characteristics.”, of which a sex could be calculated. However, he also emphasised the existence of “hermaphrodites” that are “intersexed”. Contrasting, gender is regarded as a psychological and cultural term

(Oakley, 1972; Stoller, 1984). Consequently, male or female gender roles, such as division of labour, are learned (Oakley, 1972).

2.1.2 Resolving the Sex-Gender Dichotomy

Although the researchers, who introduced a sex/gender dichotomy, helped feminism to unmask sexist positions in academics, they still used terms such as “normal” and “abnormal” to describe endo and inter people, and “disorder” to describe trans people, gays and lesbians. (Oakley, 1972)

This pathologizing view and violence committed in the name of research was prominently criticised by S. Stone (1988). According to her, the history of institutionalised medical transition for trans people constructed “the transsexual” as a human without any personal sexuality, eroticism and romance. Hostile descriptions of trans people of the 1960s became an accepted diagnosis key as “being in the wrong body” in 1980. However, according to S. Stone (1988) the theories of cis-het researchers were only validated, because trans people practiced to give those answers that researchers demanded to access medical transitions. She further criticises, that trans people are forced to be invisible: “The highest purpose of the transsexual is to erase h/erself, to fade into the “normal” population as soon as possible.”. Her consequence is an urge for trans people to become “posttranssexual” by forgoing passing and be a representative for reclaiming their own trans culture.

Also, the shortly afterwards emerging queer theory challenges the sex/gender dichotomy. Central to the Butlerian queer theory is that sex is regarded as subordinate to gender, i. e. gender already subsumes sex. While prior theories attest sex an essentialist biologicistic reality on which gender is constructed, Butler (1988) identifies that “Gender reality is performative which means, quite simply, that it is real only to the extent that it is performed.” i.e. sex is a term by which biologicistic arguments perform gender. Performative acts are intentionally a reference to theatrical acts, where gender is not an expression of an underlying identity or even sex, but the very performance is what constitutes the said identity.

However, the metaphor of stage performance ends at the choice of the script or role. According to Butler (1988), “performing one's gender wrong initiates a set of punishments”. Violent attacks and policies against LGBTIQ people are a result of cis-heteronormativity. So, gender is also normative: “performativity has to do with repetition, very often with the repetition of oppressive and painful gender norms to force them to resignify. This is not freedom, but a question of how to work the trap that one is inevitably in.” (Butler, 1992).

Beyond the ontological shift towards constructivism, even current positivistic research in medicine and biology dissolve the strict sex/gender dichotomy. Fausto-Sterling (1993) argued against practices to operate inter children to fit into either male or female “sex” and described the existence of at least five “sexes”. Partly seeing this practice being halted, she further sees sexes and genders as points in a multidimensional space, that includes hormones, chromosomes, gender identity (Anne Fausto-Sterling, 2000). At the example of bone strength, this concept of sex/gender is further developed into a dynamic system over the human life-course. Physical activity, drugs, diet, foetal bone formation, hormones, metabolism, and biomechanical effects interact with one another in a complex system. Though a purely bodily configuration, “culture shapes bones” (A. Fausto-Sterling, 2005) and consequently the term “sex/gender” is used to describe the interconnectedness between body and culture or nature and nurture.

On the other hand evolutionary biologist (Touraille, 2013) calls for a distinction between genetic information and cultural inscription, i.e. sex and gender, to explain statistical differences between male and female physiology. She proposes that body height of women is evolutionary influenced by nutrition and mate choice. Gender hierarchies in all cultures would prioritise men over women in access for food as well as men prefer to choose smaller women and women taller men. Consequently, gender produces sex differences.

In contrast, Hanson (2000) criticises generally a focus on sex in biomedical research. By the example of breast cancer screening she states, “Focus on female sex differentiators leads inevitably to the objectification and commodification of female body parts.” and women's health should not be confused with breast health. Similarly problematizes Hammarström and Annandale (2012) the inconsequent use of the terms gender and sex in medical research. These terms frequently lack definition as well as “conceptualising the interplay between ‘sex’ and ‘gender’”. The authors see a risk of reductionist and essentialist simplifications.

2.2 Construction of Gender in Design and Technology

While gender and sexuality studies or medicine investigate on socio-physiological co-constructions, it does not explain the role of technology, or rather designers and engineers.

A fundamental explanation on the workings between society and technology is that technology itself has political agency (Winner, 1980). Winner (1980) argues, that there are two ways in which politics of technological artifacts can be interpreted. Either by the form and arrangement of a technology, which establishes power relations intended

by social actors who influence the design. Or the authority is inherent to the technology and neither can it be changed through redesign or different social context.

This premise deviates from a “strong constructivism” (Brey, 1997), which is based on the “strong programme in the sociology of knowledge” (Bloor, 1976). Sociology would treat scientific knowledge not as “true belief” but as what is “collectively endorsed” as such. One of his thesis, to symmetrically account explanations considered to be true or false beliefs, is particularly taken up as “relativism” by the concept of a social construction of technology (SCOT)(Pinch & Bijker, 1984). This “strong constructivism” focuses on the study of “multi-directional” understanding of technology, i.e. that technology does not develop linearly towards a final state. It considers the interaction between “relevant social groups” whose interaction through selection and iteration leads to a “closure and stabilization” of a technology. The closed technological artifact is then set into “the wider context” of the “sociopolitical milieu”. Thus, the construction of technology is only dependent on social negotiation.

This approach has experienced criticism for lacking a study of the consequences of a technology, ignoring marginalised social groups and power relations, disregarding cultural origins of choices by social groups and “autonomous technology”, and the lack of a moral or political consequence of a SCOT analysis (Winner, 1993).

This criticism seemed to have been partly embraced by the Actor Network Theory (ANT). ANT, in its core, aims to find the origin of how morality shapes in societies. Society, however, is not consisting solely of human actors, but also of non-human actors, i. e. technology. A technological artefact would entail a “program of action” that is delegated on another human or non-human actor. Through that, it answers to an opposing moral, an “antiprogram”. (Latour, 1992)

While Latour (1992) regards technological interventions with an apparent “programme”, introduced with explicit politics, Akrich (1992) refers to “scripts” and includes less obvious morals. In these scripts or “scenarios” designers inscribe “actors with specific tastes, competences, motives, aspirations, political prejudices, and the rest, and they assume that morality, technology, science, and economy will evolve in particular ways; [...] like a film script, technical objects define a framework of action together with the actors and the space in which they are supposed to act.”. In ANT, technology also experiences a stabilisation, after which it becomes “black boxed”, as such the sociotechnical assumptions made in the design have become accepted knowledge.

This process is bidirectional, meaning not only is technology constructed by society but also society is constructed by technology. In STS literature this concept is called “co-construction” and shown by connecting users and technology (Oudshoorn & Pinch, 2003). The “co-construction of users and technologies” is further applied to gender. Gender is not a characteristic about an actor inscribed in technology, gender is co-constructed with technology. According to this, also artefacts have gender (Berg & Lie, 1995). In relation to ANT, the term “gender script” was introduced (van Oost, 2003). Gender scripts entail either implicitly explicitly defined representations, relations and assumptions about a gendered user, i.e. femininity or masculinity. At the example of electric shavers marketed to men, “Philishave”, and to women, “Ladyshave”, van Oost (2003) shows that “Philips not only produces shavers but also gender”. “Philishave” devices used a graphical design language to show the technological functionality, while the “Ladyshave” devices hid all reference to their functionality under white organically shaped housing. Consequently masculinity was referred to as technologically demanding, while women would be represented as “technophobic”. This perspective remains constructivist and repels technological determinism, by arguing, that gender scripts can be accepted, rejected or adapted and the meaning of such gender scripts are situated in a social context, in time and place.

Unintentional inscription of gender and thereby the perpetuation of gender stereotypes or exclusion is also apparent in the design of technologies. While aiming to design for “everybody”, male design teams use the so called “I-methodology”, they think of themselves as “everybody”. Consequently, social disbalance in interests and skills between genders are disregarded and female users face exclusion. (Oudshoorn, Rommes, & Stienstra, 2004)

2.3 Materialised Morality and Moralising Technology

Though these theories explain the role of designers and engineers concerning behaviour, morals and gender, they remain rather analytical and disregard moral and ethical implications for the involved actors. Some philosophers of technology were left unsettled because of this “amorality”. Achterhuis (1995) therefore urges that society should moralise technology. At the discourse on environmental sustainability, he claims that rather technical devices need to internalise morals, than humans. He defends this position from dystopian technological determinism by claiming, that delegating morals on technology is not itself immoral, but a form of “ethics of responsibility” that has more effect on reaching environmental goals, than those which focus on “ethics of moral conviction”.

This position is integrated into recent theory of human-technology relations. As a theory extending and re-reading constructivism in ANT, Verbeek (2005)'s Mediation Theory claims that technology helps humans to constitute a relation to their environment. When humans and technologies interact, it shapes their reality and morality. In this theory the role of designers is summarised by "designers are doing 'ethics with other means'" (Verbeek, 2006). Although, technologies are "multistable", i. e. their influence is dependent on the context of use and can have several meanings at the same time, designers and engineers are charged with a high moral responsibility. Similarly to Achterhuis (1995), Verbeek (2006) proposes, that designers and engineers should moralise technology and anticipate their impact. While engineering and designing technologies frequently lacks democratic legitimization, its anticipation is complicated. Verbeek (2006) sees relief of this dilemma through the application of "(moral) imagination, scenario methods, and virtual-reality technologies, and they can actively involve users in the design process". This vision of responsible design extends conventional user centered design through the inclusion of "contexts of design" and "all relevant stakeholders" as well as the mediating role of technology. This concept is described as an augmented "Constructive Technological Assessment" (CTA). The approach is further developed by revisiting the "control dilemma" by Collinridge: moral impacts of a technology are difficult to anticipate early in its development, while at later stages the technology might not be shifted towards a different impact. As a solution the "technological mediation approach" uses step by step analysis of how moral values change, i.e. the value of privacy in the development of google glasses, and are appropriated by humans, i.e. in online comments (Kudina & Verbeek, 2019).

2.4 Queer and Posthuman Technological Power Relations

The workings of gender, bodies and technology are further regarded in post-structuralist accounts. For Foucault (1976), human bodies are controlled through "bio-power". Starting from a historic genealogy, "Bio-power" entails for example the right of life and death, invocation of "the monstrosity of the criminal", population control, and insertion of bodies in machinery in the development of capitalism. According to this, "sex" was the normalisation of the body as an outcome of "technology of power on life". This technology particularly regulated women as resources for reproductive labour. Biopolitics are not only sustained by "technologies of power" but also by "technologies of the self" (Foucault, 1988). These allow humans to alter their "bodies and souls, thoughts, conduct and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality". For these he

identifies a shift of ends from “taking care of oneself” to “knowing oneself”.

For contemporary structures of control, bio-power is translated to a “pharmacopornographic” system (Preciado, 2020). Now, technology transgresses skin and invades the body. Rather than restricted through oppressive laws, the current western regime would be sex-positive. While in the name of health and immunity marginalised people were quarantined and excluded, current states of the “western” hemisphere also isolate with “immunitary ethos” against “racialised minorities and migrant populations”. He further proposes a “parliament of (vulnerable) bodies” to attain health and reappropriate “pharmacopornographic devices” by collectively altering them. He uses the example of bodyhacking in a self-managed hormone replacement therapy with testosterone on himself.

Built upon these bio-politics, a field of “cyborg politics” is introduced steering feminism into a new technological era (Haraway, 1987). According to this human-technological workings in modern states are theorised from a posthuman perspective. The human has become a cyborg. This cyborg is an ambiguous representative of a failing modernist explanation of the world in binarisms. This accounts also to gender or sex. “Being” female, does not exist and is a “highly complex category constructed in contested sexual scientific discourses and other social practices”. Consequently also consciousness about gender, “race” and class is a result of patriarchy, colonialism, and capitalism (Haraway, 1987).

Foucault’s Bio-power gets replaced by an “informatics of domination”, that entails the construction of communication science and modern biologies simultaneously. The informatics of domination is a “massive intensification of insecurity and cultural impoverishment, with common failure of subsistence networks for the most vulnerable.” In other words, the succession of bio-power is also affecting people unequally. The “informatics of domination” complexes progressive movements such as feminism, as there is nothing unifying women. However, Haraway (1987)’s cyborg is responsible for the boundaries of machines because “the machine is us, [...] we are they.” The cyborg is both a metaphor for myth and reality. It serves as a new imagery to replace essentialism and universalisations, while delegating responsibility to those marginalised by hierarchising dualisms. Instead of demonising technology, cyborgs embrace it as part of themselves.

The cyborg, however, is not the only imagery of socio-technological entanglement. Phenomena in technologized societies can also be understood as hybrids. This less humanoid, yet mystical metaphor was

introduced by Latour (1993) to counter the strong dichotomies introduced in modernism between nature and culture, human and technology. He argues that these divisions never accounted for reality and poses the thesis that “we have never been modern”, i.e. we have never lived in the reality suggested by modernists. As a non-modern he suggests to regard political issues as hybrid. Those hybrids are human and non-human, technological and natural at the same time. The constitutions of modern states, which regard technology as instruments separate from humans as tool of control and under control, should be replaced by a Constitution for non-modern hybrids. As a first content of this Constitution, he proposes a parliament of things. This parliament is set up of stakeholders for all hybrid issues, spokespersons for animals, nature, and hybrids.

2.4.1 Imageries on Gender and Power Relations

Additional metaphors of gender and power relations have been introduced to other disciplines as well. Three loosely connected imageries are presented below to contribute to a cultural understanding of technology, bodies and power.

The Master’s Tools Will Never Dismantle the Master’s House
On a panel discussion at the Second Sex Conference in 1979, Lorde (2007a) gave these comments to criticise the lack of representation of women of colour, lesbian and “Third World women” in academia. She particularly criticises the “white american feminist” researchers of missing intersectional perspectives on “racism and homophobia”. The master’s tools are consequently assimilation into oppressive hierarchies and ignorance about other marginalised people. For her, the option to “dismantle the master’s house” would be to unite with people excluded from society and “take our differences and make them strengths”.

Seven Monster Theory Theses

Monsters appeared in techno-philosophical concerns as hybrids and cyborgs (2.4 *Queer and Posthuman Technological Power Relations*). Monster theory is concerned with a reading of monsters that places marginalised people, gender and sexuality in a cultural production. These cultural monsters are characterised by seven theses (Cohen, 1996):

I. The Monster's Body Is a Cultural Body

Monsters signify something else than themselves and the monstrous body is pure culture.

II. The Monster Always Escapes

The monster disappears and reappears in the sequel. Every time it returns, it inhabits a new meaning such as the Vampire: Nosferatu can be read as control in nascent fascism, just as lesbian desire in Camilla, Anne Rice’s

Vampirism represents homosexuality and Bram Stoker's Dracula by Coppola alludes to AIDS.

III. The Monster Is the Harbinger of Category Crisis

The monster is a hybrid, which resists systematic categorisation, questions binary thinking and demands us to rethink norms and boundaries. The term category crisis was coined by Garber (1991) and exemplified by drag and trans people, who question or erase the binarism male/female.

IV. The Monster Dwells at the Gates of Difference:

The monster is the exemption of normative society, "the other". Othering and monsterising humans are a tool for systematic oppression and murder. Examples are nazi-caricatures of Jews, racist cartoons of native American population and stories about child-eating Bosnians. Fantastic monsterisation justifies real violence.

V. The Monster Polices the Borders of the Possible:

The monster limits intellectual, geographic and sexual mobility. It impersonates sexual practices prohibited for everybody except for a monster: "Feminine and cultural others are monstrous enough by themselves in patriarchal society, but when they threaten to mingle, the entire economy of desire comes under attack."

VI. Fear of the Monster Is Really a Kind of Desire:

"we distrust and loathe the monster at the same time we envy its freedom". So monsters are our "second bodies" to explore "other genders, other sexual practices, and other social customs"

VII. The Monster Stands at the Threshold ... of Becoming

Monsters are our children and "ask us to reevaluate our cultural assumptions about race, gender, sexuality, our perception of difference, our tolerance toward its expression. They ask us why we have created them."

The Master's Toolkit

As a revisit of Lorde's comment, Halberstam (2018) mentions four master's tools that uphold a divide between profiteers and exploited in modern capitalist societies, particularly those experiencing sexual abuse and racist attacks:

1. The Master's Screwdriver

The turn of the screw ensures, "that the more things change the more the rich stay rich and everyone else gets screwed"

2. The Master's Power Drill

"Instead of trying to replace the masters who exploit us, we seek to become them in small and meaningless ways." This power drill prevents "all

opposition, we turn the problem into the solution". The drill is also a phallic metaphor, that should be fought with own "prosthetic imaginaries"

3. The Master's Hammer

"By talking about the problem, you become the problem!" it limits resistance by "turning the victim of one system (racism) into the criminal in another (sex abuse)". Naming these tools is already opposing their domination, as Halberstam explains in the words of Sara Ahmed: "having names for problems can make a difference. Before, you could not quite put your finger on it. With these words as tools, we revisit our own histories; we hammer away at the past."

4. The Master's House

This is a direct reference to Lorde's "The Master's Tools Will Never Dismantle the Master's House". Halberstam (2018)'s reaction is to become dangerous, the "demolition man" to "Tear it all down!".

2.5 Designing Gender and Gendered Technology

The understanding that design and technology are constructing gender as well as that design results from gendered assumptions is also identified by design critiques and researchers. Early modernist design critique Adolf Loos already emphasised 1898 the influence of fashion on gender roles and vice versa. According to Loos (1962a), men developed a fashion that enables them for horseback riding as well as physical labour. Women would have just recently gained the right to work and according to his essay are less developed. Seeing a future of autonomous and financially independent women, he assumes that ornamental women's fashion will disappear. Besides, his radical modernist perspective was culminating in extreme racism and misanthropy. His main argument against ornamentation was that, indigenous people would tattoo themselves and "everything" while "modern" people having tattoos would exceptionless be "degenerates" and "criminals" (Loos, 1962b).

Sparke (1995) omits Loos' urge for gender equality among European women and men of all classes and regards modernist's inherent structure as sexist. By claiming that there is one "right" way to design, which is the focus on "functionality", pronounced in every part of design, the hegemony of all designed artifacts is in the hands of "professionals". In modernist societies with a strong division of labour, those are men. This binary division where female is subordinate to male, is also apparent in design, which follows binary assumptions such as professional/domestic, etc. For her, the emergence of post-modernism in design did not end the inherent sexism. However, by not claiming to be the right design, it opens the discourse in designed artifacts to question dichotomous gendered

assumptions. Additionally, deterministic perspectives of gender in design are accepted by design researcher Brandes (2008): “A gender-free or gender-neutral reality does not exist”, which accords also to design.

As a consequence of researchers giving male designers the authority over meaning of the designed technology, the research would perpetuate patriarchal ideologies. The ability to design is then set as a male attribute. Feminist design researcher Buckley (1986) therefore calls to analyse patriarchal structures, also in relation to capitalism and why women experienced exclusion in design history research. Buckley (2020) still observes the necessity to research on patriarchal structures today. Though, feminism and feminist design research have since contributed many more tactics that can be accounted for methodologies to shift the perspective of design. Particularly design historic research should adapt an intersectional or “close-up” perspective, or “look for the awkward”.

2.6 Theoretical Framework: Simultaneous Practices of Design, Gender and Society

In this chapter, some of many explanations of the workings between gender and design have been explained. Out of these theories, a framework is created from which this research project departs.

Sex and Gender as Indifferentiable

For this research, neither a completely biologicistic explanation of sex as the defining concept of male and female bodies, nor an entirely social constructivist perspective is taken, that assigns the origin of all gendered definitions to human actions of doing gender. This thesis takes the perspective, that bodies are social, physical, medical and technological reality. Society and technology are both a result of those bodies as well as shaping them. Here, the term gender is most frequently used to describe the concept under which male or female and masculine or feminine bodies, technology and social interaction is shaped, though it includes bodily configurations. Additionally, bodies are shaped by domination, violence and marginalisation. Technology including medicine normalise bodies in terms of sex/gender and create hierarchies and inequality.

Designer’s Responsibilities

Though designers and engineers are not at all in the power to decide individually on what technology is mass produced or introduced to society, the aforementioned theories, however show a crucial role in shaping society. The design research of this project consequently, respects the possibility of shifting norms and hierarchies through technology. The methodology that follows is also focused on how design research and practice can morally progress discourse on gender and technology and

approach societal power relations and inequality through democratic and inclusive processes.

Transhuman perspectives of trans humans

Post-modernist theories are rich in explaining relations between society, technology, gender and bodies, while regarding proportions of power, politics and morals. All, the human body, technology and gender are no longer autonomous spheres, they shape an indissoluble entity. Binarisms, or more generally essentialist and generalised knowledge is criticised as tools of domination or errors of modernism, that do not account for reality. Gender or sex is one of those binarisms that do not hold for reality, while trans humans can deliver the proof of existing outside a biologicistic dualism. Hybrids or cyborgs are just two metaphors that urge us to accept technology as part of being human and crucial for liberating marginalised bodies. For this thesis, this imagery contributes both literal and figural methodology of processes between gender, body and technology.

3 Methodology: Related Design Research for Marginalised Gendered Bodies

This chapter reviews literature on design methodology. Starting from conventional design practices in section 1. A second section presents related design methodology for research into design, that aid to read and interpret technology. Then, research for design methods are presented and include participators research methods. The fourth section presents research through design methods that are applying design for the research matter. An additional section presents potential analytic methods for qualitative research. This chapter is concluded by a methodological framework on which this research bases its method.

In design research, practices, which target the issues described in the theoretical framework have been introduced under a variance of fundamentally different concepts and vocabulary. To theorise design research practices, three different categories were proposed: “Research into art and design, Research through art and design”, and “Research for art and design” (Frayling, 1994). First includes design and art history research and research on theoretical considerations of, for example, politics, society or culture. The second concept is focused on research to improve technology and material used in arts and design. The third, “research for art and design” is somehow different to the former and results in an artefact, where the thinking is “embodied”.

These categories are accepted, however, with a change in meaning by design researchers. Particularly researchers in human-computer-interaction (HCI), refer to “research through design” (RtD) when they approach what Frayling (1994) calls “research for art and design” and vice versa. Further, the term “art” is omitted, ignoring the critique, that design as well as art research share similarities and right to existence as an academic research practice rather than exclusively as handicraft. (J. Bardzell, Bardzell, & Hansen, 2015).

By the scope of the research question and field of this thesis, there is a limited perspective of what art entails and how art is being practiced. Consequently, in the case of this research, the term “art” is omitted, too and the currently prevailing terminology is used. In this section, the methodological concept of the applied methods is explained through the three categories Research into Design (RiD), Research for Design (RfD) and Research through Design (RtD).

3.1 Gender in Conventional Design Practice

Conventional design practices only share a limited perspective on the key findings of 2.6 *Theoretical Framework: Simultaneous Practices of Design*.

Gender (or even sex) are rarely discussed and technology lacks “moralisation”. For example, IKTD (2023), still lectures under the title “engineering design and industrial design” mainly theories from the 1960s. They regard gender as fixed “demographic characteristics” and view technology exclusively instrumentalistically. Focused on engineering students, this modernist approach quantifies all design decisions with formulas in order to steer a design process to the objectively best result (Seeger, 2005). Frequently, design methods respect humans through statistical data just as in personas (Pruitt & Grudin, 2003) or by categorising women into types in order to design accordingly (Schroeder, 2010). These conventional design practices have been criticised for their methodology that is often based on stereotypes or the designers themselves (“I-methodology”), while assumed gender neutrality is actually implicit repetition of gender norms (Rommès, 2004). Further, women designers are still underrepresented in design processes and female representation is subjected to normative structures (Kaygan, 2016).

The criticism on established research methods is extended to marginalised genders and sexuality, particularly in sociology. In queer and gender studies, an ambivalent positionality is taken towards quantitative empirical research. On the one hand it is criticised that quantitative data collection and analysis disregards the ambiguous non-definitions of queer sexualities and genders, due to “queer-illiterate” algorithms (Tsika, 2016). Further, data collection might confront researchers with the complexity of “subjective categories”, i.e. gender and sexuality, that are impossible to find a one-fits-all definitions. For example, trans people might be included by the term “transgender” while not all non-binary people might respond to this definition. On the other hand, researchers might still use quantitative data collection, to support needs and struggles of marginalised people, such as toilets for all genders. (Doan, 2016)

3.2 Research into Design Methodologies

Research into design is adapted as well as proposed by the theory explained in 2 *Theoretical Considerations*. However, these theories stem largely from disciplines of humanities such as SCOT, ANT, Mediation Theory, but also design histories. Below, several methods to analyse or read design in respect to gendered bodies are presented.

3.2.1 Methods for Gender Script Analysis

Design researchers have proposed methods to analyse technologies and their influence on society and gender. Gender Scripts can be analysed through focussing on the design process and assessing structural, individual and symbolic gender assumptions of designers, user representations and users in a matrix (Stienstra, 2003). Another matrix as

a “Heuristic scheme for product gender script analysis” is proposed by van Oost (2014). Here, consumer products are analysed by their “product script dimension” (“form”, “function” and “interface”) in relation to “gender dimension” (“gender symbols & values”, “gender structure”, “gender identity characteristics” and “gender impact”). To analyse existing technologies, a “gender script translation framework” (Denz & Eggink, 2019) is applied based on a “brand translation framework” (Mulder-Nijkamp & Eggink, 2013). Explicit design cues, i.e. physical design features such as form, colour, shape, size, etc., are connected with implicit cues, i.e. associations and symbolism such as, tough, friendly, cute, etc.. The tip of the pyramid shaped framework are core values of a brand identity. In the case of gender script analysis, the pyramid framework is extended by a surrounding, so further contextual explanations, such as marketing. In place of a brand identity, the tip of the framework are gender scripts, assumptions about gender and the gendered consumer.

3.2.2 Master’s Tools, Monster’s Tools

Design researcher Canlı (2021) introduced a decolonial and queer feminist method or reading of design as materialisations of monster’s or master’s tools. At the core of Canlı’s (2021) toolkit are decolonial and queer readings of power relations explained by Sara Ahmed’s analysis of design as creating otherness. They are similarly abstract, however acknowledge that power relations which create *the other* are materialised by designed artefacts. These toolkits explained in *Table 1* and *Table 2* are consciously not exhaustive and meant to be extended (Canlı, 2020).

| Master’s Tool | Materialisations |
|--|---|
| <i>Monsterising</i> : Presenting humans as monsters or dangerous others. | In books, ethnological expositions, cartoons, racist marketing that “animalises” etc. today: anti-refugee politics, ethnic cleansing |
| <i>Taxonomising</i> : based on hierarchical binarisms, normalising to proof deviation of bodies. Superficially scientifically measured normativity | e.g., anthropometric measures and types from sex to social class. full body scanners pose deviation from “sexual dimorphism” as risks, recognition technology catalyses racial profiling or results in denial of service. |
| <i>Ignoring</i> : Marginalisation of “the Other” | Queer, BIPOC, women, differently abled, non-western people have been excluded from history books, exhibitions or conferences and representation still falls short. |

| | |
|---|--|
| Taming: Assimilation until annihilation (eradication) | Veiling and unveiling (covering breasts, prohibiting Hijab) Design for “inclusion & diversity” rather shifts the discourse to create docile bodies. |
| Appropriating: Decontextualising, Trivialising, erasing the culture of “the other”. | Commercialisation of traditional art and symbolism, clothing etc. as a tactic of depoliticisation of struggles for self-preservation. |
| Double Othering: Other becomes oppressor | Mainly designed propaganda. Racist feminism that saves the “poor muslim woman”, racism in LGBT-advocacy |
| Pitying: Good intentions but reproduces hierarchy of “prosperous and helpful” vs. “underdeveloped and needy” | “white saviourism”, tents for refugees in the name of profitability, war on terrorism, African girls in need for sanitary products |

Table 1: Master’s Tools (Canlı, 2021)

| Monster’s Tool | Example |
|---|--|
| Embracing the Monster’s Tools: Value the monstrosity delegated on you. | Own beliefs and actions belittled as “kitsch” should be revitalised and delinked from the master. |
| Exposing the Master’s Tools: Uncovering is making it vulnerable | Naming the names: racism in place of “race” (acc. to Toni Morrison); sexism in place of “gender issues”; transphobia in place of “gender critical” or homophobia in place of “sexual difference”. “Poetry is the way we help give name to the nameless so it can be thought.” (Lorde, 2007b) |
| Counter-memorizing: Re-writing and now-writing the history | Heal long-lasting exclusion from books, classrooms, galleries/museums, archives. Proof of deemed non-existent crimes “Writing history as witnessing it” e.g., websites enlisting crimes. |
| Boundary Blurring: How to overcome dichotomies and binarisms? | Explore cross- and non-disciplinary knowledges |
| Haunting: Sabotaging the master, taking revenge | Respond violence with violence is controversial and sometimes to be taken literal and sometimes metaphorically. Critique on “miliding the wilding”. It is “the price paid for violence” |

| | |
|---|---|
| <i>Othering the self:</i> response to double othering; coexist with own others | Refers to Halberstam’s response to the master’s drill of hacking supposedly virtual “assistants” to make them do real commands. |
| <i>Surviving the tools:</i> Surviving while not hindering the survival of others and maintaining your identity, the reason of discrimination. | Forging bonds and building collectives of support, work and love, life and energy on resisting. |

Table 2: *Monster’s Tools* (Canli, 2021)

3.3 Research for Design Methodology

The indistinct differentiation of RtD and RfD becomes particularly evident in research that includes external participants and the field of human centred design. While research for design can include research into new materials and technological properties, it can also include positivistic knowledge about “the user”. These research methodologies aim to give methods and tools to produce design interventions.

Rommes (2004) proposes several methodologies for gender sensitive design in commercial practice. Her case studies in commercial ICT artefacts for women and girls showed that it is beneficial if responsible designers are similar to the “end-user” or apply “direct user representation techniques” and “bottom-up” feedback are applied. The “user involvement” is claimed to require a thorough selection of participants and start as early as possible in the design process.

As an established design practice in research and industry, user-centred design, or as a subcategory, active user involvement serve to better anticipate “future use situations” and design according to “the users’ needs” (Thalen & Garde, 2013). As part of this field, Thalen and Garde (2013) have identified methodologies by two dimensions: the level of user-involvement and at what phase of a design project the methodology is applied. Those can be considered as design for, with and by the user, whereas design by the user is considered as the highest degree of involvement, mainly participatory design, which includes co-design as a methodology. Other methodologies are usability testing, context mapping and ethnographic research. These methodologies are mentioned below.

Co-Design, Participatory Design and Human-Centred Design
 Author driven design practices have been criticised for their insensitivity to binary gender relations, such as the “I-methodology” (2.2 *Construction of Gender in Design and Technology*). For participatory design, Schiebinger (2013) assumes, that knowledge is sex/gender-specific, e.g. divided by

labour. Hence, participatory design should first include a definition of the area to be studied and an investigation of present gender structures. Second, identify and characterise “potential target groups”; third, “seek user or community input”; fourth, “observe workers or users” for tacit knowledge; fifth include users for evaluation and redesign.

Further, including marginalised genders through “full-participatory processes” in design can serve as a practice of “queering design” (Canlı, 2014). Then, co-design or participatory design does not serve as user-centred design but as a critique on it. User-centred design fuels exclusion as it perpetuates structural exclusion and discrimination e.g. by focusing on a profitable and privileged audience (Costanza-Chock, 2020).

Denz and Eggink (2019) applied the approach of analysing gender scripts as a participatory practice that challenges “materialised normativity” in industrial design. Co-design sessions with LGBTIQ* communities can serve as a method to challenge heterosexist structures, such as in fashion, linguistics or body politics in different spaces (Canlı, 2017). By consciously including marginalised communities and enabling them to target their own challenges, participation in design can serve the approach of “design justice” (Costanza-Chock, 2020).

Another example of application of queerfeminist stands in participatory research is participatory action research (PAR). Here people from a community partner in research and become co-designers or co-researchers. It extends participatory research by action, meaning that the research aims to support communities in making “social change in their lives” (Fields, 2016). Fields’ (2016) queer feminist PAR captures not only officially pronounced interviews, but also “[a]nxious situations - failures, flirtations, and misreadings” to value “erotic entanglements” in empirical research.

Design Ethnography

Similarly, ethnographic design research can integrate “inclusive design”, which aims at integrating marginalised groups for social equality in communities but also businesses and industry (Bichard & Gheerawo, 2011). Ethnography in humanities is generally long-running several months or years and entails observation and interviews that are elaborately transcribed and analysed for keywords. However, in design research, particularly in human-centred design practice, ethnography has been turned into practical tangible methods sometimes rephrased as “rapid ethnography”. These methods are always adapted to a specific purpose. Bichard and Gheerawo (2011) propose designers to reflect on their subject matter “more as anthropologists and ethnographers” when employing these techniques of giving voice to marginalised communities.

Traditional ethnography has been criticised for a history of colonialism, racism, classism and sexism (Esposito & Evans-Winters, 2022). Critical ethnography positions therefore possible racist, classist, or sexist perspectives of the researcher and on how it shaped the participants' lives central in the study.

Context Mapping

Another shift from "user research", which focuses on use cases, towards a "human-centred" perspective that investigates the realities of "users" is fulfilled through the methodological framework of "context mapping". The procedure aims to produce positivistic knowledge and contextual "awareness by eliciting emotional responses from the participants." so it includes "peoples' dreams and fears, their aspirations and ideas." (Sleeswijk Visser, Stappers, van der Lugt, & Sanders, 2005). The approach consists of five or six phases: Preliminary, the context is defined for the specific case. The first phase, preparation, entails "the formulation of goals, planning, selecting participants, choosing techniques, etc.". The second phase is termed "sensitisation" and includes toolkits that remain for several days or weeks with the participants. They contain a set of tasks or interactive methods which "triggered, encouraged and motivated to think, reflect, wonder and explore aspects of their personal context in their own time". These toolkits prepare for generative group sessions, the third phase. In those sessions four to six participants are given tasks by the facilitator and generate design artefacts that express their thoughts. The fourth step is to analyse the content by a simplified application of grounded theory. Subsequently, the result is communicated to a group, department or other interested stakeholders not only through a report but also interactive means such as workshops or card sets in a fifth and final step.

Dilemma Driven Design

Numerous methods have been introduced for human-centred design that approach societal and personal challenges with different perspectives. One of such is dilemma driven design (DDD) (Ozkaramanli, Desmet, & Özcan, 2020). DDD focuses on situations in which people are faced to make a decision between two mutually exclusive options, dilemmas. As national breast cancer screening programmes explicitly delegate a decision onto prospective screening participants whether to attend screening or not, the technology is also charged with a dilemma. Ozkaramanli et al. (2020) proposed a DDD approach consisting of three phases: discovery, definition and application.

Discovery of dilemmas means their identification by relevance to a design brief and may include applied techniques such as tool card sets.

The definition of a dilemma is systematised by a dialectic framework containing the personal goal as reason of doing something, the pains and gains of the action and the concrete action. All three levels are expressed for both options of the dilemma.

The application or solution to the dilemma can then be ideated with any creative or co-creative method in more or less interactive and generative sessions. For a richer insight in possible design interventions, Ozkaramanli et al. (2020) proposes three different cases. First, resolving a dilemma by enabling both goals and consequently eliminating the dilemma. Second to moderate a dilemma by prioritising one of the two options, and third to trigger dilemmas to expose the conflict and make it more accessible without fulfilling either or both sides.

3.4 Research through Design Methodology

If the previously mentioned approaches are not already considered as RtD, it focuses less on the analysis or solution of a design challenge, but rather includes a critical, political, inspirational or even playful attitude on societal or technological situations by applying design methods.

3.4.1 Critical Design

Critical design can be considered as research through design approach (S. Bardzell, Bardzell, Forlizzi, Zimmerman, & Antanitis, 2012). The name intentionally or unintentionally references to Frankfurt School, as it acknowledges how design and designers continue social hierarchies and division of class through consumer goods that represent “harmful ideologies” (J. Bardzell & Bardzell, 2013). Consequently, critical design aims to encompass ethical positions. For J. Bardzell and Bardzell (2013) it does so by: “a perspective-changing holistic account of a given phenomenon, and that this account is grounded in speculative theory, reflects a dialogical methodology, improves the public’s cultural competence, and is reflexively aware of itself as an actor—with both power and constraints—within the social world it is seeking to change.”

A further development of this position can be identified in “norm critical” or “norm creative” design. Nilsson and Jahnke (2018) base their design tactic on norm-criticism, which is an approach to criticise social norms, that lead to exclusion, especially gender inequality. Since norm-critical analyses could result in an “action paralysis”, “norm-creativity” is introduced as a practical approach resulting in material design interventions (Nilsson & Jahnke, 2018). The methodology was introduced through a card set with numerous design methods to produce tangible results. Examples are: “the plastering trowel”, which focuses on a design that aims to suit as many people as possible, taking into account ergonomics and universal style; “the sledgehammer”, which creates

understanding through experiencing excluding norms of designed artefacts by altering an experienceable object or environment so that privileged people get a hint of the exclusion of marginalised people; or “the swirl whisk” that replaces problematic expressions and through that creates new experiences.

3.4.2 RtD for the Emancipation of Marginalised Genders

If the collection of methods in this section is concerned as a field, the field is particularly rich on diverse approaches that disrupt current normative assumptions on gender. Some, particularly referencing to women’s health are recalled hereafter.

By a focus on the design language, Butler’s performativity and normativity of gender is unveiled. Ehrnberger, Räsänen, and Ilstedt (2012) switched the graphical design language of two products, which are associated as stereotypically masculine or feminine, namely a blue and white immersion blender and a green and black electric drill or rather screwdriver. The method resulted in a “Mega Hurricane” mixer and a “Dolphia” drill. The two prototypes were exhibited and the reaction of the spectators were non-systematically documented and later grouped using the “KJ-method” into four categories from disapproval to approval. This enabled for several conclusions such as, that male is seen as the norm also in masculine design language, or design language or the switch of it can be considered as drag just as in the Butlerian notion.

Similarly, Ehrnberger, Räsänen, Börjesson, Hertz, and Sundbom (2017) introduced the “Androchair” to “deconstruct” the hierarchical structures in the design of gynaecological examination chairs. First, an analysis of gynaecological examinations and “male” genital examinations by semi-structured interviews on individual experiences of practitioners and patients were conducted. Second, the “androchair” was designed and prototyped while criticism of sexist hierarchies of the gynaecologic examination chair were made experienceable for “men”. Third, the design was presented in seminars to capture reactions and interpret the intervention. These seminars were concluded to help to renegotiate power, experience and bodies. For example, power relations could be changed by a simple intervention as a mirror to watch the examiner, or participants thought of how trans and nonbinary bodies would fit into genital examinations in future. (Ehrnberger et al., 2017)

Further, research through design can also entail practical yet almost revolutionary changes to gendered body politics. The design and introduction of the roughly translated “formoonsa” menstruation cup in Taiwan led to a “peaceful vagina revolution”. Vaginas in Taiwanese culture were put under the taboo, that they may only be accessed by

husbands and upheld the myth of an intact hymen to be “the greatest gift to her husband” (J. Bardzell & Bardzell, 2018). Consequently, it was prohibited to import, sell and purchase menstruation cups. Designer Vanessa Tsen, intentionally marketed it for Taiwanese women and included a “cute” design that resembles the blossom of lilies of the valley. First, Tsen needed to fund her design of the menstruation cup via crowdfunding and then used a government platform to petition for a policy change to legalise menstruation cups. Both succeeded and J. Bardzell and Bardzell (2018) identify the design “including the Cup itself, the creative process and designer intentions, all the accompanying materials packaging and illustrations, the teaching at expos and public events, the political activism leading to changes in Taiwan’s laws, and the nature of the press coverage” as a “sociological and political intervention” that led to a change in society and legislation. Though it is not phrased as research through design, it is proposed to regard the work as embodying theory, in this case for HCI research.

Another critical design intervention on menstruation is identified by J. Bardzell et al. (2015). Sputniko!’s, aka Hiromi Ozaki’s, design intervention is the “menstruation machine”, presented in music video of a cross-dressing, genderbending or trans protagonist, who uses a technological device that simulates menstruation and menstrual pain. An analysis offers six propositions which are further analysed. By critical reading the “menstruation machine” can “co-produce new design understandings” and knowledge. However, Canlı (2020) criticises that Ozaki herself as a privileged cis-woman appropriates trans culture for her design intervention. In the video, Ozaki “enacts” the role of the crossdresser, gender-bender or trans person herself.

3.4.3 Cultural Probes

The research through design “probology” of cultural probes, is central to this research. This approach is framed by the authors Gaver, Dunne, and Pacenti (1999) as a “design as research” method, which can be regarded as critical design (S. Bardzell et al., 2012), a research through design methodology. However, it is characterised by rather unconventional means of doing research.

The method was first introduced by Gaver et al. (1999) for the involvement of elderly participants on three sites in Europe. It consisted of giving “An assortment of maps, postcards, cameras, and booklets” to participants like a gift in order to “provoke inspirational responses” (Gaver et al., 1999). They named it after astronomic or surgical probes, which would also be left behind to produce data over time, in their cases about a month. They intended to gain inspirational insight into their communities as well as

new understandings of technology. According to them, Cultural Probes would not produce objective information, but result in inspiration from a pleasurable continued conversation with a community.

The authors regard the method as user-centred, however it distinguishes in several characteristics which are mentioned here:

Overcoming Distance

Cultural Probes would overcome “distance of officialdom” between the design researchers as “experts” and participants. Further, Cultural Probes would be applied over a large geographical distance as the communities were located in Oslo, the Bijlmer, Amsterdam and Peccioli, Tuscany, while the researchers were located in London and Milan.

Bridge the age gap

The communities of elderly participants were not regarded in pathologizing (“needy”) or trivialising (“nice”) stereotypes but seen as representatives of experience and knowledge about the local community. Rather opposing to those assumed stereotypes, they consider elderly as people who have the chance to playfully explore life, not being bound to wage labour.

Aesthetic Pleasure

The objects are made to be pleasurable, while aesthetics is a function and matter of efficiency of the probes. The authors took inspiration from conceptual art of Situationists, Dada, the Surrealists and contemporary (1999) artists. This further serves the goal of overcoming the “distance of officialdom”. The result would be “Aesthetically crafted” but not too professional, in order to give participants an informal and uncommercial feeling.

Invaluable for Detailed Analysis

The authors argue that the results are fragmented and invaluable for detailed analysis. The method is rather a provocative intervention that stirs conversation, while the researchers benefit with inspiration.

Cultural Probes in Design Research

These Cultural Probes were soon adopted in research fields such as HCI, where the meaning however changed and with it its name, to, for example “Identity Probes”, “Empathy Probes” or “Technology Probes” (Boehner, Vertesi, Sengers, & Dourish, 2007). According to Boehner et al. (2007), Cultural Probes were altered as a method for data collection, as readymade packages, as a participatory design practice or as means for intimacy or provocation. While they interpret the initial Cultural Probes as a subversion of established HCI method—i.e., Cultural Probes return unreproducible results, would contradict the approach of the researcher

as an expert and disrupt the rules and roles in which user research is carried out—they identify a domination of the use as a tool for data gathering in HCI practice such as a supplement for ethnography.

This trend in practice has already been criticised by parts of the initial authors Gaver, Boucher, Pennington, and Walker (2004). They insist that Cultural Probes deliver “not comprehensive information about [people], but fragmentary clues about their lives and thoughts.” and regard it as a problem, when researchers summarise or analyse them. The probes would not be “necessarily accurate or comprehensive, and [...] they seldom give clear guidance” and see the advantages of Cultural Probes threatened if used scientifically. By analysing raw data, designers would “blunt the contact” with users and it would even be impossible to analyse or interpret the returned probes. The method should rather be pleasurable and create empathy.

For Wallace, McCarthy, Wright, and Olivier (2013), the method is called “Design Probes” and a “tool for design and understanding”, in their case understanding the context of lives of people living with dementia themselves or in their family. They agree with Gaver et al. (1999)’s original intention that the probes do not serve a structured analysis, however their idea of design probes is still a more directed method towards a particular social matter. They particularly use it to explore “personal significance and identity” where participants might “struggle to articulate feelings around challenging aspect of their lives and it is not straightforward for them to document these things”. For them design probes are not gathering data, they are reciprocity in a reflective and reflexive process. Both, the participant and the researcher should benefit from the empathetic interaction, however the researcher is not meant to transfer or generalise the gained tacit knowledge. They find probes most beneficial when carefully designed for “thematic openness and boundedness”, “completability”, “pace” and “materiality”.

As “technology probes” Almeida, Comber, Wood, Saraf, and Balaam (2016) introduce “Labella [...] an augmented wearable and smartphone system that uses non-traditional on-body interactions to enable discovery and learning about hidden parts of the body”. A pair of underwear combined with a smartphone app aim at breaking the taboo on vulvas and vaginas and create “body literacy” such as pelvic floor muscle training. The method consisted of handing material kits to 14 participants to remain with them for a week and semi-structured interviews. The interviews were analysed with inductive thematic analysis conducted by four researchers. The researchers found that the probes enabled for awkward learning and funny experiences that lifted the taboo resting on vulvas.

3.5 Analysing Qualitative Design Research

Design research, among others, can be analytical, constructive or critical. In several practices a phase of data gathering and subsequent analysis is proposed, however particularly critical research practices on gender justice or norms use a range of different approaches as they do not aim to generate universal knowledge. One of those approaches that refuses to apply analytical methods from qualitative research from humanities are Cultural Probes.

Gray (2004) offers a ready to use manual for doing research. His conception of qualitative research corresponds with the approach taken in this thesis, as it deals more with the rationale behind decisions and events and focuses on individual long term rather than generalized short term contributions of subjects. Similar to Gaver et al. (2004)'s Probes, the obtained data is rarely accessible for immediate analysis according to Gray (2004), however Gray then takes the conclusion that this requires processing such as codifying for data reduction.

Gray (2004) proposes two methods of analysis: Content analysis and grounded theory. The former is classified as deductive in order to "systematically and objectively" categorise participant's statements into different classes and then analysing it while ambiguity and contradictions are clarified. The latter is classified as inductive and somewhat more open, as it starts without prior assumptions, but continues similarly by coding participant's statements into a coherent framework.

Very similarly Thematic Analysis is meant as a flexible and accessible method to analyse qualitative data. According to Clarke, Braun, and Hayfield (2015), it serves to identify patterns across different individual qualitative data sources such as interview partners. Either an inductive or deductive approach can overweigh. In a preliminary step all verbal utterances are transcribed followed by a translation into themes which are logically summarised into a report.

These methods of analysing data are targeted at research conducted through interviews and partly also through ethnographic studies such as diaries or open answer questionnaires. By claiming objectivity, they contradict the *Theoretical Considerations* in chapter 2, where knowledge is viewed under principles such as "relativism" and technology as "mediating". Further, the goal of clarifying ambiguity or concluding outcomes contradicts the intention of cultural probes to broaden understandings of technology and community and embrace a playful interaction rather than generalised or scientific meaning.

Design research methods such as Context Mapping or Critical Design often use simplified analyses of collected data and participant feedback.

To some extent the presentation of material interventions in Critical Design can be regarded as “arts-based research” (Esposito & Evans-Winters, 2022). This methodology resembles core elements of critical design and cultural probes as it features “ambiguity”, “empathy”, and “aesthetics”. Arts-based research can be based on traditional approaches such as ethnography, but way of presenting the resulting data can be poetic “in form of a novel or as a screen play” (Esposito & Evans-Winters, 2022).

Narratives are used to represent personal lived experience and are analysed by context and form of a contributed text. Then the narrative is either taken as the ready truth or is regarded as social constructions in power relations and social context. (Gray, 2004) According to Esposito and Evans-Winters (2022), narrative inquiry is a methodology as well as a method of collecting and analysing data. Its methodological characteristics are to centre the perspective of marginalised people—“reality is told from the perspective of the marginalized” (Esposito & Evans-Winters, 2022). It can be interview based and/or make use of documents, whereas in both cases the presentation of stories of represented people is central.

3.6 Shaping a Methodological Framework

The theoretical framework problematised the production and reproduction of essentialist binary knowledge and universalisations. Technology and design contain politics and designers hold a share of responsibility of materialised morality. It further proposed several benefits of reading human-technology relations through imagery such as cyborgs, hybrids or monsters.

The methodology for this project takes tools and methods from all of Frayling’s dimensions. The presented methodology is summarised in four concerns targeted on the research questions: the application of cultural probes for gender justice in breast cancer screening, methods for identifying gendered assumptions, methods for identifying gendered power relations and methods for identifying technologies for emancipation.

Cultural Probes for Gender Justice

Cultural probes have evolved in various shapes and have been applied for various purposes. The original intention, a personal method for inspiration and conversation was applied to bridge several challenges that this research faces too, such as distance and age gap. Related work also theorised possible dimensions for designing, that could add to the required sensitivity of this thesis. However, the original method did not aim at justice or power relations outside of the design process. Consequently, this methodology can be extended by methods that add

democratic control or civil involvement. Participatory design can serve as a corrective method. Participant involvement can include a variety of methods that approach power relations in gendered health technology systematically such as by focussing marginalised communities or queer feminist participatory action research.

Methods that aim at shifting current regimes and question established norms can be summarised as critical design. Its results are not limited to the production of material interventions and can be implemented in analytical and generative research methods. Critical design methods challenge normative assumptions on gender while maintaining intimacy or overcoming taboo. Cultural probes are proposed as a method that challenges established positivistic research methods as well as normative assumptions on society. or dilemma driven design

Reading Gendered Assumptions

Gendered assumptions can be identified in multiple ways such as by exposing gendered cues through graphical design language. Generally analytical methodology such as context mapping or methods to analyse artefacts for gender scripts by the proposed frameworks.

Identifying Power Relations

Power relations between bodies and technology can be read by interpreting marginalised bodies as monstrous and design as tools for oppression (“master’s tools”) or liberation (“monster’s tools”).

Technologies for Emancipation

Design research also identified technology that emancipated bodies by addressing for example menstruation. It is not a single design intervention but a collection of different social, political and technological interventions.

4 Method: Cultural Probes on Screening Monstrous Bodies

The methodological framework suggests a wide range of human centred design methods. The design of appropriate methods suiting the *Research Questions* and *Theoretical Considerations* (chapter 2) is consequently further controlled by the possibility of personally interacting with concerned people. In qualitative human centred design research however, most methods are meant for direct participant interaction on site (Bont, Ouden, Schifferstein, Smulders, & Voort, 2013; IDEO.org, 2015). However, the research was born in a moment of the global COVID-19 pandemic with reoccurring lockdowns and restrictions in personal meetings and gatherings. Research infrastructure at the University of Twente were closed and national breast cancer screening programmes were suspended temporarily.

In participation with online workshops and offering those oneself, the researcher finds that most of the benefits of such methods is lost. Most methods require hands on interaction with material while the digital terminals of participants have only limited input devices, i.e. most people only own a laptop with camera, microphone and a touchpad or mouse. After personal experience, the researcher assumes that in these video conference interactions communication is inhibited in the group or dominated by single participants and that additional digital tools, i.e. online whiteboards, only contribute to a very limited amount to superficially to discussions.

For the research, the assumption is made that particularly people in the age of getting invited to national breast cancer screening programmes, so 50 to 70 have a higher digital illiteracy. This assumption is only partially undermined by scientific data, but by personal anecdotal evidence of elaborate phone and video conferences with people of the age 50-70 as well as trying to connect to elderly women with hearing impairment.

Using intersectional and methodological approaches for justice also means to anticipate accessibility to the method by dimensions of gender, age, and disability. Particularly women 55 and older statistically experience a higher gender-based structural digital exclusion. According to the Organisation for Economic Co-operation Development (2018) access, affordability, lack of education and technological literacy, biases and socio-cultural norms and experience of sexualised online violence are contributing to this digital gender gap.

4.1 Bridging Contradiction in a Combined Method

This research values the intended benefits of cultural probes and regards them as very suitable for targeting the research questions. However, this research differs from the original probes intention as it is not able and intending to deliver enduring or sophisticated material design interventions. The studied field of marginalisation of bodies and breast cancer, as well as the accordingly defined methodology of approaching power relations demand advocacy and representation of the participants. In addition to Gaver et al. (1999)'s "conceptual pleasure as a right" this work considers academic representation of participants as their right.

Rather established in human-centred design research is the methodology of context mapping by Sleeswijk Visser et al. (2005). Similar to cultural probes, it does not study the use case of a product or technological intervention but the human context in which a technology acts. In practice the approach consists of several stages while the substantial ones are a sensitisation phase, sessions and analysis. For the sensitisation phase, Sleeswijk Visser et al. (2005) explicitly mentions the use of Cultural Probes as this phase is meant to be playful and subjective and stimulate self-reflection among participants. In the case of Context Mapping the sensitisation package is however less designed for aesthetical pleasure and more for direct yet provocative questions. The second phase consists of generative sessions either individually or in groups. Those combine several techniques in which participants produce tangible data by tinkering on a posed task. The acquired verbal data is then transcribed and analysed as presented in grounded theory by Corbin and Strauss (1990). However, for Sleeswijk Visser et al. (2005) this analysis can be adapted for short student projects or few researchers, to once relistening the recorded sessions without transcription while creating an overview on themes that include the produced artifacts.

In this research the approach of context mapping is used in a somewhat changed way. The focus is set on Cultural Probes in the original sense of thoroughly designed artifacts that are completed by participants and aim to evoke intimate and provocative perspectives. However, the purpose is not to use it as an inspiration for a material intervention for breast cancer screening, but to continue a conversation in a session. Those sessions are steered by the results of the probes and are central in the discussion. Participants can talk and ideate on their probes while the facilitator can guide the conversation with tools that fit to the themes of the probes. Through that the distance to participants is kept while personal participant group interaction is reduced to a minimum.

4.1.1 Assigning Meaning to Incomprehensible Data

Design methods are developed and applied in diverse research contexts that generate meaningful and communicable output. Their methodology provides approaches to analyse or communicate participants' contributions.

Context Mapping

Sleeswijk Visser et al. (2005)'s method context mapping is similar to what is used in this research as it mentions so called "sensitisation toolkits" that are directly referencing to Gaver et al. (1999)'s Cultural Probes. This preliminary phase is followed by sessions "with users". In case of this thesis, the "user" is replaced by a mere reference to marginalised bodies and potential future, current, and past BCS examinees.

The presented methodology involves an analysis phase, as the resulting data would be "complex [...] not readily structured" (Sleeswijk Visser et al., 2005). According to them, the analysis was still a young field. Analysis would focus on the stories participants add to the tangible results/created objects in sensitisation and sessions. For the researchers grounded theory approach for analysis seems an adequate option, so they based their own analysis on this:

1. Fixate on the data: present in the session, document right after session, transcript (but very time consuming)
2. Search and be surprised: search for interesting indicators (fuzzy process), be physically surrounded with all the resulting materials, what topics mentioned and why?, What's it about?, What are their ideals/values/morals?, have "open-mind", use post-its etc.
3. Search for variety of patterns through organising and reorganising notes, determine striking or recurrent themes/topics, work spatially and visually

According to the researchers, this structure can be followed more or less intense, dependent on timing and goal. They advise to use multi-relational databases with more than ten participants. Sleeswijk Visser et al. (2005) says, that the software does not encourage to view the data with empathy and would create an unwanted distance to the participants. Their example from industries works as follows: team of researchers works parallelly, meets daily, each member for one section of the sessions or sensitisation material, each member becomes an expert of one method. Finally, they advise to use more time on preparation and sensitisation than on analysing, but at least review the recording once and create an overview of themes based on frequency. Not advised to just look at produced objects.

4.1.2 Dealing with Participant Contributions

If cultural probes are not to be analysed, and their ambiguity not distorted, then how can a research question be answered by applying probes as a design research method?

This approach tries to balance different mutually exclusive demands. All of the aforementioned positivistic data analysis methods of assigning meaning disregard other design research approaches such as from critical design. The argumentation of the inventors of cultural probes is especially suiting the subject of the thesis, gender sensitivity, as it acknowledges the inevitable subjectivity of every research and even emphasises the personal connection between researcher and participant. However, it also neglects the inherent political dimension of every research by defining all contributions as incomprehensible and cultural probes as a pure tool for creating empathy, connection and conversation.

In Gaver et al. (1999)'s application of probes participants are left with uncertainty, after the method finishes. The proposed method applied in this research would maintain the conversation and find a closure, that cultural probes cannot offer. To some extent this approach is conceptualised in context mapping or grounded theory, since both aim to co-construct the research with participants. As in context mapping, we can review the contribution with an openness to surprising results.

Consequently, this research applies cultural probes as in critical design or even arts-based research but collectively co-analyses the results in sessions. The work becomes similarly structured to context mapping, however with a strong emphasis on cultural probes and individual sessions.

This two-step approach can lead to a sharable account of how the probes were finished. The techniques envisioned for the generative sessions are somewhat analytical but mainly extensions on the conversation started by the probes. The analytical dimension lies in the nature of the session, as the same methods are applied for each participant. Consequently, the ambiguous contributions become comparable. However, in contrast to finding patterns and coherence, the analysis does not aim at producing theorised data. The method of analysis is combined with the method of "narratives" and put emphasis the contributions already as the "truth".

4.2 Design of the Cultural Probes

In a preparational design phase in this project the probes were designed thoughtfully as presented by Gaver et al. (1999), Gaver et al. (2004) and most importantly Wallace et al. (2013). The following design process for each of the cultural probes was iterative and included testing and

discussions with peers. The order of the probes changed during the design but are presented here as how proposed to go through by participants.

The iterative process can be divided in roughly four stages: 1st rephrasing of research questions to questions asked by probes, 2nd exploring metaphorical material provocations of responses, 3rd restyling for tinkering/crafting/producing and 4th piloting and revisioning. For each of the resulting probes the design process is described below.

4.2.1 1st Probe: Pink Ribbon Card

1st Rephrasing of Research Question

To combine both, the identification of some gendered assumptions in breast cancer screening as well as open the probes with a comprehensible task new questions were generated. For this, the widespread recognition as well as criticism of the pink ribbon for breast cancer share a common ground to start a conversation and was thus chosen as an opener of the cultural probes package. Further, participants are asked for their opinion on the symbol as well as to share symbols of their own gender and health.

2nd Exploring Materiality

Initially the design of this Cultural Probe was inspired by postcards as a friendly yet aging ritual of sending greetings from holidays. On the postcard a short introductory text about the ribbon and the question to ideate on the personal meaning of symbols for health of the own gendered body was asked. This drafted idea, however was not further connected to discourses on breast cancer screening or would open the conversation ignited by the probes towards an understanding of gendered bodies, their politicisation and marginalisation in health practice except for the pink ribbon, which is however not self-explaining.

3rd Restyling for Production

The design was changed in the design process to rather resemble the “Breast Cancer Awareness Ribbon: B. C. A. R.” cards (*Figure 3*), which the activist and initiator of the breast cancer ribbon, Charlotte Haley, made and spread herself. The overall style was changed to resemble rather an information flyer of a “grass roots movement”. Since it was meant to function as the initial probe, the participants were intended to receive more boundness or guidance through examples. Within the allusion to grassroots activism stickers were chosen to be added. A preliminary sticker set was created by tracing pride flags on a touchscreen and digital art software. This included also other symbols that target marginalised gender, sexuality, and health care. The drafted stickers had an unprofessionally drawn appearance to prevent the experience of a creative

skills hierarchy, as mentioned in the professional/participant distance that is targeted by the probes.



Figure 3: Charlotte Haley's Breast Cancer Awareness Ribbon card (Pool, 2011)



Figure 4: Preliminary sticker sheet

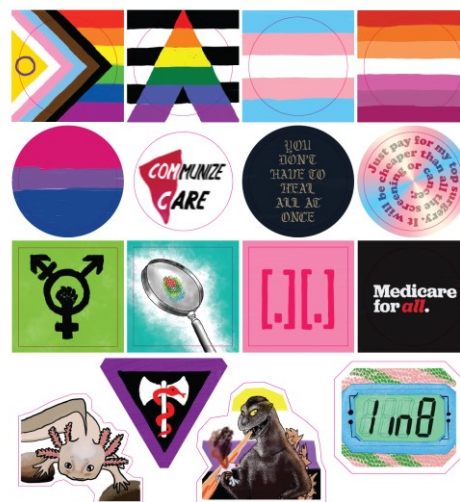


Figure 5: Sticker sheet of the 1st probe

4th Piloting and Revisioning

After a pilot session with peers from the study programme in which the probe task was tested (Figure 4), the stickers were slightly changed and extended by adding a magnifying glasses as a symbol of cancer research, a number counter "1 in 8" to create context of the probability of having breast cancer once throughout the lifetime, a very direct yet populist title "communize care" of a pamphlet by a left radical group and a labrys with an Aesculapian snake winding around the axe. Further, the genderqueer

pride flag was replaced by the phrase “you don’t have to heal all at once”. (Figure 5)

The finally distributed probe consisted of three parts: a card retelling the introduction of the pink ribbon and criticism about it, as well as the task to try on the ribbon, comment on the symbol and create an own symbolism, a self-made pink ribbon out of gift ribbon on a safety pin and the sticker sheet attached with a paper clip to the card (*Appendix A 0 1st Probe: Text of Pink Ribbon Card*). The card was made by handwriting the text on a horizontal white A5 sheet and photocopying it on a thicker (150g/m²) colourful sheet. The pink ribbon was ironed before, since it was too floppy without. After the first probes were finished by the participants, the process was altered. For the last pink ribbons, the gift ribbon was cut in half to be smaller and starched to be even stiffer.

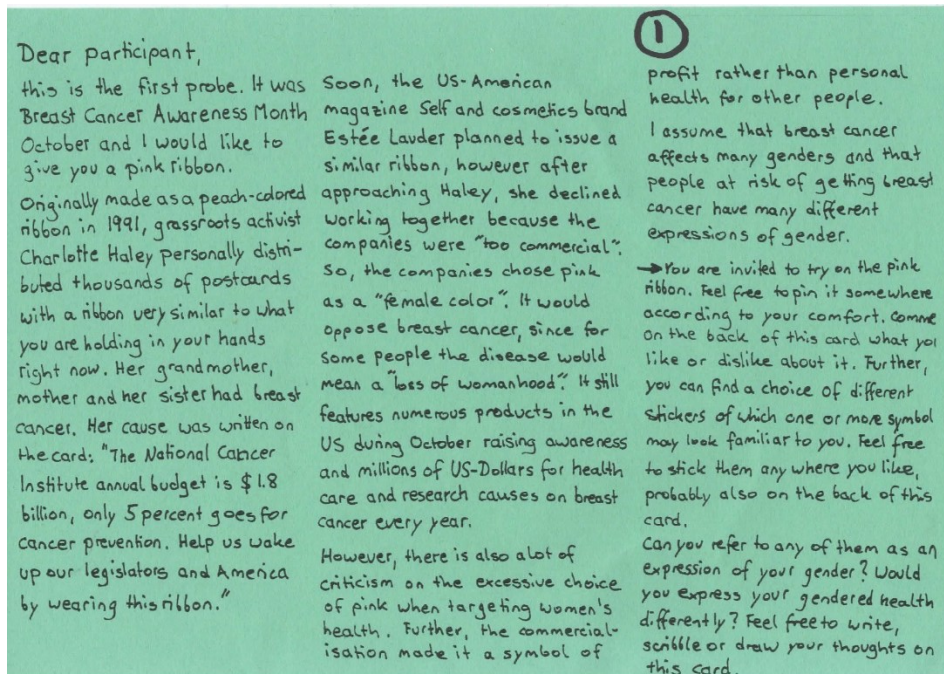


Figure 6: Pink ribbon card

4.2.2 2nd Probe: Monster’s Tools and Master’s Tools

1st Rephrasing of Research Question

To identify power relations in medicine technology, the second sub research question was rephrased to ask participants to find master’s tools and monster’s tools.

A task was ideated that would let participants take photos of a specific object. The concept of Canlı (2021)’s “*Monster’s Tools, Master’s Tools*” was

used and participants asked to find or “expose” these tools, by taking a picture of them when they find them in their daily life.

2nd Exploring Materiality

The idea of using picture frames as well as a reference to Canlı’s “monster’s tools master’s tools” emerged simultaneously. However, Canlı (2021) did not describe technology or material objects as tools of oppression and liberation but abstract concepts. It was thought that the materialisation of those tools is more easily to grasp for participants than to develop a theory from scratch.

Two colour-coded A4 sized picture frames were cut out of thin cardboard. The shape was rectangular with a corner standing out on which the description for “monster’s tool” or “master’s tool” was mentioned. Participants are asked to take a photo through the frame.

3rd Restyling for Production

These frames were found to be not adequate for serving as a probe out of many reasons and experienced several changes. The frames were too floppy and replaced by thick cardboard. The shape was found to be disconnected to “monsters” and “masters” and the metaphor materialised by laser cutting an imaginary shape that resembles somewhat picture frames of the fin de siècle. Through this, the two frames appeared more approachable as the shape is somewhat corny and archetypical like in romantic Victorian interior architecture. At the same time the frames should allude to the monster’s and master’s tools of “exposing”. The antiquated shape resembles frames like in a museum and with it alludes to the monster’s practice of exposing the tools of oppression as well as the crimes of colonial powers, which hold racist “ethnological expositions”. The rectangular shape and colour coding was also dropped because of its repetition of modernist foundational views that used to be essentialist, racist and sexist. Further, the researcher sees colours with a protnomaly and wants to avoid colour coding to avoid misconceptions and as an ableist practice.

The shape of the picture frame was traced as a vector graphic and laser cut out of corrugated cardboard for production

An introduction text is added on the frame explaining the context of monster theory and monster’s and master’s tools by citing Ece Canlı and Audre Lorde (*Appendix A o 2nd Probe: Master’s tools, Monster’s Tools*). The text on the frames changed from handwritten directly on the frame to handwritten on a white paper and then photocopied on colourful paper and glued on the frame. The Herold Reklameschrift was selected as the title font of this probe because of its use for movie posters of Murnau’s

expressionist film *Nosferatu* from 1922, which itself contains numerous metaphors and allusions to bodily autonomy, sickness, control, and, most importantly, is to a certain extent archetypal for genres of cultural productions on monsters, namely vampires.

4th Piloting and Revisioning

After a pilot with a fellow student, participants were not further asked to take photos through the frame anymore and additionally proposed to write their thoughts on the cardboard if they preferred writing over taking photos. The text and task were altered by adding two different examples, one for each tool frame. The frame offered to send them right away to the researcher or to keep them and show them later when the probes are returned.

4.2.3 3rd Probe: Monster's Body

1st Rephrasing of Research Question

To identify technologies for medical emancipation and liberation, the research question was reinterpreted to ask about generally technology which gives autonomy to one's own body.

2nd Exploring Materiality

Initially this probe had no connection to monsters and was a set of three-dimensional geometric shapes out of insulation polystyrene, whereas the largest block was covered in magnetic metal sheets and wrapped with colour paper. Smaller blocks resembling bodyparts were equipped with magnets and then wrapped in paper. Those blocks could be stuck and detached from the main body. Participants should write on the paper what makes them feel comfortable in their gendered body.

3rd Restyling for Production

The hard materiality was found to be too modernist and cold to provoke intimate responses, as mentioned in *4.2.2 2nd Probe: Monster's Tools and Master's Tools*. Further the magnets could be easily detached so the probe would never appear to be finished and always change its shape. The body was changed to a puppet patchworked out of several old clothes and filled with cotton. Participants would be able to attach paper slips with safety pins to the body. The puppet was inspired by the costumes used in the "Triadischen Ballett" by Oskar Schlemmer. (Figure 7)

4th Piloting and Revisioning

The puppet already had a certain monstrosity due to the unprofessional skills of the crafting researcher. However, the allusion to the "Triadisches Ballett" from early modernist group Bauhaus appears to be rather mechanical and experimental than fitting to the question of gendered

body, health, and comfort. The puppet became a cute monster body, a round body with a large round head and thin arms of wool threads and large button eyes. The mouth is the closing seam of the stuffed head. The cute shape and patchwork out of different old clothes resembles further a rather post-modernist look, fitting to the playful attitude of probes and post-modernist imagery of monsters.

The metaphor of a monster's body was explained by the concept of biopower on a paper slip photocopied on construction paper (). Attached to the monster puppet were further two examples, four paper slips and four safety pins. The small size and quantity of the paper slips limited the effort participants should invest in the probe and lead to a closure when all slips are used up. In the task, participants were asked to find, technology, objects but also rituals and other things that they like to give to their body in order to regain autonomy over it. The examples were true personal examples by the researcher "I got my ears pierced, so I can wear all kinds of earrings. I already have earrings in pride colours self-made by friend and would love to wear similar earrings as the strong queer characters in the old Almodóvar movies did." and "I got vaccinated and now I feel safe to date other queer people."



Figure 7: Preliminary Probes

4.2.4 4th Probe: Session Invitation Letter

Initially only three probes were ideated. A fourth was added to give the set of probes a closure as well as to more directly connect the probes to breast cancer screening. This was realised through a mocked invitation letter to breast cancer screening. The fake was however made obvious to not evoke wrong assumptions about the nature of research. The address of the researcher was in the top left corner as well as a digitally hand drawn fictional logo of the research project. Only the subject and the first sentence were copied and slightly altered from the invitation letters, which

are being sent out to women aged 50 to 69 in many European countries. The following text reveals that the letter is an invitation to the session that follows the probes and to agree on an appointment with the facilitator. (*Appendix A—Cultural Probes Texts 4th Probe: Screening Invitation*)

4.2.5 Personal Journal

Since the probes were limited in space and method to answer, a small personal journal was added that should enable participants to reflect on the probes and process and comment their thoughts they could not share on the probes. The personal journal was also added because participants might want to reflect on the content of some probes which could however be too personal to share with the researcher. On the back of the A7 sized booklet were explanations, that participants are free to decide whether they want to share it in the end with the researcher or not.

4.3 Participant Involvement and Intake

For any research with participant interaction ethical considerations are inevitable. These include considerations on: being honest, the research is voluntary, respectful, no possible negative risks for participants, responsibility of the researcher to immediately stop the study if a risk for participants occurs. This co-design research and cultural probes are somewhat different to standards in humanities. The methods are meant to be pleasuring and more colloquial than for example medical studies.

In the case of this research all involvement of participants on a study must be met by ethical requirements of the University of Twente. For that participants must be informed with a document and informed consent agreement, which is checked by an ethical committee at the University of Twente.

Those documents include all necessary information and clarify that the researcher is not able to give any medical advice. Instead, the national screening programmes, general practitioner or gynaecologist can be approached. Further it includes the contact details of the researcher, the supervisor, and the ethical committee. (*Appendix A—Cultural Probes Texts, Information Brochure, Informed Consent Agreement*)

Additionally, an introduction letter is added to the probes, which summarises the intake meeting and adds a few words on how to work the probes, and wishes a pleasurable time going through the probes.

4.3.1 Participant Recruiting

This research forwent a definition of a target group. The construction of marginalised and pathologized groups objects the method used in this research, namely Canlı's (2021) master's tool of taxonomizing people.

Further, a too strict limitation of participants might lead to difficulties in recruiting them for participation. Participants were

The potential participants were addressed through social media posts (Figure 8), trans, feminist and queer feminist activist group chats on messengers, direct messages and e-mails to groups working with queer people of different ages in health care or parties, as well as physical flyers in non-commercial spaces for queer and feminist gatherings. The groups and addresses were in Germany and the Netherlands, i.e., Enschede, Münster, Cologne and Berlin. Several groups were approached multiple times when they did not react. The invitation was intentionally not phrased as a “call for participation” and used informal layout and phrasing. The invitation hinted at the act of giving probes as a present like when you are guest, on a date or for a birthday party.



Figure 8: Invitation for participation as social media post

4.3.2 Intake Meeting

Although, it is not an official part of the research, participant interaction began with the first reply to the invitation. As early as possible participants were given all important information on the project, like assumed time and that participation is entirely voluntary to make a well-informed decision on their participation. The intake meeting serves two main purposes: first to clarify all remaining questions and enable a participation according to ethical standards in research and second to familiarise the

participant and researcher with each other and to create a trustworthy relation for the participant interaction.

Depending on the mode of communication, messenger or e-mail, participants were sent information documents as pdf and asked if they were available for an intake meeting either online or personally in a neutral space like a public library or café. When the meeting was appointed online, participants were sent the probes in an envelope. When the meeting was appointed offline, the probes were handed over personally. If both was not possible all information was sent digitally as pdf as well as written in the chosen mode of communication.

The intake meeting was about 15 minutes long and was structures as shown in *Table 3: Structure of the intake meeting*.

| Meeting part | Time |
|--|---------------|
| 1. Introduction to one another | 2 min |
| 2. Origin and motivation of the research | 2 min |
| 3. Background of Cultural Probes | 2 min |
| 4. Procedure of these probes and session | 2 min |
| 5. Required tools, skills and time | 2 min |
| 6. Remaining questions | 2 min |
| 7. Appointing Session | 2 min |
| 8. Consent agreement | 1 min |
| Total | 15 min |

Table 3: Structure of the intake meeting

4.4 Session Design

After the participants finished their probes, they were returned in a session. The aim of this session is to contextualise the completed probes and develop these positions towards a thorough understanding of breast cancer screening. These sessions are mostly guided by the probes or rather by how the participants completed them. This requires high flexibility and very liberally planned sessions. Several prepared techniques and questions help the researcher to gain insight into the participant's perspectives on breast cancer screening.

In a first ideation of the session set-up, the plan included real prototypes such as the PAM or Blue Box and material from breast cancer screening centres. However, it was neither certain that these prototypes could be available nor that participants could be present on site. Further, the additional presentation of technology would have changed the incentive of context mapping towards user testing, which is not the aim of this research.

The overall setting of the session was meant to be as respectful and sociable as the previous process, which means to include the option for snacks, tea or coffee, breaks and a quiet and comfortable location, that serves as a safer space.

4.4.1 Tool Cards

Additionally, four tools aiming at contextualising the participants contributions in the theoretical framework were created. The tools are four sets of cards that are handed to the participant during the session and are simplified presentations of different parts of the theoretical framework. The card sets are targeted for discussing the different probes but are not necessarily suitable for every participant. The sets are:

Monster's Tools, Master's Tools

Canlı (2021)'s monster's tools and master's tools were summarised as cards. For each tool one card was made, which named the method, featured a sketch, and gave an example. The sketches mostly depict a monster looking like the monster puppet of the 3rd probe. The tool cards were translated to German, and for each master's and monster's tools, a virgin card was to leave space for participants to concept their own monster's or master's tool (Figure 9 and Figure 10).



Figure 9: Monster's Tools illustrated and translated to German.



Figure 10: Master's Tools illustrated and translated to German

Discovering Gender Scripts

To aid analysing the chosen objects, technologies, rituals or anything connected to the body, a set of four cards was designed. The framework to discover gender scripts in a co-design session by Denz and Eggink (2019) was translated to German and slightly adapted by adding a fourth element, which respects the assumptions and prerequisites about people concerned by the investigated technology (Figure 11).

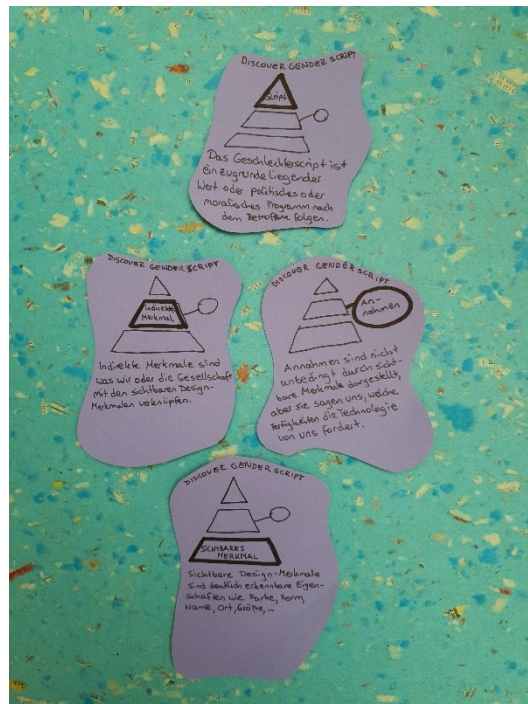


Figure 11: Discover Gender Scripts cards

Monster Theses

For the second and third probe, the seven theses about monsters by Cohen (1996) were translated to German and added on seven cards. The theses

and descriptions are direct translations from literature and thus belletristic, metaphorical and abstract in style (Figure 12).

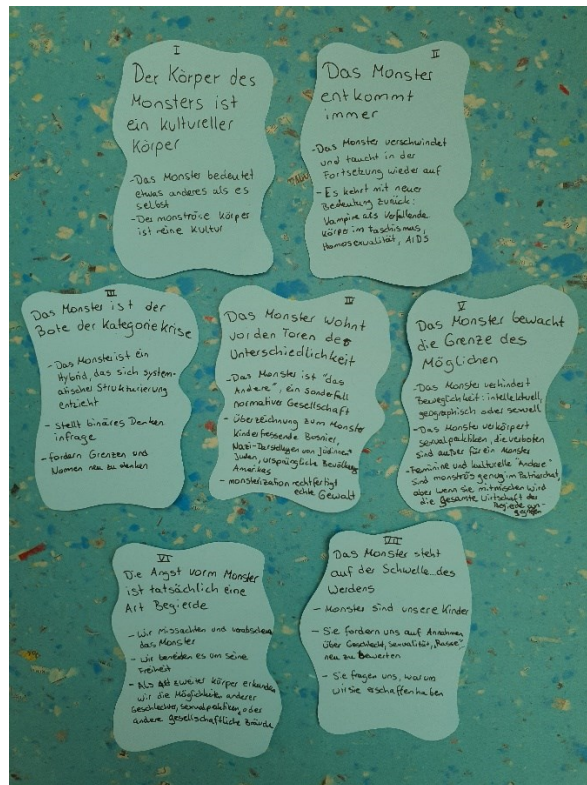


Figure 12: Monster Theses cards

Dilemma Driven Design

For the fourth probe, the 4th Probe: Session Invitation Letter a set of six cards was added, that targets the question of whether to participate in breast cancer screening or not. The concept is applied from Ozkaramanli et al. (2020)'s Dilemma Driven Design approach, i.e. their proposed framework for the definition of dilemmas. This card set is not translated to German (Figure 13).

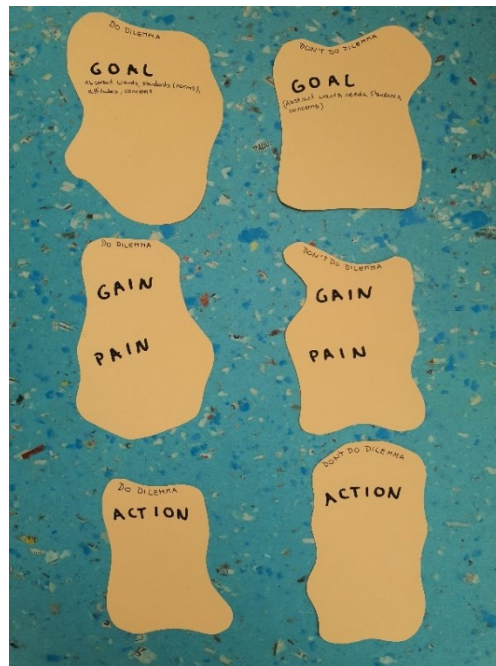


Figure 13: Framework of Dilemmas as cards

4.4.2 Session Agenda

The sessions were planned to be rather short to fit in participants daily schedules as well as to require a balanced amount of attention. However, a pilot of the probes with a peer turned out to be much too short when only 30 minutes were available. The sessions were aimed to not require about 60 minutes of interaction. For this research the assumption was made, that attention spans of the participant and facilitator are highly variant dependent on the person, course of the day, possible neurodiversity and many more personal circumstances that are impossible to anticipate. Therefore, additional time was planned for getting settled at the location, welcoming, breaks and closing to about 1h 30min. The researcher planned for two hours in total for each session to remain flexible in any case.

As means of record, minutes as well as audio recording was selected, since previous experience with sessions showed that video recording does not add more usable data for most methods and minutes are often incomplete and lacking contextual meaning without detailed memory of the session. Further, this research should be able to cite participants in their words. The minutes primarily support during the course of the session but can contain information, which cannot be audio recorded, e. g. physical expressions of the participants. The recording is continued throughout the whole session, also in the breaks, as informal conversation can contain valuable insights. Out of privacy reasons, the session is recorded with a sound recorder with only that functionality. The selected recording device was equipped with high end microphones, which also makes re-listening

to the recording more pleasurable. An overview of the planned session setup including the required material and action is given in *Table 4: Session Agenda*.

| Session part | Details | Materials |
|---|---|---|
| 1. Introduction (5 min) | Welcoming, ask how they are doing, mention opportunity to stop or have breaks, ask how long participant is available, ask for OK to record session. Present the agenda of the session. | Recording device, Prepare: snacks, tea or coffee, notebook, pens, and scrap paper |
| 2. 1st Probe: Pink Ribbon (15 min) | Ask if participant tried on pink ribbon as a conversation starter. Then inspect at the probe. Ask if participant knows campaigns on breast cancer screening and has been examined for breast cancer once. What means gender to you? | 1 st Probe brought by the participant |
| 3. 2nd Probe: Master's Tools and Monster's Tools (20 min) | Ask if participant could find some tools or take pictures. Let participant show and explain the tools. Admit that task was on materialisation and not abstract tools. hand abstract tool cards to participant and let them connect and extend the concept. | Monster's and Master's Tool cards |
| 4. Short break (5-15 min) | Let participant decide on the length | Tea, coffee, snacks, and toilet |
| 5. 3rd probe: Monster's Body. (15 min) | Ask if participant found things that would support the marginalised body. Inspect the probe together. Ask if the concepts could be applicable to breast cancer screening, too. Optionally offer to inspect objects and breast cancer screening for gender scripts. If interested, offer to compare with monster theses. | Discover Gender Scripts cards and Monster Theses cards |
| 6. 4th probe: Screening invitation (15 min) | Ask if participant had thoughts on probe. Would they participate in screening? Use DDD framework to discuss the factors of deciding to get screened or not. | Dilemma cards |
| 7. Closing (5 min) | Ask if there were things the participant could not tell so far. Ask if they had feedback in their mind. Thank the participant for their time and contribution. | |

Table 4: Session Agenda

4.5 Data Storage

Data and contributions of the participants are stored locally without the involvement of a third party. The personal information that can serve to identify the participant were kept particularly secure and were not saved digitally. The consent forms for example are only accessed by the researcher. Back up files of the audio recordings are saved on an encrypted external drive held by the researcher.

4.6 Procedure and Participant's Demographics

Of the approached organisations, only a fraction replied and those who replied forwarded the invitation to their members delayed or not at all. Friends and peers forwarded the shared the invitations on social media.

After ten participants showed their interest in participation, acquisition was stopped and incoming requests were proposed to be reapproached if other participants cancelled participation. Two participants did cancel their participation; however, no participants were reapproached. All eight participants joined for the whole participant interaction, i.e., cultural probes and sessions. All participants lived in Germany and had German as their first language. Only one participant was above 50 and had participated in screening.

Seven participants were known to the facilitator before the study and two are considered friends. Only one was completely unfamiliar to the researcher prior to participation. Half of the participants were cis women, while the other half was male or nonbinary, in other words trans masculine, and might also be genderqueer, genderfuck, genderfluid, or agender.

The probes were all handed out with the German versions of information on the study and translation cards added to all probes. The sessions were also conducted in German. When participants are quoted, their contribution is loosely translated to English.

Participants lived in different cities in North Rhine-Westphalia and Saxonia. One session was completely online via teams. The two participating friends had their sessions in their own homes, three participants had sessions in university buildings in different cities and two were met at their professional environment. For the online session, the probes were sent with stamps (2,75€) to be sent back.

All participants agreed on appointments for the sessions already at the intake meeting where the probes were handed over and the informed consent signed. One intake was only written via messenger, two were online and the rest in person.

5 Results of Cultural Probes and Sessions

The completed probes together with the individual sessions delivered data that is presented in this chapter. In the first section *5.1 Method of Analysis* the procedure of analysis is summarised. The second section *5.2 Resulting Findings*, presents the results by the participants regarding the content of their contributions. Additionally, participants indicated direct feedback verbally and by their interaction on the workings of the applied method of cultural probes, which are presented in section *5.3 Methodological Findings*.

5.1 Method of Analysis

Eight participants both completed the probes and showed their results in sessions. During the sessions, notes were taken and audio recorded. Immediately after each session, notes on the impression and most memorable contributions were taken down.

The following analysis was carried out as proposed in chapter *4 Method: Cultural Probes on Screening Monstrous Bodies*, a compromise between the ambiguity of cultural probes and the demand of communicating tangible results. The cultural probes were not interpreted by the researcher alone but together with the participant in the sessions. Further, the results of the sessions are made accessible by an analytical method inspired by thematic analysis and grounded theory. Using an inductive approach, no classes or themes were pre-given to restructure the transcripts for analysis. However, the probes, session tools and agenda gave already structure to the sessions, which is used to structure the data, adding deductive elements. The workflow of the analysis contained the subsequent steps:

1. Audio recordings and minutes during the sessions
2. Reflexive minutes after the sessions
3. Transcription of sessions with probes at hand
4. Mind Mapping:
 - a. Translating striking statements
 - b. Fill in on A2-sized mind map with four quadrants: one for each probe plus a centre for general feedback.
5. Giving English headlines to each topic addressed by participants
6. Connect corresponding answers by different participants

The resulting topics and participants quotes are presented below in English as translations of the German sessions. Several topics by the participants are omitted due to their loose connection to the research question. The full transcripts are held by the researcher and are available on request.

5.2 Resulting Findings

The resulting findings of the cultural probes and sessions are described in this section ordered by the structure of the probes and sessions and complemented by additional contributions of the participants.

5.2.1 1st Probe Pink Ribbon Card

The probe of the pink ribbon card contained three main elements: the card with the history of the pink ribbon and the task explained, a pink ribbon on a safety pin, and a set of stickers. The reactions to these elements are presented in this order, summarised for each probe according to grouped themes of replies.

Pink Ribbon

Readings of Pink

The first participant wrote “Is the ribbon too pink?” on the card and by that answered why they did not wear it. The participant is nonbinary and preferred not to wear symbols of a “women’s issue”, acknowledging that breast cancer actually involves them, too and appreciating visibility generally. Similarly, the ribbon “also evokes the association of pink with femininity for [participant 4]”. For participant 6, pink is restricting and “always put [them] in a certain category”, so they would not have felt comfortable wearing the ribbon.

Similarly, participant 8 did not realise that the pink ribbon was even missing in their set of probes:

“No, so it’s rather good that there’s a campaign like this. It’s good that these examinations exist, even if they are terrible and need to be improved, but I don’t think it’s necessary to link them to the girl’s colour pink.” (Participant 8)

The second participant differentiated between light pink (German: “rosa”) and deep or hot pink, close to magenta (German: “pink”). For them light pink is “at least this girl’s colour” and “especially the pink of the trans pride flag is not my thing, a little too soft, but hot pink is neat.” (participant 2). However, they still pinned it to their backpack. Participant 4 however, has no issues with pink in the trans pride flag, because it’s his “community” and he will stand up for everybody who sees femininity in them, and further can’t deny to also having femininity in himself and expressing it.

Participant 3 found it “crap” that pink is commercialised by companies and the initial peach colour was abandoned. She recalled having issues with pink, as a girl because she avoided girly clothing as it would invite boys to tease her. She continued as an adult, however now she wants to reclaim the colour for herself. Similarly, participant 5 supports the

criticism that pink is co-opted by brands and wants to reclaim pink (German: “Rosa[...], genauso wie Pink”) as a “strong colour” and pinned the ribbon on her large hiking backpack.

Participant 7 remarks that the colour choice is the “typical pink-babyblue trap”:

“I’m fine if people like pink but I do not like to say ‘woman is pink, man is blue’. I think it’s super problematic and just translates the whole ‘there is only woman and man’ onto colours and I find that’s absurd.” (Participant 7)

Targeted on Women

Since the campaign is perceived as exclusively targeted on women, participant 2 felt “triggered” by the salutation in the last probe and thought “Holy fucking shit, no!”. Participant 4 further only witnessed pink breast cancer awareness from US-American contexts targeted on women, while “meant were/are probably cis women, but they don't say that”.

Participant 5, “who identifie[s] as a woman, feel[s] [...] totally represented” and the campaign could also work in any other colour, while “pink is perhaps a bit more of an identification for [her] personally”.

For participant 6, the pink ribbon seems to be the “symbol of femininity par excellence”, which felt “totally unpleasant” when they noticed the symbol in a shop window. They identify breast cancer awareness as “encouraging stories by some power women, who are combatting cancer, so it’s good that it’s there and it’s nothing that gets through to me.”

Also participant 7 could not really relate to the pink ribbon, however still associated it positively with non-profit awareness campaigns. Now she regards it critically “that it is getting so commercialised”. For her, current awareness is about women, but it should be accessible for all concerned people:

Because I think, especially if you’re a woman, then maybe you grow up anyway with much more awareness for such topics. But if you don’t feel like you belong to this category, then you feel even less addressed and maybe you already have less access to it just by being... That’s why campaigns should perhaps be tailored for people who are affected but are not women. (Participant 7)

Limited Prominence of the Pink Ribbon

Participant 4 prefers more explicit and radical symbols, than a pink ribbon, plus,

“The problem is, I think, that a lot of people don’t have it in their minds what it actually means, like for example the red ribbon, I think it’s clear to a lot of people that it’s about AIDS/HIV.” (Participant 4)

Personally Limited Relevance

Participant 4 did not intensely deal with the subject and explained: “I’m planning my mastectomy, so the chances that I’ll get breast cancer afterwards are relatively low, and that’s why both the topic itself and the examination and so on don’t play such a big personal role for me.”

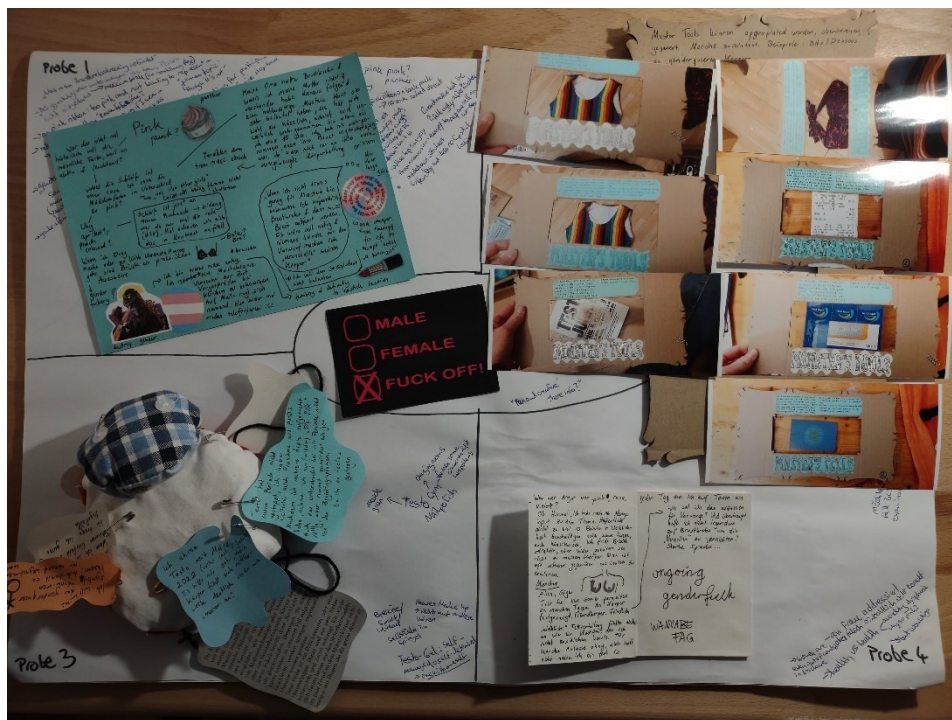


Figure 14: Probes of participant 2

Stickers and Symbolism

Participants chose different stickers and stuck them either onto the card of the probe, into the journal or on their laptop. Not all stickers were used. The meaning of the applied stickers are presented below.

“Medicare for all”

The first participant was reminded of difficulties for trans people to have gynaecological examinations. They can experience gender dysphoria and exclusion: “I am just not thought about, so, or my needs are not necessarily seen and thought about in such examinations, too.” (Participant 1). Similarly, participants 6 and 7 stuck it to the back of the card, to make clear breast cancer concerns many genders. For participant 3, this sticker refers

to an improved health care system without patriarchal exclusion. Participant 7 used the sticker to urge for availability and accessibility:

“So I think there are different levels. Of course, there is always a financial level, because even if we have some kind of insurance in Germany and stuff, they still don’t pay for everything, but I think there is also this welcome level and information level, so if you have the feeling that you can’t go to the doctor because you’re asked weird questions or because you’re looked at strangely because you’re sitting in the waiting room or, or, or. I think that also blocks access and that’s why it’s so important that you’re aware of that and that you somehow incorporate that into the practice that you build or whatever.” (Participant 6)

Israeli Trans Pride Flag with Fist

Participant 6 chose the symbol to make clear the issue concerns many genders, not only theirs and cis women, as “in medical contexts, unfortunately that often gets lost.” Participant 7 just chose it because it looked empowering. Participant 8 used the sticker as a symbol to increase representation of “multi gender” (German: “Vielgeschlechtlichkeit”) in medicine:

“[multi gender] actually just joined the public debate in the recent years and it should actually be clear to every physician, because they deal with so many different people. That it just worked that way, that it was just such a male medicine and idea of medicine and everyone else just runs with it.” (Participant 8)

“Communize Care”

The third participant chose this sticker as a utopian ideal to overcome patriarchal and capitalist relations:

Communized, so that somehow medical care is possible for everyone and that it is not such a financial hurdle or especially not this two-tiered society with private and public insurance and so on. So everything the health care system brings with it, where many people fall through the cracks and perhaps little research is done for bodies with uterus... (Participant 3)

She adds, she feels an “inner conflict” because reality is a “capitalist, patriarchal health care system”, where commercialized awareness can be more successful than solely publicly funded research and campaigns.

Godzilla and Nonbinary Flag

For the first participant it was important to draw the nonbinary flag on the card, because “I think that being nonbinary is even more invisible and even less thought about and somehow visibility is simply important to me and also especially in the medical context there is a lot missing.”

The second participant used the Godzilla sticker, and also prefers nonbinary as their gender label “because [they] find the colours of the genderqueer flag so ugly” (Participant 2). Participant 6 drew the genderqueer flag without colours on the card. It also corresponds to their gender but they had no colour pencils at home.

“Just Pay for my Top Surgery, ...”

The first participant proposed to have a top surgery as mastectomy as preventive care:

“Thought to myself so somehow it would also be relaxing if one would get a top surgery simply for cancer prevention. [...] whether maybe there are also people who have so much gender dysphoria or so much discomfort with such examinations that they might even prefer a top surgery or something.” (Participant 1)

And adds, in contrast to the perception, that breast cancer care is mainly breast conserving, they would not want that: “If I were diagnosed with breast cancer now, I would say, yeah, off with it. My breasts are not that important to me now.” (Participant 1) For them, breast cancer screening and top surgery are related. Both are health care, but top surgeries are gender affirming for their wellbeing, while breast cancer screening is lacking accessibility for trans people.

The second participant phrased it: “if I am not trans enough then I hope I get breast cancer so that I can get my breasts removed through this.”, since they used to think for a long time that they are not trans enough. And further:

“I just actually heard it also from other trans masculine people. I found it fascinating, because retrospectively it is such a bonkers thought, so this like, so finally it’s then almost a: they hope on a disease to reduce suffering, which is simply for many people absolutely destructive.” (Participant 2)

For the fourth participant, this is his motto for 2023, the year of his top surgery. He feels lucky not to live in the USA, because he gets it covered by his insurance. He is looking forward to get to know his new body.

“You don’t have to heal all at once”

Participant 3 mentioned to quit her job, because she was overburdened with emotionally care work. She used the sticker to remember that she does not need to support every birth and “offset the system”, referring to her profession.

“Male, Female, Fuck Off”

Participant 2 added their own sticker with this slogan in it both as an example of a shade of pink, they like because it is “not so friendly and feminine” and further because they loved the sticker and brought it as a present for the researcher.

ASCII Art Breasts

Participant 3 first did not recognize the ASCII art breasts as breasts and drew her own differently shaped breasts. After recognizing the ascii art sticker, she added it to the card. Participant 4 also added the sticker and his own drawings of differently shaped “boobs”. He prefers the term “boobs”, since it is less specifically gendered towards women, less medical as breasts, a way of reclaiming a term frequently used by cis men who are sexualising breasts, and it also since it sounds “funny”. He further added “all boobs are beautiful” as a double coded reference to ACAB and in order to contest normative images of breasts and “that somehow either they are all beautiful or it doesn’t matter if they are beautiful or not.” Participant 4 altered the sticker by adding two tiny devil’s horns to each breast. Participant 5 simply used it because she likes breasts and regards them as “emancipatory means”.

For participant 6 it is “rather a reminder, like it’s an issue that also refers to you.” Their breasts are “not like 100% part of [their] body, such as some other body parts and therefore I find it simply more difficult to relate”.

Labrys with Aesculapian Snake

Participant 4 chose this sticker because “Butch was [his] first stepping stone and [he] relates to it”. He further stresses, that there is “a lot of solidarity between butches and trans masculine people” or rather they are not clearly divided. In contrast he “find[s] it really incriminating that some TERFs, who call themselves lesbians and somehow attach their ideology to it, claim this sign, this axe, for themselves and thus it gets such a TERF association. He further thinks this symbol would rather fit than “just” the colour pink, because it is less gendered and “powerful”. He imagines that cancer requires a lot of “fighting and stamina” such that a “militant” symbol “carrying so much power” would suit more.

Participant 8 stuck the Labrys in her journal to represented feminism and feminist medicine,

“because I was also involved in feminist medicine and then I worked for a long time, actually until today, for pro choice [German: “218-Bewegung”]. I used to be in the task force against gene and reproduction, so these were all topics that also related to medicine and when I, when I started to deal with the topic in the women’s movement, it was not an issue at all. On the contrary, many people said, “What do you actually want?”, “What do you actually imagine? and why do you think you are discriminated against? And a lot has actually changed in medicine.” (Participant 8)

Bi-Pride Flag

Participant 5 used this sticker, because she identifies as bisexual, though she is in a heterosexual relationship, and finally got the sticker.

Straight Ally Flag

Participant 3 added the straight ally flag and bi flag with a question mark, because she did not want to appropriate colours that are not hers. Nevertheless, she experiences “ally struggles” and is not sure whether she just wants to be bi in order to be part of the community or she actually is. She is keen on “going into” the topic, but “peut à peut”.

Axolotl

Participant 5 also put the axolotl on her laptop because she found it “cute” and “unique”, “a less well-known creature”.

1 in 8 Digital Display

Participant 5 did not understand the meaning of the sticker and did not use it however asked for an explanation in the session and then thought it was “totally cool”.

Individual Screening Needs

Several participants mentioned that BCS needs to be inclusive. One participant took a trans perspective and proposed that the salutation could just be enquired from potential screening participants. Another asked, whether the technology works the same for Black and People of Color with dark skin as for white people with fair skin and whether it is accessible for people in wheelchairs.

Further Remarks

Participant shared further thoughts and experiences not related to the ribbon or the stickers.

“Gender Affirming Healthcare Saves Lives”

For participant 1, gender affirming health care is important but individual. "And this also includes that one does not conclude gender identities from certain body parts even in medical contexts." (Participant 1)

"In general, I was thinking about how many trans people would go to breast cancer screening in the first place. Um... And how many would go and how many lives could be saved if the system were changed so that people would feel more comfortable?" (Participant 1)

Consequently "also in medical contexts one should not imply gender from certain body parts" (Participant 1).

Participant 3 regards it as a matter of "reclaiming", that also "a penis can be female", yet still a societal utopia. As a midwife, she is expected to immediately tell a sex/gender at birth. She indicates her utopia:

Um, and I think that sex/gender is a lot of identity and that you actually need time in life to somehow deal with it. And that should ideally be accompanied throughout life, somehow in sexual education, but that often does not happen, so that people have a totally individual learning history with their body and their gender.

Individual Screening Needs

Participant 1 detailed their idea for individualized screening. This includes "simply asking the people, what needs they have", asking for the proper form of address of screening participants, and explicitly mentioning that trans people are welcome. (Participant 1)

"Too Much Gender"

Participant 2 claims to have "too much gender", doing drag, going to kink events and dressing as a femboy. They prefer the nonbinary symbol for their gender, so the circle with an asterisk on top.

Reclaiming Terms

For participant 5 reclaiming terms is an important tool, inspired by her passion for German rap. Consequently she intentionally uses the term abortion rather than "termination of pregnancy" and associates something strong with the pink ribbon.

Tactile Breast Examination

Though not in the age of mammography screening, participant 5 was regularly examined for breast cancer by her gynaecologists. She already received information on self-examination at the age of 17, but did not read it, because "let's face it, you just have other things on your mind." In her

mid-20s her gynaecologists motivated her to watch a tutorial. Now self-examination of breasts is part of her body hygiene.

Participant 7 had a gynaecologist who was not interested in educating her. However, when she switched to a new practice and noticed a campaign by a model, it made her ask to get a tactile and ultra sound breast examination.

Experience of Mammography Screening

Participant 8 received already invitations for breast cancer screening between 2007 and 2022 and participated frequently. She recalls the procedure of about 8 weeks from receiving the invitation letter to receiving the results as stress. She describes receiving the results:

“The result, the negative one, was sent straight home and if I had had a positive one, I would have gotten it from the gynaecologist. So it was always clear from the envelope you had, what the result was.” (Participant 8)

Despite the stress she felt obliged to participate:

“And that was a total stress, so I thought, no, this stress, uhh maybe it triggers something more. But still, I felt a bit obliged to take part, because they also thought that they would find it sooner and then it wouldn't be so dangerous and everything. Well, and the last time I didn't go.” (Participant 8)

She never had a positive result, so “In the end, it was always quite relieving to know that, no, I don't have anything.”

The procedure itself however “was always totally painful”:

“I don't know if that was also because of my size or if it was like that for all women, and that is that I always had to stand on tiptoe because the device itself was kind of, so big and and this plate so high where you had to put your breast on it. Yes, and then you always had to –also so so horrible, right? –hold the one arm like this or hold it like that or hold it away like this, and then it was always turned and flipped again, and always with the message that it has to be like this now, even if it hurts a bit, so that the picture is neat. [...] So there I always thought that should actually be different, because it didn't just hurt a bit, but because it was very painful.” (Participant 8)

She experienced the staff contributing to this experience: “And they also grabbed really roughly, where I always gave them credit, well, they probably have to do it that way, but I didn't know.” (Participant 8). She did not recall receiving a pre-examination or post-examination discussion, however, she remembered a sort of discussion must have taken place, when she filled in the admissions form.

Breast Cancer Screening vs. Feminist Medicine

Participant 8 compared their experience with breast cancer screening to feminist medicine:

No, I think I would consider that something else, because that is, so to speak... Feminist medicine is, well, at least so far, not totally technical, but it seems to me that it fits into the normal prevailing medicine. And it also fits in well. And that's why it's been taken up by, let's say, the dominant medicine.

“[...] So preventive medical examinations and all that kind of things, women take part in them more than men. [...] But I would not say that this is a feminist medicine. So I would imagine that somehow quite differently. I don't know how, but... No, just the way I'm treated, it doesn't match. So I just imagine an examination that is not painful, that more is spoken.” (Participant 8)

5.2.2 2nd Probe Master's Tools, Monster's Tools

Participants interacted with the second probe in slightly different ways. Their identified tools are presented in this section.

Master's Tools

Letter of Indication, Letter from Insurance, §218 and Maternity Log

Participant 1 chose the letter of indication that allowed them to start taking testo. For them it is a master's tool:

“because I wasn't allowed to decide autonomously that I wanted to do that, but needed other people to tell me, like 'you're trans enough to, um... do that now and I believe you that you are safe with it.'” (Participant 1)

Their therapist was supportive to write this letter, for which insurances require people to be binary trans, though they are nonbinary. Consequently, this tool refers to taxonomizing.

Also participant 4 took a photo of a letter from their insurance as a response for his request for top surgery, as “a symbol of the legal, administrative and bureaucratic hurdles I need to jump to get my body

shaped the way I want it to be.” He highlights bureaucracy and legislation as the tool of oppression:

“which is very blatantly used to oppress people and then wrapped up rationally, because it’s a law or because it’s, you have to have bureaucracy so everything works and then becomes somehow detached from that, which is actually just a mechanism of oppression.” (Participant 4)

He links his tool to the development in the US and UK, “where legislation is currently used to extremely oppress people. He would have added photos of an expert report for his top surgery, but he did not have it at hand. He describes the expert reports as demanded to attest, that his plan to transition is not influenced by other diagnoses and “medically necessary”. However, this is also a master’s tool, “because how can anybody else decide about which gender identity I have? That does not make any sense.” and further produces waiting time and workload. The surveyor for the last expert report has never seen the participant and still decides on his transition: “somehow, he is the master and somewhere he is only executing laws [...] but at the same time it is not really controlled in the end, he could also simply say ‘Yes, all right. All done.’”

Participant 7 wrote §218 on the frame, since she had an abortion. Though she knew she would have an abortion, she was handed a maternity log, a small booklet called “Mutterpass” (“mother’s log”) in German:

“For me it was shocking, how many steps I have to take because of §218 in order to have the abortion and how often I had to talk to people about it. And I perceived it actually very restrictive and oppressive. And the same with the maternity log, because it was completely against my self-determination at that moment, because I have never been a mother, ever at any point in my life, but a booklet told me that it was different.” (Participant 7)

Participant 8 printed the title of a book “Between Compulsory Childbearing and Forced Sterilisation”. She refers to a position against the right to abortion in the “first world”, while

“in the third world, the same people distributed coils or those hormone depot pills, implanted them to decrease the birth rate. So this double standard actually always prevailed. And through this gene and reproductive medicine, it then also became... [...] then the embryonic tissue was only raspberry-like and research could be done, but a woman who was pregnant and didn’t want that, so to speak, was not allowed

*to decide that she didn't want to continue the pregnancy.”
(Participant 8)*

Invisibility

Participant 1 took a photo of a white wall, since they regard “genderqueer identities being made invisible” as a master’s tool.

Binder, Swim suit, Clothing and Pantsuit

The second participant took a picture of their binder, which is however also a monster’s tool for them. They consider it as a master’s tool:

“Since it contains the complex of passing so not happily playing around with gender and do as one pleases, because you have a safe bubble, but rather the fact that one has to get through in the streets and at the bakery. [...] literally extremely confining piece, um which is somehow demanded as a proof that you are trans enough [...]” (Participant 2)

They further selected the upper part of an old swim suit. The participant tried it out to get along with their body, but it did not work out: “It was also a bit of an attempt to blend in. [...] due to the fact that it came from assimilation, it didn't work.” (Participant 2)

Also, participant 3 mentions certain apparel. She wears wide high-necked clothes to obscure her large cleavage when wearing a bra. For her it symbolises patriarchy as it “works in the sense of what am I wearing? And depending on that, how freely can I move?” (participant 3). Further, she wants to avoid looks and comments on her décolleté and dislikes the bodyfat at her hips to be visible.

Participant 5 chose clothing also as a master’s tool, though “it can be a monster’s tool simultaneously”. She restricts herself to avoid being harassed in short dresses, since “society somehow teaches you that you have to deal with it as a woman, that it's your own fault.” She enjoys being naked, however feels “insanely restricted” out of fear to be stared at or harassed and feels then safer to wear long and wide clothing.

Participant 8 wanted to choose a picture from the middle ages, however then chose a photo of the first woman in the German parliament to wear a pantsuit (*Figure 15*) “and for this, has been reprimanded for disobeying the dress code. [...] And that was in 1970, and she became the subject of intense hate. So she was an SPD parliamentarian and dared to wear a pantsuit.” She was called a “red party broad”.



Figure 15: First German MP in pantsuit (right) and hate reactions (left)
(Participant 8)

Business Card of Endocrinologist, Doctor's Offices and Deported Children

When participant 2 approached their old endocrinologist, because they were still menstruating including intense PMS with depressive episodes, he refused to prescribe the gestagen based minipill, because he said they are a “binary trans masculine”, “a trans man”. The same doctor decided that the participant gets their legal gender changed to male “without consultation” with participant 2. They want to change their legal sex/gender via the German PStG §45b, the “intersex law” (participant 2): but “it felt actually very much like master”. Further, the new endocrinologist who prescribed the minipill is a gynaecologist, making participant 2 feel irritated by “let’s get pregnant’ propaganda” in the waiting room.

Participant 6 noted “doctor’s offices” (German: “Praxen”) and includes psychotherapists, “because the gender is always directly stored there too, and the other people in the waiting room sometimes give me a very strange look when I’m called up and walk past.” Further, their psychotherapist “actively and consciously” misgendered them:

“I felt a certain resentment and antipathy or a lack of understanding for my gender identity and also for my request to talk about it [...] that’s a support which is rare and difficult to get. And then being treated badly is very unprofessional and dangerous.” (Participant 6)

Participant 8 reminded this probe of their own childhood. In 1963, when she was a child she was sent to a child sanatorium, since the youth welfare office found that she was “too little, too weak, too... I would need such a convalescent home”. She remembered she did not want to, but had to go for six weeks:

"I was brought to the station by my father and then here at the station was um... what is the name of these sisters? [...] At the railway mission, we were somehow all collected and then we were put on the train and then it was a whole children's train. And with those nuns/nurses [German: "Schwestern"] who had also accompanied us." (Participant 8)

She experienced a strict regime: "Already on the first day it was clear to me, damn, here you have to somehow, um, immediately conform and do everything they ask you to do." She remembered three girls who had to stay because they did not gain weight:

"And now they also came into our group and cried and actually wanted to leave, where I always thought, if you don't gain weight here and nothing changes or you stand out, then they'll keep you here." (Participant 8)

During the "horrible" six weeks, no one was allowed to leave for the toilet during the night, "and of course every morning a child had wet their bed". She reflected her experiences after she found an online petition and found that she did not experience violence, however "it was actually pretty harsh". She added the punishments were:

"The girl would then have to stand at the door while the others all went to the washroom. Or there were those who were excluded from meals or had to stay in the house. So I didn't see anyone hitting anyone or such, but this punishment did happen." (Participant 8)

Bill for Hormones and Money

Participant 2 is privately insured and has to advance their expenses. The insurance currently refuses to reimburse the prescribed hormones, since they have not read the letter of indication. The minipill is not reimbursed as it counts as "private pleasure" (participant 2). Participant 2 had "actually no desire to share the whole indication, [they] will just do it now. [...] A little bit as a symbol of the whole system that you have to climb through."

Currently their parents have "financial means" to support them. They describe medical transition as conflicting:

"That's always this funny conflict with the whole medical transition journey via the health insurance, that you have to show, I'm doing shitty, but I'm not doing so shitty that I, count as not uh ...capable of insight or not...think.... uh not,

act possible... What do you call it? that I'm not trusted to act on my own." (Participant 2)

For participant 5 money itself is a master's tool:

"[money] causes pressure, chains to things, to which you actually... so you need money in this society in order to survive, but I actually perceive money as something insanely unfair and for me it's a tool of oppression and nothing that is fairly distributed or that acknowledges effort." (Participant 5)

Smiling

Participant 5 took a photo of herself smiling. She worked in night clubs, bars and at festivals and "proper dudes" would come to her with the line "Oh, smile a little!", however she did not do it during her six to ten hours work shift. She explains "women, delicate persons" are expected to be friendly, however "if I had just had the strength not to be so fucking friendly and not to be polite, [...] so to not smile it away, but to just say in this moment 'ey, that was not okay, what you just did.'"

Twitter/x.com, Web Portals and Dating Apps

For participant 6, online accounts for web portals and dating apps are causing problems. They cannot sign up with their appropriate gender and salutation. On a dating app, they could select their appropriate gender, but then had to decide if they should be displayed to people looking for either men or women. Further, they had extremely negative experience on the network Twitter, now X:

"Twitter has a very concerning effect and that's of course due to the concept of the platform that every person can shout out their opinion and everything is flushed into the timeline. [...] It is certainly not a safe space and find that very stressful. [...] Even if someone speaks up against hate, the hate is still linked." (Participant 6)

Witch Hunt

Participant 8 printed an image of a book on the book "Hammer of Witches" an "instruction for the persecution of witches". "40 people were accused of witchcraft, 29 legal proceedings happened" in Münster according to participant 8. Files on the rest of the diocese of Münster are said to be missing. In 1995, when the last victim was planned to be commemorated with a street, "there was great resistance by the local parish with the allegation, one could not name a street after a criminal. So where you could really see, now they didn't understand a thing"

(participant 8). 20 years later participant 8 petitioned to the city council to have a rehabilitation or memorial stone.

“And then [the municipality via their archive] rejected it by saying [...] that we had now commemorated... er, researched sufficiently. And then we wouldn’t need the other one any more. And we thought that was such a slap in the face, too.”
(Participant 8)

Binary Gender Norms on Children

Participant 8 printed a photo of two infants, one in blue another in pink clothes. She referred to binary gender: “Girl and boy. Nothing exists beyond.”

Late Transition

Participant 8 wanted to present a different image, but only found an article on “that a woman had to live her whole life as a man. A life time in the wrong body.”



Figure 16: Probes of Participant 5

Monster’s Tools

Ezra Furman

Participant 1 chose a photo of an Ezra Furman poster, a trans musician. They found a concert by Ezra Furman very empowering, as they were seeing a trans person on stage. Ezra Furman is “representative for somehow queer artists in their entirety” (Participant 1).

Pose

Participant 1 also took a picture of the logo of the TV show “Pose”. They liked to experience “queer bodies simply in an empowering situation” and realised:

“that visibility is one of the most important things and also one of the most important, I think, to ensure that self-empowerment or empowerment [...], since of course power structures like you to remain invisible” (Participant 1)

Progress Flag

The first participant chose the pride flag, as it symbolises proudly showing a queer body and queerness openly.

Binder, Nailpolish, Feminist T-Shirt

Two differently gendered “tools”, nail polish for rather feminine and a binder for rather masculine looks, are obscuring stereotypical gender for participant 1. They find it “cool” if people ask whether they are a man or woman, since it shows, they are breaking dominant perceptions of gender. They link this approach to Canlı’s “boundary blurring”. The second participant chose a binder, too because they can change their looks and “freak out”, however, it is also a master’s tool.

Participant 3 took a photo of her t-shirt, because it had “8th of March Feminist Strike” printed on the breast, “which somehow fits to the breast cancer screening study”.

Books

Participant 1 chose a pile of books by queer authors, who break gender stereotypes in their books.

Participant 2 photographed the book “Testo Junkie” by Preciado, because they find the writing “mega cool” and “very empowering”. They intended to chose a different book of the author, but did not have it at hand. It also refers to practice described in the book they once did in a seminar: “where we were supposed to draw a penis on our arm and then “basically jerk them off”. And that was a totally fascinating experience.” (Participant 2) They mentioned, they did not read the book completely because of their ADHD.

Participant 5 books are a “total monster’s tool”. She refers to books in general and thinks “also a novel can educate”. She extends it to other texts: “[It] can also be a fact sheet or a post. It can... I find simply speech and writing or written words, too can be so monstrous.”

Participant 7 also chose the book “Untenrum frei” (German for “undressed/liberated down below”) by Margarete Stokowski. She found

it “very eye-opening” and her use of direct and coarse language empowering. She recalled one part from the book:

“The general point was that women who are particularly feminine simply have difficulties being successful because these feminine attributes are negatively associated in society. And then she said that Angela Merkel is actually only this successful because she is neutral, and I had never thought about that before, but then she gave a few examples, I think. And that was somehow such a striking moment for me, because I thought it made total sense.” (Participant 7)

Testo and Minipill

For participant 2 testo and the minipill are a tool to hack their body, for “biohacking”. They describe it as “absurd” to take both, female and male hormones. Further it is connected to master’s tools:

“Right, so in principle that’s also what the binder was about before. So this one aspect of biohacking ‘I vary my body according to my standards’ and the other one, you are also told from the outside what standards my body has to meet.” (Participant 2)

Topless Breasts

Participant 3 added a photo of their topless breasts, because she thought “free the nipple”. Being topless in public in some occasions feels empowering for her to support her idea of her breasts: “they are good the way they are and they are beautiful and you are allowed to show them and you can show them.” (Participant 3)

Tattoo

Participant 3 set her tattoo of a naked woman’s trunk in the monster’s tools frame, because she feels empowered when seeing it. Sometimes people would be irritated by the tattoo and when they ask, she claims to have the chance to utter some of her fundamental feminist ideas: “nudity is okay and somehow we all should reveal our breasts” (participant 3).

Unshaved Legs

Participant 3 noticed that she does not shave her legs and took a photo of her leg hair. Not shaving her legs anymore was “one of [her] first [...] politicised rebellious acts”. Shaving however always caused try and irritated skin. Likewise, participant 5 mentions to “have insanely fought three years for this confidence to say: yeah, I’ve got hair. I have no desire to shave my legs. Why should I?”. On the other hand she sometimes decides consciously against not shaving when she cannot mentally handle the looks.

Friends, Prides and Queer Community

For participant 4, community and friends is most important, as he chose a photo of his friends at the local pride for the frame and wrote in his personal probe journal:

*“My monster tool is community – it is not called ‘Organise!’
without a reason
without my community I would be at least seriously ill
without my friends – without my dots (we urgently need a
dots group photo ♡♡♡)” (Participant 4)*

For participant 6, seeing the “diversity” at prides or “CSDs” makes them “always very happy”. It gives them the chance to be how they want to be and “blend in with the masses of so many diverse people... or disappear.” They further noted queer groups of regulars (“queere Stammtische”), since they were happily surprised to have many people in the small city who are queer.

Head Torch

Participant 5 took a photo of her head torch, because she is afraid of “on empty roads in the dark”. She feels safe with the bright torch, because “light is totally good for me. I want to see what’s coming.”

Dog

Participant 5 took a photo of her large and black dog. She used to live in different cities and when she went home after a late shift the dog would accompany her:

*“He can sense incredibly well whether I’m feeling good or not at the moment. [...] [fraternity members] have just always kept a distance from me, so um because my dog could just also not stand them and if they then somehow made comments, then he immediately made himself tall.”
(Participant 5)*

Vibrator

Participant 5 did not feel comfortable of taking a photo of this tool but she thought of her vibrator as a monster’s tool:

“Simply masturbation [...] I can decide for myself when I want to have uh with myself, uh when I want to have an orgasm, when not, when I want to feel good and also something, I think, that is kept from women for an insanely long time.” (Participant 5)

University

For participant 6, their university is a monster's tool. The university is eager to address equality "for example unisex toilets were already implemented several years ago":

"And as students, we are well aware of this commitment, and we see that things are progressing here. Um, yeah, that... I think that's important, because I don't believe I would have the resources to do that. And I am... I am very grateful for that." (Participant 6)

Home of One's Own

Participant 6 experienced it as liberating to leave their parental home: "no one who somehow judges me or gives me nasty looks and somehow wants to evaluate what I am, what I... what I do."

Social Media

Participant 6, noted social media, i.e. Instagram, since it is a platform where it's easier to hide "hate speech against queer people" and they follow many trans people on that platform.

Remarks to Canlı's Master's Tools and Monster's Tools

Monsterising

Medically transitioning includes getting monsterised, according to participant 2.

Participant 4 reminds this tool of dealings with trans people in the USA:

"where again and again it is being said that they are somehow dangerous that we have to protect children from trans persons and above all trans women [...] and [at CPAC] a republican politician said [...] 'We have to eradicate transgenderism' was his choice of words"
(Participant 4)

Participant 6 sees their "online experience" as monsterising, since they had to submit to the binary and the term "currently sums up twitter pretty good".

Participant 7 connects this tool to the anti-choice movement, while she is reminded "of pavement harassment, because people like to stand there and scream "murderer" or whatever. And of course you can find that endlessly on Instagram's comment columns."

Very clearly, participant 8 connected the witch hunt in Münster to monsterising.

Taxonomising

For participant 1 this tool includes the wish to take a different dose of testo and then being judged by his doctor. Also participant 2 was judged by their endocrinologist, “who simply reads me as a trans man, because I don't jump in his face every time he says that I'm a trans, I'm supposed to be a trans man, but only every third time.”

Participant 4 links taxonomizing to his expert opinions for the health insurance “that allegedly science always knows better and gives a neutral view that can judge identity.”

Participant 7 found her maternity log to be taxonomising “and actually it also fits to binary gender, because mother or father, but there is nothing else. It could be called parental log, for example.”

Ignoring

Participant 1 linked their concept of being made invisible to ignoring. Participant 6 matches ignoring to pitying. Their experience with psychotherapy:

“Another experience from psychotherapy that I found quite unpleasant was that my therapist back then had the opinion that she had to respond to my descriptions by saying that she had once had a person in therapy who was convinced that she was a boy and wanted to be addressed as such. And then, now, lives happily as a woman again. And that was more or less the only answer to my description that I don't feel comfortable in my assigned gender. And that was very patronising, so I would certainly recognise this dominance and also an ignoring of my, um, my “problem” in quotes.”
(Participant 6)

Taming

Participant 2 connected this tool personally to taxonomising, as they are forced to pretend to be binary as well as pushed to fit into binary gender. However, all of Canlı's Monster's tools would apply to health care insurances:

“So, that one ignores that there are people who suffer somehow, or that one has to prove that one suffers enough. That in order to prove that, you need this F65.0 [F64.0] diagnosis, which is right next to all the sexual ‘perversions’.”
(Participant 2)

Participant 3 linked their way of dressing “to get through the day without getting catcalled” to taming and also to taxonomising.

Participant 5 did not feel that she was generally the target of master's tools, as a "white able-bodied woman, who is mostly read hetero", however assimilation as an adolescent woman is a "big issue":

It is sort of a disarming, so to speak, what society does with you all the time, to disarm this rebelliousness again and again. Through feelings of shame or through condemnation or through the judgment of what one does, that's why, that's quasi, it's being hemmed in. It's like this: 'I'm tamed. Then why don't I wear the clothes, the short skirts, so much in the summer?' Precisely because I somehow think to myself, 'I'd rather not do that.'"(Participant 5)

Concerning women's breasts, participant 5 had no sympathy for her breasts being sexualized:

"That as a woman you can't just lie topless in the park. So, because it is then indecent exposure. And it's really pissing me off that every stupid dude can run around with a fat beer belly and present it. And nobody is bothered by that. [...] So it bothers me, like that. I feel restricted by it. Um, because I perceive it as harassment or also in the train, that men always have to sit like that, these dudes, so that's then, so this manspreading like that... Yes, this taking up this space in such a way, that makes me insanely angry simply, that... That I would like to have the strength more often, I think, to also take up the space, but rather go the more defensive way, for example in public transport. Period." (Participant 5)

Also, participant 6 experienced their parenting as taming. They required them to blend in, "in order to not get bullied [...] and they did not notice that it caused enough damage and actually I was certainly accepted in school."

Participant 8 matched reproductive medicine to taming, "determining women completely to this maternal role by law and order". She assumed that if it would be normalized that "some can and others cannot" get pregnant, "it would not be that much of a burden, that women have to go through all this agony." She referred to in vitro fertilisation, where ova were aspirated through the abdominal wall by surgery, while she recalled the success rate was lower than 10%. She called this "torture" and "for us it was not liberation, but again a cementation of this maternal role", however today she assumes it would be "relatively normal". She further remembers though the procedure was unsuccessful, women "suddenly" became pregnant, which showed "there were actually other reasons and

causes, that made it impossible". She criticised that a medicine-technologic solution was chosen over a "humane approach".

Appropriating

Participant 2 linked this tool to the history of the pink ribbon and "rainbow capitalism" and further:

"Somehow this whole being 'woke' is then also often used as a marketing argument. And I'm always very ambivalent about that, because on the one hand it's of course just a 'yeah cool, representation' and 'yay, I'm not alone' and on the other hand it's also simply a, 'you just make money with... with the monsters. Freakshow...' So somewhat, ignoring and appropriating, balance each other out. So to put it wickedly, what should you do as a company if not ignore or appropriate?" (Participant 2)

Participant 3 does not link their experience to this tool, however fears to do cultural appropriation herself.

"The white middleclass woman, who I am, is also frequently represented. So always in a normative form, where I don't fit in, but still a white woman is represented." (Participant 3)

Double Othering

Participant 2 refers this tool to their own privileges and assesses, that "people who are simply multiply marginalized also simply crap out even more, logically."

Participant 4 comments this tool by naming hierarchies introduced among trans people:

"[...] there are the right or good trans people who neatly conform to gender norms and those who don't [...] which in the end leads to a shrinking community and less people can unite if they fall for this tactics." (Participant 4)

Participant 7 is reminded of "internalised misogyny, which you also often see on Instagram accounts of women who put down other women or trans people or other queer people. I always find that very tragic."

Pitying

Participant 1 experiences this as a trans person when clinical staff is pathologizing and mitigating them. Also participant 2 identifies this with their experiences with their insurance and endocrinologist, as they feel obliged to arouse pity to access treatment:

"I have to convince not only my doctor, but also my health insurance company that I am doing bad enough, that I am 'strange' enough to need treatment somehow." (Participant 2)

Participant 7 reminds this tool of social media accounts of "cis men who make themselves believe to be feminist, but in reality are actually not at all, but are totally convinced themselves."

Participant 8 linked pitying to her deportation to a children sanatorium. She mentions the youth welfare office came to her family since they were poor and decided that she is send away, "but that was no help at all." She does not consider herself as a victim, however current public debate showed her that she was not wrong when she thought "oh that's really horrible" and other children did "totally suffer and cried almost every evening."

Embracing the Monster's Tools

Participant 5 links this tool to her "leg hair issue", when she is a role model for other friends and is inspired by artists or other feminists in her milieu. For participant 6, prides are an example of "embracing visibility". Participant 7 linked her book to this tool, because of used language. She further feels, it can be empowering to be hated: "You're precious, but it might also be good that there's this one group of people who think you suck and you don't even want to be liked by them."

Exposing the Master's Tools

Participant 5 relates this tool to her idea of reading. "Education as weapon" would contribute to exposing. Participant 7 further identified her feminist book as exposing the master's tools, since the book is about "making patriarchy visible".

Counter Memorising

Participant 2 linked her idea of reclaiming pink from the first probe as well as her notion "Free the Nipples" to this tool, as she questions "why they are actually so extremely sexualised?".

For participant 6, Instagram offers counter memorising. They relate to the sketch on the tool card "monster history":

"because I find it actually most helpful to know, that trans people existed already 100 years ago and they could also indeed be succesful in what they were doing. And of course they also had a huge history of persecution and discrimination, but it's also neat to read stories where the focus does not lay on the masters." (Participant 6)

Boundary Blurring

Participant 2 is doing this to their body through medication, which gives them a “clear conscience” when entering both women’s or men’s locker rooms. For them “it’s a shitty situation, but at the same time it’s also a little bit euphoric.”

Participant 6 identifies their university supportive for their survival and blurring boundaries.

Participant 8 identified the “pursuit for pants” as boundary blurring.

Haunting

Participant 1 likes “haunting”, however they doubt that sabotage and revenge would change anything except some satisfaction for oneself. Participant 2 already takes revenge by doing drag and their “genderfuck” appearance. Also, participant 3 interprets doing to her body what she wants as a form of taking revenge against patriarchy. For participant 5 it can simply refer to not doing what patriarchy expects from her.

Participant 4 mentions that he “loves the imagery of master and master” and “I will happily identify as a monster. I want to be the monster that haunts fascists. And I want to be the monster that protect its friends.”

Participant 8 did not like the idea of sabotaging or revenge and discarded this tool.

Othering the Self

Participant 1 had difficulties understanding the concept, but thought it could mean to distance oneself from hegemonial power together with other others. Also participant 2 gets reminded of community building by this tool. Similarly, participant 5 referred to her dog and her partner. Her partner supports her and knows his privileges. Further, participant 8 interpreted this tool as children supporting each other in the child sanatorium.

Surviving the Tools

For participant 1 this is potentially the most important tool:

“Generally, so related to health care, but I mean also through violence and stuff people die and um so survive or also through um through suicide and so on of course, which of course also has to do with structures of power. [...] and of course the system does not necessarily want us to survive. So maybe you can also ask yourself if that wouldn’t be a monster’s tool to survive nonetheless and still go to cancer screening.” (Participant 1)

Participant 3 was not certain but linked shaving her head, not shaving her legs and her tattoo to this tool. Besides a “practical reason” she describes her motivation as a conscious decision to rebel against her former good and cute self, to maintain her queer-feminist identity.

Additional Tool Visibility

Participant 1 identified “being visible” particularly queer-specific. While they think some marginalised groups are involuntarily visible, queer people to an extent have the option to be visible or not, “which is also such a decision, so it's a necessary thing, too.” (Participant 1)

Additional Tool Predator Syndrome

Participant 2 explicitly mentions to experience a “predator syndrome”. They feel like an intruder when both being with only men or only women. While the rhetoric of an intruder into safe spaces is “usually applied mainly to transfem people” (participant 2), their problem is to be nonbinary trans: “what I want to have in gender hacking or whatever, has the logical consequence that I somehow socially irritate.”

Remarks to Breast Cancer Screening

For participant 1 breast cancer screening is linked to “ignoring”:

“In popular conscience, it is completely ignored that not only women are affected by breast cancer and that not only women need breast cancer screenings. And otherwise, it's just... well, I don't know, I think that science simply symbolises and represents a lot of power. Because it's always an authority that you have to believe somehow, but that also doesn't do everything right somehow.” (Participant 1)

Participant 1 interprets it as counteracting the monster's tool “surviving”:

“that the health system also ensures structurally that certain people are excluded from breast cancer screening, for example, simply because they do not go for various reasons, and that the survival of these people is not necessarily guaranteed. [...] that it almost seems as if they don't want certain people to survive, because they might not be so interested in it, because that certainly brings down a system of power when certain people are visible and live, are living their lives.” (Participant 1)

According to participant 4, breast cancer screening is upholding a binary and “eradicates” that there are more than the “target group”. For him the “concept of having a target group is already tricky”, however he assumes that he does not know enough to relate. He recalls to have seen

educational videos on social media on breast self-examination targeted on cis women. Further, there are several cases of breast cancer in his family, however it was never addressed:

“I can also imagine that it’s a taboo because breasts are somehow, I don’t know, sexualised plus first of all it’s only female associated and everything female is anyways, phew, charged as either something negative or unimportant.”
(Participant 4)

He proposes to speak in terms of “people potentially affected of breast cancer and breast cancer screening” and to unite to talk in a community about “that a screening can also be super burdensome”. For himself medical examinations are related to anxieties, especially if they deal with cancer, being very unpleasant and regard parts of his body he “at a minimum want[s] to forget”

Also participant 5 identifies taxonomising with breast cancer screening, because it is focused on women in a “biologicistic sense”. She feels not affected, however thinks, that it excludes other people. Further, she is reminded of pitying, however not because breast cancer screening is paternalising, but since the good intentions are not consequently thought through: “But please think them also through to the end.” (participant 5)

Participant 6 mentioned their difficulties to classify breast cancer screening. They would find it “inconvenient” to receive an invitation now, as “according to current standards” they would not feel in the right place, however “self-care and caring for one’s own health”, can also be empowering.

Participant 7 can only identify the master’s tools taxonomising and ignoring with breast cancer screening, however no monster’s tools “because in my mind breast cancer screening is heavily based on this gender binary and not so much on bodies”.

Participant 8 referred to breast cancer and thought the disease is being monsterised. She remembered that in the 1980s a cure for cancer was announced, “And where the mother of a friend of mine, she was... she had cancer and was so set on this that this would help her now. And of course, she died.” As a consequence of monsterisation of some diseases, she identified ignoring leading to a neglect of other diseases, for example myoma or other diseases of the uterus.

For another participant her dog is her monster’s tool. It is her companion and although the dog is rather small, she feels safe and confident when she is out for walk with it.

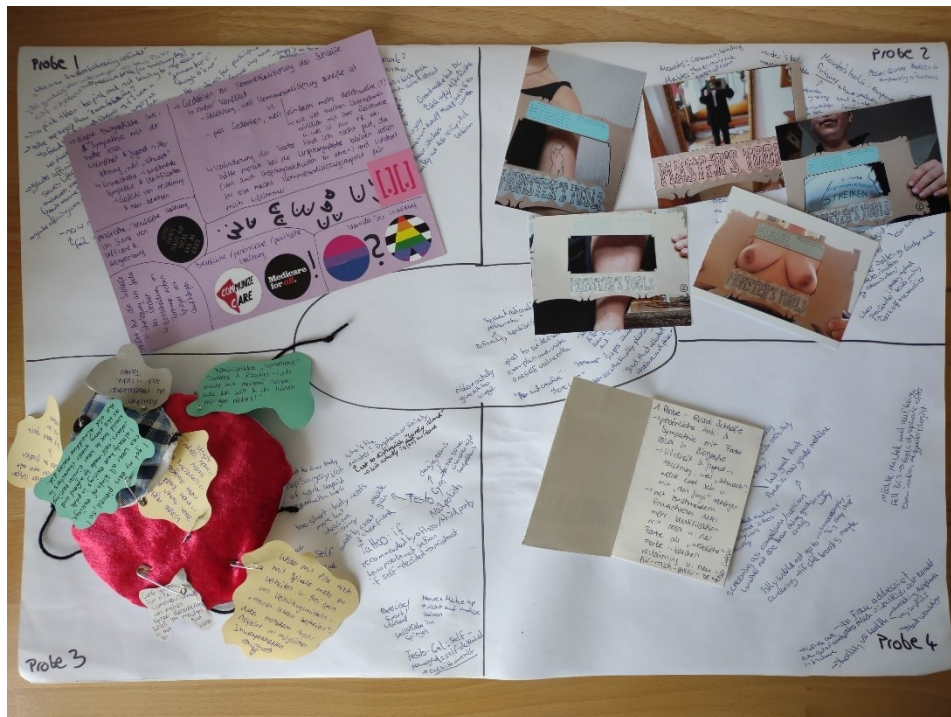


Figure 17: Probes of participant 3

5.2.3 3rd Probe Monster's Body

Below, first technology by selected by the participants and their descriptions are presented. In the second subsection gender scripts of these technologies and breast cancer screening as found by the participants are indicated. Not all participants were handed the method cards for gender scripts and asked for their assessment of breast cancer screening.

Attached Technology

Testosterone and Minipill

The first as well as the second participant attached a slip with testosterone to the plush monster. Participant 1 particularly likes to apply the testo gel themselves, since "it feels self-determined" and further enables them to be viewed how they view themselves. Also the second participant referred to "Meanwhile, my body feels much more like mine."

They added a second slip explaining their experience of finding a way to get the progestogen-based minipill to stop their menstruation. They further mentioned that there are no studies, as far as they are concerned, on menstruating trans people who take testosterone.

Apparel, Make Up, Haircut and Nailpolish

Participant 1 wrote "wearing what feels good right now, no matter what gender is related to it." And referred to generally "clothing, hair, make up and so on."

Also participant 2 likes to wear nail polish but sometimes refrains from it. They also like to go to the gym, however then have to use a binary locker room and decided for the men's changing rooms, because of their deep voice. However, they assumed that their breasts and nail polish combined is too much femininity for the men's changing room, "I think that would also be something that would be easier for me if I were binary trans, because then I could argue honestly and directly: 'yes, I am a trans man, I belong here.'"

Participant 5 noted that lipstick makes her feel "strong and sexy". She likes her mouth and likes to draw its shape. Furthermore, she explains that lipstick is "a kind of trademark" of her and she wears it frequently for special occasions but also "on a Saturday, sometimes, too. When I go for a walk with the dog, simply because I fancy it."

Participant 6 mentioned "gender neutral or masculine clothing". They wore "femininely cut clothing", which made them feel insecure. However, they realised that "neutral clothing" gives them "control over their body image or I can simply follow my needs of the day."

Grow Out Body Hair, Cutting Own Hair and Shaver

Participant 5 wrote down that she likes to "grow [her] hair. Everywhere." She attached the paper slip to the armpit.

Participant 4 added a paper slip naming the practice of cutting his own hair. He likes to have a "radical haircut" and uses this to signal an "alleged readiness to attack", though he rather thinks of himself as a "sweetie pie". Benefits of cutting his own hair very short are a feeling of "self-determination", not needing to pay money for it, being able to experiment with himself, faster drying hair, and he can use it to reclaim the looks of Antifa blokes (German: "Macker"), without being "too much of a bloke".

Participant 6 noted their shaver, since it lets them "freely choose their body hair as I please." Their parents insisted that they need to shave their leg hair. Participant 6 had however already a clear "mental picture" how they wanted to look, which included leg hair and short hair:

"But there was also a huge discussion whether that was necessary and um, how I could do that, with my full hair and they don't grow back that quickly. Yes, it was a big drama and, um, yeah, I lost a lifetime for that."

(Participant 5)

Mirror

"Looking at oneself in the mirror with a loving sight" is a practice described by participant 1. They mentioned to "have moments of self-love

and simply like to look at myself in the mirror” and want to treat their body mindfully.

Intimacy and Community and T4T

For the first participant spending time with other gender-nonconforming people and “feeling closeness to them. And T4T”.

Yoga, Exercise and Gymnastics

Participant 1 mentioned that yoga or generally exercise can contribute to “feeling at one with oneself.” They also compared this to their gender and reflected that exercise contributed both to physical and mental wellbeing, which enabled them to perform their gender identity more confidently.

Participant 3 restarted on gymnastics and realised to have developed a “completely different posture”, “more strength” and “to feel every single muscle”. “And that feels somehow actually totally good.” (Participant 3)

Tattoos and Piercings

Participant 2 wants to get a tattoo of the genderqueer symbol. They like the principle of tattoos “And also just configuring the body, putting images on the skin. Super.” They prefer tattoos over piercings or other accessories, since “then nobody can take it away from me.” They already acquired tattoo materials, but then preferred to have the tattoo made by a friend rather than at a professional studio.

Participant 3 mentions “feminist ‘controversial’ tattoos” and piercings as a way to tell people to decide autonomously over her body. She mentioned she is further tempted to get a nipple piercing but does not dare.

Participant 4 also noted their tattoo on a paper slip on the plush monster: “I got a sweet tattoo done by a sweet close friend. That makes me feel closer to my community. Tattoos improve my body experience, because find more beautiful like this.” He chose the tattoo for this probe, since he “decided entirely voluntary, there was no medical necessity or I was not forced by external factors to do it”. He further liked the positive change of the looks of his body and “it is also pain I consciously chose”. He was fascinated to compare it to other decisions: “If I decide on it myself it is questioned and if others decide something for me it is assumed that it would be right.

Further, participant 5 dedicated a paper slip to her tattoos: “I’ve got tattoos. To me they express that I can do what I want with my body. They distinguish me from others. They make me feel beautiful and cool.” Concerning potential pain of getting a tattoo, she found it “a bit arousing/cool (German: “geil”)”. The one on her back “was not arousing/cool. It really hurt as fuck.” Her last tattoo on her lower arm

however felt “a little good actually. Yeah, it tingles somehow and in between you think ‘ha, it hurts’, but somehow afterwards you got this colour and you got something for eternity.” She likes the “severity” of her decision and also admits regretting a tattoo, however accepts it as a part of herself.

Participant 7 chose to mention their pro-choice tattoo of a coat hanger. She wants to communicate clearly “my body, my choice” and also express her dislike of “anti-choice people”.

Smoking

Participant 3 attached a slip to the monster’s mouth that reads “smoking as rebellious act”. She explains she smokes though “actually you aren’t supposed do it” as an expression of her autonomy. For her it is a rebellion against their parents, who “quite absolutely really crass” did not smoke, and against her younger rule compliant self.

Saving Money for Clothing and Jewellery

Participant 3 wrote “Saving money for nice clothing/jewellery to present my body, dress up and to feel good”. She said it is hard for her to admit this since she is somehow “anti-capitalist on the streets”. She enjoys spending the money on something valuable for herself and gives the examples of durable earrings or a top with a low neckline. She further mentions the empowering feeling of looking at herself in the mirror when wearing these items.

No Contraceptives and Abortion

Participant 3 is neither using the pill nor coil as contraceptives in order to “liberate my uterus”. However, she is still afraid of a pregnancy as it would currently not want to have one. She mentioned that she was feeling the ovulation more intensely, cramps starting a week before her menstruation, and an intense menstruation while having the coil. After five years she had it removed and

“[it] feels really cool, um, because that’s also such a, well, that triggers a feeling of total liberation. So, I don’t take any medication, [...] so I have the privilege of not having to take any medication, because I’m somehow not ill or anything. [...] So my body is simply like it is, somehow and I don’t do anything or I, exactly, I don’t have to do anything with it forced on me from the outside [...] So the fundamental feeling is really a radical liberation somehow, because sometimes I perceived this spiral as a burden and as annoying and lousy [...] and now it’s just gone and I’m somehow so relieved, too.” (Participant 3)

She added a drawing of a small uterus giving the finger with both ovaries.

Participant 5 added a note on her own abortion and explained:

“Abortion or sexual self-determination in general is, in my opinion, one of the most important issues of our time. I think it should be an unrestricted human right that I can decide what happens to my body. Yeah, whether it’s my uterus or whether I, [...] don’t want my breasts any more [...] it’s simply my body or your body and I think neither the state nor a religion nor anyone else should be allowed to say anything about it. And that’s why for me my abortion was above all to make me aware of that in some way, or because of that, I just realised how important the right to one’s own body is. And that’s why it was incredibly emancipatory for me.” (Participant 5)

She is further an “abortion buddy” and helped via phone someone in Munich through their abortion. Participant 5 explained that sharing her experience that abortion “can simply mean to make a decision for your own life” meant a lot to them.

Participant 7 also mentioned her abortion on the probe that lets her “[...] decide if and when a child may grow inside me”.

Top Surgery

Participant 4 wrote on the probe that he would like to give himself his top surgery as a present. Though the costs are covered by the insurance, the process to attain this was very elaborate. He regards this “present” as “unpaid reproductive work” for himself.

Vaccination

Participant 5 intentionally left the example slip of vaccinations on the probe. She explained, that the vaccination against Covid was very important to her and gave her a “feeling of security” after the pandemic. Besides, she wants to protect vulnerable groups generally of infections: “Um yes, big fan of... of yeah, vaccinations so also measles, mumps, rubella all of that I think is awesome.”

Also participant 6 mentioned a vaccination. They “feel safe at dating cis men” because of their HPV vaccination. They criticise that cis men in their generation are not vaccinated against HPV. They assume that every person can get an infection and pass the virus:

“Only because I now got an uterus, does not make me the only group at risk. [...] That’s why I never completely understood it: there is a vaccination and it works and it helps

and well, but... this vaccine debate does not only exist for the topic of HPV. But exactly for the same reason I'm very glad to have the vaccination and [...] the required passport gender." (participant 6)

Feminist Instagram

Participant 7 attached "feminist Instagram" to the monster. Instagram is the place, where she started to engage with "physical things" and "a lot of sexuality", which showed her on "many levels that I am normal, the way I am". She explains that she visited a catholic girls' school, where these topics were not addressed.

Feminist Badges: Smiling Sun

Participant 8 attached four badges of her life time of activism to the probe. Her activism started already before in 1969. Her family did not feel included in post war Germany, as her parents came from former areas of Germany, today Poland. Her first demonstration supported reconciliation and treaties of the "Ostpolitik" by Willy Brandt.

She was part of the anti-nuclear movement and described her participation in huge demonstrations:

"So we all had our groups, our affinity groups, and we knew that we couldn't let anyone else in because we were totally afraid of snitches and police provocateurs and so on. And we go through it as far as we can get, and afterwards we go back again. And yeah, till they came with the helicopters and then they really terrorised us from above." (Participant 8)

Now as the last nuclear power plant is shut down, she resumes: "Yeah, now that was successful after all, although it was also totally terrible at times with all these transports and everything, and the police really clubbed everywhere, too.

She was also a founding member of the Green party and remembered her conflict with another gay founding member who insisted "gays can't be misogynistic", "but I found him misogynistic, too". However, she left the party 10 years later since it changed from an alliance to a "bourgeois party".

Feminist Badge: Naughty, Free & Feminist

For the women's group of the greens, participant 8 organised a girl's conference under the slogan "naughty free & feminist".

Feminist Badge: Abolish §218!

Participant 8 also attached a badge to the probe reading "Abolish §218! Women decide on their own". The badge is from a conference in Berlin

1991 in the context of the German reunification. The GDR had a right to abortion, while the FRG had §218, so she joined the organisation of a large demonstration against the incorporation of the GDR:

“Because we thought that you can’t simply transfer everything like that and that our visions were rather, especially in the area of women’s policy and women’s rights, that there is a lot in the GDR that we should preserve and where the FRG has to change.” (Participant 8)

Feminist Badge: Women's Strike Day '94

Participant 8 “ran around” half a year with this badge to advertise the Women’s Strike on 8th March 1994.



Figure 18: Monster’s Body of participant 8

Remarks on Technology for the Self and their Gender Scripts **Healing**

Participant 1 summarised their technology as capable of “healing wounds”: “It is somehow painful if one was not able to appear as one actually wants to be for a long time. And that is also what leaves marks.”

Also participant 2 found that their technology is contributing to health, because their “level of suffering” is decreased if the body corresponds to “how one feels”.

Shavers

Participant 6 analysed the gender scripts of their shavers as follows:

“[For the lady shaver], at least, I noticed that it’s quite concerned with, um, yes, especially with the removal of leg hair. So then, there were, I think, particularly skin-friendly attachments and so on [...] And at some point I switched to these men’s electric shavers. Yeah, where it’s often very clear on the product box that it’s for men. [...] But the shaving product itself is much more neutral. So, I don’t have the feeling that it wants me to do something with it, or that I’m being told what to do with it.” (Participant 6)

Remarks on Breast Cancer Screening and Gender Scripts

Not Gender Affirming Care

For participant 1 BCS is something “counteracting” their gender, however their chosen technologies could compensate the gender dysphoria caused by breast cancer screening and help to still participate in screening.

Targeted on Women

Participant 1 found that breast cancer screening is targeted on women and what women are doing. This script is also what makes the participant feel uncomfortable and excluded, though the technology should principally include them.

Participant 2 referred to their gynaecologists, which are called “women’s doctor” in German. At their offices the participant got confronted with different offers “do you want to get pregnant, women’s health and all such stories”. They understand it from a “feminist perspective” but feel like an “error in the system”. They would prefer to have information material less gendered or at least a short note added that includes other genders. Further they propose to train medical staff on trans patients “specifically for tactile breast examinations”.

Participant 7 thought of the pink ribbon and screening buses which explicitly name women. She speculated that this could mean “even if one now accepts that there may be more genders on a sociological level, there is still no spectrum on a medical level.” She added that this assumption is “nonsense”, though the binary gender model is still rooted deeply “in all those institutions.”

Top Surgery in Place of Breast Examinations

Participant 2 aims at having a top surgery, which they said they could have attached to the plush monster as well. They also know that they

should do self-exam on their breasts but “nothing like this would come to [their] mind.” (participant 2) They further recalled a statistic according to which “trans masc people are affected by breast cancer more frequently simply because they go to preventive care less frequently.”

Where is the Master?

Participant 4 also reflected on masters. He asked in his personal probe journal, who the master actually is: “is my master the society? Or is my Master my own dysphoria? Where starts this? Where ends that?” He answered with a conversation with a question by his therapist and his answer to it:

“What if you were all alone on an island right now? What physical, medical transition steps would you take?’ I was like, ‘I don’t know.’ This concept is so far from reality I can’t imagine myself in a vacuum because I am the result of my experiences in this society.” (Participant 4)

Concerning the definition of dysphoria, he adds: “And I think the point where maybe dysphoria starts is when [...] I’ve internalized that so much and I see that for myself personally and I don’t have the ability to break free from that.” (Participant 4)

Monster Theory

Participant 2 said to know the metaphor of monsters and feels included, however prefers to call themselves part of “Freaks”, since it would be clearer to them, that Freaks are a made up “social category”.

Participant 4 was also given the tool cards explaining the seven theses of monster theory. He knew it existed before, but did not remember the details. He gave attention to the 6th thesis “the fear of the monster is really a kind of desire”, which he found to describe why breast cancer screening is not much of a topic “since breasts are associated with desire.” He transferred this to trans rights, too. Men would be aggressive and violent against trans women because they fear being attracted to them:

“probably there’s a desire in society to break certain norms or to live out my own queerness or femininity or masculinity or whatever, but there’s such a great fear of this that it is then projected onto the alleged monster. That’s why I think that’s kind of a completely accurate phrasing.” (Participant 4)

For him the fourth thesis “the monster dwells at the gates of difference” shows the intersection of antisemitism and cis-sexism. “Blood libel” and “child protection” are fused in conspiracy myths about trans people. He

recalls that a conspiracy myth was spread that all trans people are Jewish. He further thought about probable connections between vampires and breasts.

For participant 6 the metaphor was irritating in the beginning, as it was “arousing a feeling of otherness in a disquieting way”. However, it was presented in a positive way and they were able to identify with it. Besides, they would not want to play the role of the master.

Visual Cues

Participant 4 reflected on the visuals of breast cancer screening and criticized the logo of the German breast cancer screening programme for alluding to a women’s silhouette in a stylised way, he could not identify himself. A friend explained it to him. He then googled “mammography screening device” and was shocked by the second image result of pink device: “I can describe my facial expression, it’s uh slightly disturbed and um yeah, wild. I do not like this.” (Participant 4) He found it a “little peculiar” that of all medical devices there was one in pink for breast cancer screening.

Normative Bodies

Participant 4 was concerned the machine could not work for people with very small or very large breasts. Consequently he identified as gender scripts the assumption that all people with breasts are women and that those breasts are having a certain size and shape. He further noticed:

Further, he was told by a doctor that statistically mammography would not work well, but emphasized “I can’t judge that either.”

He further identified racism in the presentation of the machines:

“If there were pictures with people, then all the people were white and that’s strong stuff, I think. I wonder... sometimes there are such things, certain technical devices that are better designed for lighter skin [...] But that is unfortunately also in medicine, is very geared to white people and um yes that’s what struck me. [...]” (Participant 4)

He finally wondered if the mammographers are accessible: “and can actually people use these devices equally well, who for example use a wheelchair or such? Because it always appeared as if you had to be standing to use the device, so that the device could work.”

Comparing BCS to Abortions

Participant 5 compared breast cancer screening to her abortion. She assumes that breast cancer screening is “not as heteronomous” as an abortion. For an abortion she is at the mercy of doctors, but not for breast

cancer screening. She identifies that breast cancer is not as “ethically charged” as abortions: “I think breast screening is perceived purely as a health issue. And abortions, for example, are not regarded as the health care they actually are.” Participant 7 advises that breast cancer screening should be as self-determined as proposed by the slogan “my body, my choice”, no one should be judged if they decide to have a mastectomy.

Mental Safety

For participant 6 the “aspect of safety” is important. They want to expect that their “mental safety is somehow warranted” in terms of being “respected”, “addressed properly”, and “understood”. They further propose the methods “training for gender identities”, “being in control of the procedure” or “getting asked if a step is comfortable”, and “maybe even being able to decide on the amount of physical closeness”

Comparing BCS to Tattoos

While tattoos are a decision to express oneself with an image or text, participant 7 identifies that breast cancer screening is about maintaining health. Breast cancer screening is driven by “fears and worries about health”. While pain can be part of a tattoo, it is rather something “I endure, because I need the result” for breast cancer screening (Participant 7)

Like to the Gods in White

Participant 8 thought about her experience with breast cancer screening and speculated that an underlying script could be that “women don't really want to know what is going on with this X-ray machine”. However, she then admitted that she also did not ask, though she could. She explains her mindset as:

“I behave like the [...] gods in white. So, I go there and then I think: ‘Oh, they’ll know and they’ll do the right thing and the right thing will come out of it.’ [...] with such a bias I went to all the examinations. And I also did not expect that anything is explained to me.” (Participant 8)

5.2.4 Breast Cancer Screening Invitation

Pain and Stress

Breast cancer screening appeared for the participant who experienced screening as “pure stress”. The procedure is impersonal and quick. The machine is painful. But most stressful is the time spent between the image being taken and the answer by the radiologists and oncologists. The answer took up to two weeks and the uncertainty is “unbearable stress”.

Accepting Screening Invitations

The decision making of whether to go to a screening or not is very different from participant to participant. The trans participants spoke very

hypothetically about their participation: “if I still had breasts at the time maybe I would go”. One participant already scheduled their top surgery. Two of the participants shared a similar perspective: deciding on going or not is a decision based on health: either stress because they get misgendered and pathologized when they accept the invitation or they might feel an uncertainty when they don’t go. Or by not going, they would do self-care and reject an oppressive health care system and by going they would be cared by the screening facility. For one participant it would be a decision in order to resist the esoteric parents. For one participant it is a way of knowing the body, however the painful experiences of her mother makes her doubting whether it would be really worth it.

A detailed approach is presented by the participant who had screening. If the proposed date for screening seems comfortably manageable, then she went, if it was in busy or stressful times she would skip and wait for the next invitation.

Breast Cancer Screening Information

Several participants thought that it might have been interesting to see an information brochure. They proposed that it might have given them more insight, as they have not had screening so far. However, several participants knew the logo of the German mammography screening programme. It consists of a square divided into two halves by a curved line. One magenta and one dusky pink half. Two participants identified it as female silhouettes, which they found too stereotypical.

Also, other parts of the brochure were analysed by a participant:

“So here are the only people who are shown in this brochure, so except for the lady here at the beginning with the thoughtful gaze and they also have just now, so yes, these are now somehow women, but otherwise as symbolism, but it has not so much to do with breasts now. Yeah, I had just noticed that.” (Participant 1)

Both participants found it unsettling that not a single breast was shown in information brochures on breast cancer screening. A participant noticed that the only photo of a topless woman was covering her breasts with her arms.

Missing Knowledge

Several participants mentioned that they miss knowledge on breast cancer screening.

“And that I also just don’t have that much idea about it, that also struck me, which I also, um... Well, I mean, of course,

I'm not yet in that age that I have to go there, somehow, and of course I already know a little bit, but yes, I also thought that it would actually be completely interesting to deal with it once again. Um..." (Participant 1)

Another participant mentioned that though she is a midwife, her was never explained how to do a tactile breast examination for breast cancer. Depending on the gynaecologist, they did or did not examine the breasts for breast cancer. She further compares it to Pap smear. It is regularly done at gynaecologist routine examinations, however she assumes that many people do not actually know what is done for what purpose in this case. She concludes that she wants to visit a workshop or professional information event on breast cancer screening.

5.3 Methodological Findings

Completion and Interpretative Flexibility

All participants completed all probes without asking intermediate questions. Particularly the second probe was perceived as complex and postponed to the end of the participation by three participants. Three participants asked to postpone the session. One participant had to organize familial issues and the two other participants wanted to have more time in order to be able to think an adequate time about the probes. Further participants shared similarities and dissimilarities in the working of the probes

1st Probe

Six participants used the card of the first probe to put stickers on there which they could allude to and explained those in written text and added own drawings. One participant even added their own stickers. One participant did not use the card but the journal to put in stickers and did not add notes but a large printed photo. One participant just reflected and put the stickers on their computer.

2nd Probe

Five participants took photos with their smartphone camera through the frames. Two participants just wrote their “tools” on the frame. Participant 8 worked this probe dialectically. She collected 12 images and printed them, while always two correspond with one another as master’s tool and its answer through a monster’s tool.

3rd Probe

Seven participants used the probe similarly writing their thoughts on the paper slips and attached them to the monster’s body. One participant did attach their personal buttons from a history of feminist activism to the monster’s body.

Too Few Things on the List

Participant 4 commented that he could not find enough emancipating technology. However, he announced he would like to spend some more time on finding out what technologies help to gain the autonomy over his body. Participant 5 emphasised that the probe belongs to her and called it “my monster”.

Participant 3 gave an extensive feedback that the probe helped her to reflect on herself. She shared her thoughts with her flatmate and with her partner. The four paper slips were not enough for her so she wrote on the back of example slips and ripped them in half to have the chance to reflect on more technology for her body.

When asked to compare technologies to breast cancer screening, participants frequently mentioned to not know enough about screening. Also the participant who participated in breast cancer screening for 20 years of her life.

4th Probe

All participants kept the reaction to this probe brief, while most did not note anything down and one added a bullet point in the personal journal.

Forgotten Probes

The researcher forgot to add the personal journal for one participant and the pink ribbon for another. Both participants said they would not have realized.

Not Shared Results

Participant 5 decided not to take a photo of her vibrator and keep the personal journal to herself. She still brought it to the session to read from it during the discussion.

Health Related Adaptions

Neurodiversity and ADHD

Participant 2 mentioned that due to ADHD they preferred to schedule the session right at the introduction meeting. They further mentioned their ADHD during session.

Risk of Infection and Ability

Participant 8 had a medical treatment which required to wear an FFP-2 medical face mask during the session. She further completed all probes without handwriting or adding text and only attached material on the probe and printed images.

Changes Due to Mental Stress

Participant 4 and participant 5 asked to reschedule their sessions due to appointments, workload and stress.

Feedback on the Method

Appreciation of the method

All participants mentioned with different words, that they enjoyed participating. Different participants mentioned, that it was “fun and creative”, “super sweet” or “nice/lovely”. One participant kept this comment to the very last moment when saying good bye on the street and told that the probes and the session were “surprisingly comforting”.

Aesthetics for Accessibility, Imagination and Intimacy

Several participants mentioned the style of the probes in particular. One mentioned, that the cute style made it accessible. Further, the distinct

appearance and tangible questions made them remain in their memory and reflect on it over several days.

Empowering Reflections

The puppet of the monster's body was mentioned to be relatable by the round indistinct shape and being like a pillow. Additionally, three participants asked if they could keep the monster after the project, because they found the interaction was empowering. One participant mentioned, that they could reflect on what is good for them and helped them to appreciate past interventions on their body and think about what to do next in order to feel comfortable with their own body. Another participant wished to come up with more things in the future, because they would like to appreciate their body more.

Vulnerability

For one participant the ability to share personal information on their body and health was assigned to the perception that the researcher exposed themselves as vulnerable by sharing the examples of paying for the own HPV-vaccination to date queers and their thoughts on earrings.

Subjectivity and Positionality

One participant appreciated that the probes did not pretend to be "neutral" or "rational" and acknowledged that in many cases these concepts are problematic. "Apparent rationality" would introduce hierarchies.

Interest in the Research Matter

Taking Photos

Three participants showed particular interest in the concepts of master's tools and monster's tools and tool photos of the tool cards presented in the session. Two participants asked for the literature background, which was happily shared.

Interest in the Report

One participant proposed to add this thesis in to an autonomous local feminist archive while others asked to be kept updated generally about the research outcome.

Flirtations and Reciprocity

One friend participant mentioned that he had a tiny tattoo made by sweet close friend person. The tattoo artist is the author of this thesis. One participant who withdrew participation was matched on a dating app several months before with the researcher but never met in person. Another participant gave a sticker during the session as a present and when the researcher met them at a meeting for trans, inter, non-binary and agender people they gave them a weeded flower crop top. One participant

asked the researcher to contribute for an art exhibition while another owning a public feminist archive offered tea and presented several interesting books to borrow from the beginnings of post-war German gay movement.

Criticism and Recommendations

More Information

Some participants who have not had breast cancer screening reflected whether it would be helpful to have more information on mammography screening:

„And I was just thinking whether it would have been cool to have had such a brochure in the letter, because I find that interesting, so to take a look at it. At the same time, I find it a bit tiring to read, because it only talks about women and so on.“ (Participant 1)

Limited standpoints/situated knowledges

Participants proposed that their perspective is only limited and many even more marginalized bodies and perspectives exist:

“Yes, so I now believe that all my answers had to do very strongly, somehow also individually with me and were also very strongly from a transmasculine perspective somehow, which yes, which I think is important because I am affected by it myself. But it’s also important to me to say that there are of course also very different um perspectives and yes, also for example transfeminine or also the feminine or also male perspectives or general non-binary, genderqueer, there are simply many perspective, perspectives on the topic, I think, from very different gendered directions, which all want to be heard somehow. Um exactly. I think I’ve set a bit of a focus on that now, but it’s important for me to say again that there are of course many more perspectives.“ (Participant 1)

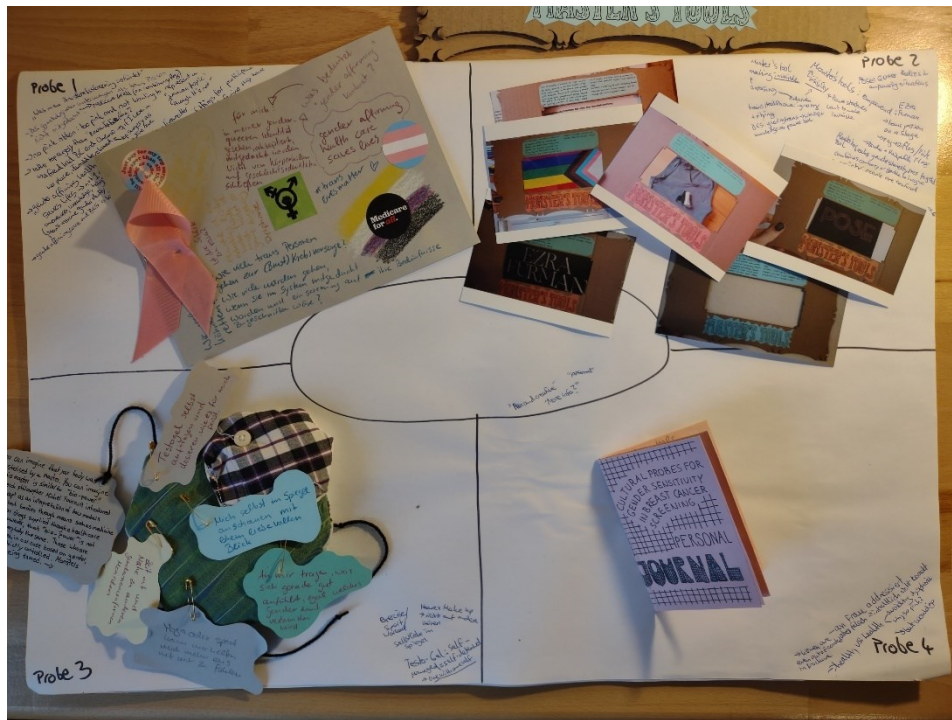


Figure 19: Probes of Participant 1

6 Discussion

This chapter starts with a summary of the conducted research. In a second section, the content contributed by the participants through their interaction with the probes is viewed in relation to the three sub questions on gendered assumptions, power relations, and technology for emancipation. The third section refers to the main research question, how cultural probes are put into shape and practice. A last section adds a personal reflection on the content and method of thesis.

6.1 Summary of the Research

Continuing feminist irritations with technology for breast cancer screening led to the formulation of a research on “How are cultural probes put into shape and practice for sensitive design research on gender justice in breast cancer screening?”

Further, three sub research questions were asked:

1. How is Breast Cancer Screening governed by gendered assumptions?
2. How are gendered bodies dominated by medicine technology and practice?
3. What interventions for medical liberation and emancipation can be applied by people from affected communities?

These questions were approached by a literature review on the background of sex/gender, technology and power relations. A theoretical framework was formulated that ascertained three combined perspectives. 1st Gender or sex is an indifferentiable part of bodies and shaped by society and technology as well as shaping it, 2nd designers are capable and responsible of producing and shifting norms and power relations, 3rd transhuman perspectives provide imagery and explanations on entanglements of gender, society, technology and power or rather dissolve the separate categories to shape an entity that makes complex discourses accessible.

A literature review on related design research offered a methodology for this thesis. Participatory design research was identified as a possible approach to justice in design, while cultural probes can evolve into various shapes. The original intention of detailed probes can access intimate and sensitive topics with participants while it overcomes things as distance and age gaps. Several methodologies serve to identify gendered assumptions such as gender scripts. Power relations and emancipatory technologies are made accessible by readings such as master's tools and monster's tools or combinations of technological and political interventions.

A design research method consisting of a set of four cultural probes and a session for co-analysis was designed. The four probes were a pink ribbon card with stickers, two frames for monster's tools and master's tools, a plush monster for emancipatory technology, and a letter of a mocked screening invitation to close the probes. The sessions are structured according to the four probes and aided with four tool card sets.

Participants were addressed on different channels and handed a number of information material, before the probes were handed in a preliminary introduction meeting. The 8 participants from different places had the sessions in their chosen environments. The probes and sessions produced a large amount of data that was transcribed and structured by probes and technologies or phenomena mentioned by the participants.

6.2 Breast Cancer Screening, Gender and Technology Relations

The data produced by the participants is discussed following the three sub questions of the thesis. Gendered Assumptions in Breast Cancer Screening

6.2.1 Gendered Assumptions of Breast Cancer Screening

Though seven out of eight participants did not participate in breast cancer screening their idea of the technology and practice did not fundamentally differ from the participant who participated. The variety of concepts is discussed here.

Normative Womanhood

All participants identified an overdose of pink and consequent address of cis women as an indicator for normative womanhood. Namely, women in the eyes of mammography screening, have breasts, endure pain, want to keep their breasts and have a foible for pink. This normative assumption and connection to breast cancer is not without irritation. Participants did generally not identify with this normativity. Pink in this case is not a reclaimed colour but a pure stereotype. Participants rejected this normativity and did not feel convinced by those assumptions.

Techno-Medical Incuriosity

Participants frequently mentioned their lack of actual knowledge how the screening works. Though many folders and websites exists, which explain statistical relevance and name several arguments, the workings of the machine and screening remain untold. Several participants wanted to gain more knowledge about what is done in medical examinations, also from a professional perspective. One participant suggested, that it seems, that the screening facilities produce an image of technologically incurious women.

Exclusion of Marginalised Genders

Participants with breasts, who were not female felt excluded. For them it does not matter, whether the screening is theoretically offered to them or not but the ignorance they are met with and being framed as a cis women, when they participated. They mentioned discomfort when they need to go to gynaecologists and also mention this discomfort about breast cancer screening. If the trans masculine participants still had breasts in the sought age they would still consider to participate in BCS. However, the consideration — whether it was sarcasm or honesty — that breast cancer as a potentially deadly disease is considered as beneficial over interaction with health care professionals reveals a systematic failure of addressing gender affirming health for marginalised genders.

Health vs. Health

While screening brochures suggest concepts such as overdiagnosis, unnecessary treatment, statistical significance or radiation as competing arguments. Participants identified different competing arguments. Guided by the DDD cards, participants mentioned that when they decide upon whether to go to a screening or not, participants are mainly concerned with their personal health. While many participants did not consider unnecessary treatments, they did consider stress and pain with negative health consequences if they would go to BCS for example because the current practice produces gender dysphoria. Not going to screening is consequently another form of caring for the own health for some participants. Consequently, some trans participants already found an

intervention to resolve the dilemma, the “BIG CHOP CHOP” as one participant called the top surgery. This preventive measure is however also not presented in the official screening folders. For other participants, however the implications of BCS and the capabilities of the machine play a minor role, they would try it out first anyways. Similarly the participant who exceeded screening age did identify breast cancer as the higher risk over discomfort by non-feminist gender representations.

6.2.2 Power Relations of Medicine Technology and Health Care Practice

Participants located themselves within structures of power that origin abstract and personal actors. Master’s tools and monster’s tools by Ece Canli served as reading aid for these relations.

Gatekeepers

For some participants their access to gender affirming care was guarded by gatekeepers. In several cases the gatekeepers sabotaged the access to treatment. Insurances refused to pay for testosterone or top surgery and demanded unnecessarily elaborate bureaucratic requirements. Even when access is granted, the work and stress invested into obtaining care was at high cost. In terms of tools, the tools for liberation and affirming the body, were concealed through bureaucratic tactics, which one participant identified as an intentional power instrument.

The access to abortion is used by several participants as an example of paternalization in health care practice. They perceived the procedure as unnecessarily difficult and criminalising.

But also access to knowledge such as on tactile self-examination of the breasts or the brief delayed message of BCS results creates knowledge hierarchies and consequently power relations in health care.

Structural Power Systems

Several participants mentioned that health care is attributed to capitalism. They criticised the consequence of exploited medical staff as well as their bodies and a disease for the interests of profit. Though some participants see positive effects in commercialisation of breast cancer awareness, they only accept it, because they face the reality of the economic ratios.

Bodily Autonomy and Self-Determination

Participants presented many materialisations of tools to describe an absence of autonomy over their own body when in contact to health care. Being sent to a children centre without consent, difficult abortions, and delayed access to gender affirming medical interventions.

Internalised Oppressor

One participant asked who the “master” actually is. Is it society or is it dysphoria? And already answered that nobody exists completely alone, humans are always in a relation to society. However, dysphoria as an internal or internalised master is more difficult to be ignored.

6.2.3 Tactics of Medical Emancipation

Beyond participants analysis of power instruments and hierarchical relations they suggested several tactics that aid to emancipate their gendered body.

“Biohacking”

In the manner of Preciado’s urge to use technology to hack the own body, one participants puts it into practice in order to gain autonomy over their body. Though in other words participants use similar tactics.

Hormones

Testosterone is not only a cure for gender dysphoria, it is also a tool to gain autonomy over the own body. One participant even combines it with a mini pill, to prevent the body from menstruating. The method of application further contributes to autonomy. For one participant the ritual and control of using testo gel was giving autonomy.

Tattoos

Many participants mentioned tattoos as way to feel confident in their skin. Though it is permanent and painful, even invasive, it is regarded as more directly contributing to health than BCS. Participants argued that the pain or discomfort felt while getting a tattoo is a welcome irritation as it is self-determined. Further, the permanent result constantly contributes to wellbeing.

Haircuts

Wearing short hair was liberating for two participants as it was firstly not connected to normative femininity and secondly more practical to maintain and requiring less attention. The haircut can further carry concepts such as concerning looks or simply be altered according to the comfort. At the same time not shaving leg hair is perceived as liberating, too.

Binder

As an ambivalent garment, the binder is taking autonomy as well as giving it. However, the possibility of altering the body through a simple piece of clothing contributes to the autonomy of marginalised genders with breasts.

Top Surgery

Gender affirming medical interventions contribute to bodily autonomy in many ways. Participants mentioned among others that it is a present and the best breast cancer preventive care.

Abortion

Only a few people might even have an unwanted pregnancy, however participants highlighted that their abortion was giving them the autonomy over their body.

Rebellion

Several participants chose interventions as means of performing a small social rebellion. Besides the above named, also accentuating clothing or smoking is contributing for a liberated body. Further the urge of freeing the nipples is questioning oppressive gender norms and liberating.

Besides, a participant showed their involvement in various feminist and other political activism that can be considered as rebellious in different scales.

6.3 Cultural Probes for Gender Justice

6.3.1 Adequacy of Cultural Probes

The results shared by the participants are rich and multifaceted. Participants did not only answer direct questions but came up with their own principles, theories and explanations of complex socio-technological workings. The acceptance of the probes and the thorough engagement can be attributed to several factors which are discussed here.

Importance of Imagery

Participants already suggested during the session that the design of the probes helped them to reflect on the topic. Participants mentioned tangibility of the questions, cuteness of the monster and vulnerable exposition of the researcher as helpful to answer the question. Though some participants did regard themselves as rather privileged, they accepted the monster metaphor. One participant wrote down "I will happily identify as a monster" and another also identifies as a monster however prefers the term "freak". This suggests that the research benefitted from applying the monster metaphor.

Openness and Boundness

As suggested by previous literature of cultural probes, the questions need a defined openness and boundness. Participants used the probes in a range of interpretative flexibility however also similarities are evident. While some did not use the card of the first probe at all, others independently drew various shapes of breasts or put the ribbon on their back pack. Although tattoo was not mentioned as an example the majority of

participants mentioned that they use it as a gender affirming practice. This range of similarities and dissimilarities suggests that the probes balanced openness and boundness. The confined space was even extended by a participant by ripping paper slips in half and adding them to the monster puppet. Even when participants interpreted the question other than intended, their contributions included very meaningful insight.

Personally Known Participants and Social Context

The engagement of the participants can also be attributed to the selection process. Seven of the eight participants were known to the researcher before and the unknown participant is living in similar community spaces as the researcher. All participants could be considered to belong to a loose community unified by political views. The somewhat different locations of the participants and age range and various genders is only one dimension of diversity. If cultural background, racialisation, language, nationality, educational status, and that no trans feminine person participated is considered, the participants shape a rather monolithic “group”. Participants of different communities might have contributed other answers or even rejected the probes.

Design of Cultural Probes

The cultural probes managed to overcome several distances. Geographic distances were bridged as well as an age gap. But also, bodily and mental configurations such as ADHD or inactive immune system had to be bridged by the method. The design of the probes managed to overcome the distance. But what were the crucial properties?

Low-Tech and DIY

Though the DIY appearance and non-electronic design was consequently applied, it was also a matter of budget and skill. For the monster puppet that seem to have been answered with ease and pleasure, only old fabric pieces for example of old pyjamas, shirts and t-shirts, spare buttons and old wool yarn was used. Only the sticker sheets were professionally ordered. The only technological interaction of taking smartphone photos was even avoided by three participants, suggesting that smartphones can also be hindering the interaction with probes. Considering the feedback of tangibility helping to remember the questions during the daily routines, using a non-electronic probe design appears inevitable.

Individuality

No set of probes was identical to another. Every probe contained at least one hand crafted part with imperfections. The probes are also personal and contribute to the goal of creating empathic and personal interactions. Further the overall concept is individual for the research questions. The imagery of monsters might have alluded to a variety of power relations of

marginalised bodies but different researches need to find their designated materialisation of the research questions. As a consequence, the probes are not reusable for other projects. Even in a similar research, the same probes might lead to completely unanticipated results.

6.3.2 Limitations

Fuzzy Ends

Ironically a limitation of the applied method is, that it has almost no limits. Participants could contribute whatever they felt like and consequently some sessions were considerably longer than intended. The amount generated data is consequently inflationary.

The assumption, that cultural probes are impossible to analyse can be supported by the contribution of the 8th participant who did not use any written text. Though the content of the contributed images and buttons can be read, their significance and meaning is inaccessible to the researcher. The session however, revealed an enormous amount of knowledge, experience and insight into power relations in health care.

Technological Applicability

Although the participants contributed to the aimed insights asked in the research questions and even beyond, the results do not directly contribute to an improved technological intervention against breast cancer.

No Target Groups

This research forwent the definition of a target group. One participant supported this approach and also criticised the concept of target groups. This avoided paternalizing participants and reintroducing taxonomisations of humans that are considered as an oppressive instrument. However, people used to clear formulations of “group characteristics” of participants might not understand this approach and do not offer their participation. Further, if the selection of participant is not controlled, the participants might not be part of a community that needs representation in the research. The culturally monolithic participants can be a consequence of the unspecific addressal of participants.

6.4 Personal Reflection

The focus of the four probes resembles a striking resemblance to Foucault’s (1988) technologies. Probe 1 relates to “technologies of sign systems”, as a focus is set on graphical language and symbolism in breast cancer screening. Probe 2 relates to “technologies of power” as it identifies master’s tools, tools for domination. Probe 3 relates to “technologies of the self” as it asks what improves, or liberates their body. Probe 4 can only loosely relate to “technologies of production” as it puts the mammography device for the production of mammograms central again.

Notable is also Foucault's notion of technology. It is not limited to machines, mechanical devices or even material objects. It is rather including policies, rituals, customs, and abstract concepts.

Monster Centred Design

From user-centred design to human-centred design to monster-centred design/cyborg-centred design or simply post-human-centred design: what counts as reality is just a very narrow reflection of a socio-technological environment. Generalisations are uncritical. By moving from the average to the marginalised, monster-centred design becomes another tool for liberation. If designers aim to design for utopia, then they might seek the challenge not in matching with those who are privileged but those who are missing. When Papanek urged to design for "the real world" he omitted that "reality" was his reflection of a world including its racism, classism, sexism, ableism and LGBTIQ-hostility. His solutionist design proposals, or rather those of others he endorsed, consequently served the master. Designs for "the third world" such as a proposed car can be read as the racist tool of pitying, in other words white saviourism.

When philosophy of technology turned away from determinism and instrumentalism towards constructivism and later post-something theories such as technological mediation, pharmacopornography or cyborgs and hybrids. Then we can see a similar shift from deterministic "good design" via instrumentalist "user-centred design" and a constructivist "human-centred design" towards post-something critical design approaches that challenge hybrid connections of human-non-

Othering the Self

One of Canli's (2021) monster's tool "othering the self" is difficult to explain and interpret. Canli refers to Halberstam's master's tools, but there it is consequently not a monster's tool. The mentioned example of "virtual assistants" by Amazon, Google and Apple make us to their exploitable mass rather than serving the liberation of marginalised people.

Limited Technological Sophistication

For the research, several new practical techniques were newly appropriated. The use of a sewing machine was learned autodidactically, corrugated cardboard was successfully laser cut against the suggestions of technological gatekeepers and starching was applied to ribbons. Although I attribute benefits to the tangibility and purely non-electronic set of probes, digital methods and electronics could not have been implemented to a lack of education in this field. If an app could have had similar effects remains unanswered by this research.

Taken for Granted Technological Assumptions

Why do most science and technology sociologists and philosophers of technology assume something like a stabilization of technology? Why does technology have to become readiness at hand in Heidegger's terminology? Cyborg feminism or rather queer feminism might be one interpretation of society and technology that do not assume stabilization. However, findings of this research show much more, that accepted technology can also be the tool of rebellion, a monster's tool. Heidegger's rhine hydropower plant is in times of climate action and biodiversity as fragile as queer symbols on a flag pole. Breast cancer screening today means to x-ray breasts, but the "novel" screening technologies mentioned in the introduction and developed at UT challenge the fixation of technology. For the participants, breast cancer screening is not necessarily the instrument for health, but rather something to be debated. Top surgery, "surviving" the screening or rebel by accepting it, it is doubtful that any technology is ever stable or making the "user" forget themselves while using it.

Compulsory Generalisations and Objectivity

bell hooks criticised the white lesbian voyeur, the director of "Paris is Burning" as the colonialist ethnographer gazing at black queers doing misogynistic drag. Judith Butler resolutely rejects an inherent misogyny of drag but values that the director makes herself invisible. Yet she decided what we see and what not. The death of the author is opposing current queer feminist and intersectional understandings of how to do research. Subjectivity is unavoidable. Instead of compulsively applying generalising methods of analysis, the research found benefits sharing political motivations and positionality to produce knowledge on bodies in power relations that are apparent in design, technology and health care. And when I communicate an outcome I interpret, analyse and select what I want to share. To apply a plan, protocol, rule, program, system to the act of sharing the stories told in the process is a scientific desire. I do not think that it is necessary or inevitable, but I want to fulfil the demand on a thesis, that tries to rebel in a very bourgeois context. I want to see my approach as a present to those who respect my research and never mind about the pseudo-scientific haters. However, we need to be clear that the aim of this research is to ask what sensitises research for marginalised genders and not to identify a framework, rules or dimensions that explain gender in breast cancer screening.

Cultural probes are meant to open up, but the conversation is incomplete when giving the present away. We may compare it to BCS where we take part in a painful ritual and afterwards, we are left alone until a letter tells the results. This thesis does not try to make the analysis objective, but value its subjectivity. The approach to deal with the contribution of the

probes should intensify the bond and continue to play. The void after completing the probes can be filled with generative sessions.

Standpoints vs. Universal Design Cues

The design of the probes is not only using the monster imagery, it is spiked with many popcultural and political references. Participants only recognised a few of those, which became most evident in the first probe and the stickers. Some stickers were meaningless to some participants while others were appreciated. Probably none recognised the font and reference to Nosferatu. The allusion is an imagery within an imagery: the pest outbreak summoned by Nosferatu/count Orlok in the film is leading to a citywide—Wisborg references to a decayed Hanse city—lockdown proclaimed by the municipality. Nosferatu is also a personified disease that is rather met with despair than confidence. But are these cultural references then redundant? I propose that a richness in metaphors and allusions that guide in similar directions is beneficial to cultural probes as well as critical design interventions on tabooed topics is enabling conversations. The more references are hidden in the design, the higher the probability that participants find one to interact with. Further, I assume, that even missed references have a cultural impact. When an allusion such as a font is not recognised in its origin and reference, it is still representing a style that already served once to create the desired context.

Consequently, the situatedness and context specific acting of design cues and scripts is never all or nothing. A given design feature is not only connected via one contextual reference but many. If one design cue is not read as anticipated, another reference might compensate. Thus for designing artefacts such as cultural probes, I propose standpoints, situated and contextual knowledges are never completely independent and for some communities a near universally comprehensible inscription of design cues can be achieved.

Where Sits the Master?

A participant asked whether the domination over his body is just internal dysphoria or societal injustice. His conclusion was that both might apply while finding the division is difficult. However, he acknowledged that nobody is independent from society and often irritations are internalised. This dilemma in approaching gender dysphoria and injustice can also be concluded by John Donne's words "No man is an island" or rather "No human is an island".

Bodily autonomy and Self-Determination

Self determination, bodily autonomy and bodily integrity is not a new concept, but only recently getting applied in western societies. In Germany trans people had to undergo sterilisation if they wanted to be officially

recognised until 2011 and in the Netherlands even until 2014. Abortion is in most European countries criminalised while particularly western European states established some exemptions based on “indications” or “impunity” if a term is met. Still genital mutilation and forced sex/gender reassignment of inter children is only slowly being criminalised and prohibited. Considering access to gender affirming health care, pathologisation, exotisation, and ignorant bureaucracy, many factors continue to limit bodily self-determination. In this context breast cancer screening is consequently acting. It deviates, as people can decide themselves to participate or not without fearing consequences. However by addressing primarily cis women through normative symbolism and considering the painful and stressful examination, mammography screening practice reproduces the experiences that participants have not the autonomy over their own body.

Naming the Names: Anonymity vs. Representation in Academic Reporting

Participants were guaranteed anonymity for their participation, however that is not without cost. Sensitive topics might be more easily discussed in an anonymous setting and participants may require protection against possible trans-hostile attacks. At the same time academic publications may use their discursive power to represent the existence of trans and gender non-conforming people by allowing them to be present in research as co-researchers. The initial participatory approach, also apparent in cultural probes is counteracted by anonymity. Would participants have agreed to share their intimate thoughts, pictures, desires and critique if they would be acknowledged as co-authors?

In trans communities particularly in provincial Germany, where everybody knows everyone, personal details could be identified by a given name immediately. Anonymity is counteracting the co-researcher approach of PAR and introduces hierarchies. However, anonymity might be the requirement for some participants to agree to share personal experiences. A real co-authorship is impossible for the thesis anyway.

Researcher's Imposter Syndrome

Since the researcher included friends and acquaintances in the research project there is a chance that they only engaged so well with the probes because they wanted to do a favour. If the participants were complete strangers, they might have rejected the tasks and criticised the overall approach. These conspirative doubts of skills can be called a researcher's imposter syndrome without using the term psychopathologically. The researcher might benefit from reflecting mechanisms and appropriateness of these doubts when engaging with befriended participants.

7 Conclusion

This research began with a potentially deadly disease and a fuzzy feminist critique on novel breast cancer technology. The multilayered irritations in the context of breast cancer screening technology and practice led to research asking to apply cultural probes for gender justice in breast cancer screening. Further, these cultural probes aimed to generate insight into gendered assumptions by breast cancer screening, domination of gendered bodies by medicine technology and interventions for medical liberation of people from affected communities.

The research method is supported by thorough investigation of theories explaining the entanglements of sex/gender, technology, medicine and society. Sex/gender is regarded as an indifferentiable part of bodies. Bodies however, are also shaped by society, technology, medicine and sex/gender. Men and women are just two potential interpretations of sex/gender and bodies. The technological entanglement was theorised by constructivism, that considers technology as actively carrying politics, by a mediation of morality in individual people and society, and by trans humanist theories, that regard humans as technological and technology as human. A world defined by hybrids and cyborgs.

These considerations gave inspiration for the definition of a critical and gender just design method using cultural probes and co-analysis sessions with participants. Sets consisting of four cultural probes featured the metaphor of monsters and many more pop cultural allusions.

Eight participants delivered intimate and professional insight into gendered assumptions of breast cancer screening, power relations in health care and tactics to liberate marginalised bodies.

The participatory yet critical approach resulted in rich analyses of the posed questions. Breast cancer screening normatively addresses cis women and by that excludes not only marginalised genders but also irritates women who refuse to fulfil patriarchal gender norms. The technology might be accepted as successful in terms of cancer detection, but unsuccessful concerning a just health care. This raises the question if a technology, which promises to improve survival, but is inaccessible to marginalised bodies, is consequently also limiting survival.

Participants identified personal and structural power relations in health care that systematically oppress marginalised bodies and defined these master's tools. However, participants also identified a range of practices that contribute to their liberation or empowerment. Concepts such as "biohacking" contribute to an autonomy over one's own body.

Finally, the designed and investigated method of cultural probes for gender justice in breast cancer screening cannot create a novel screening technology itself. However, the applied method targeted a serious sex/gender-specific disease to which screening technology is only one approach. Other “technologies of the self” for emancipation and liberation might lessen the burden of marginalised genders in a different dimension.

If the positive feedback to several cultural probes is considered, the cultural probes presented in this research can themselves serve as a technology for emancipation and liberation of marginalised bodies.

8 Glossary of Terms

Several terms used in this thesis are jargon, that are not explained as part of this research. Their use and meaning in this thesis are explained below.

§218

§218 StGB is the German criminal law, which criminalises abortions since 1871 and is still effective with exemptions from punishment. Pro-choice or the “218-movement” aim to abolish this law since it was erected.

BCS

Abbreviation for breast cancer screening, mostly through x-ray mammography. Refers to all elements of screening an asymptomatic population for breast cancer.

Cishet

Cis refers to people for whom the gender assigned at birth corresponds with their gender. Het is an abbreviation for hetero or heterosexual. The term consequently refers to all people who are cis and hetero, or people who are not LGBTIQA.

Cissexism

While terms such as transphobia or trans hostile name the victim of structural and personal violence, cissexism refers to the offender.

Constructivism and Constructionism

In epistemology, particularly learning theory, both refer to processes of shaping knowledge. For constructivism, knowledge is shaped cognitively and individually while for constructionism knowledge is shaped socially. In STS however, the terms social constructivism and constructivism describe the socio-technological processes that shape technology, scientific knowledge and society. Since the latter definition applies for this research, constructionism and constructivism refer to similar principles.

CSD

See →*Pride*

Dysphoria

Frequently short for “gender dysphoria”, a psychopathologic concept that describes unease of trans people when they perform a gender that does not match them, for example because the appearance of the body or clothing mismatches their gender. The concept of dysphoria is criticised for example by S. Stone (1988), because it implies that trans people are required suffering to prove their transness.

Endo (Dyadic/Peri)

Short for “endosex”, from Greek “inner, internal” in contrast to “inter”. Means people who, in the eyes of clinical staff appear to have a typical

body in terms of shape of primary and secondary sexual organs, chromosomes, hormones, etc that all correspond to the binary division of those characteristics into either male or female. The origin of the term “endo” is a German author. They use however, very pathologizing and sublime language. Dyadic is the older but frequently criticised term because of its reference to a binary; dyadic from Latin “based on two”. The term peri has a more playful as well as inter activist origin on tumblr, meaning “close” (...to a normative imagination of a binarily gendered body) and intentionally alludes to periwinkles.

HRT

Short for hormone replacement therapy. Many but not all trans people consider to affirm the appearance of their bodies by taking hormones or drugs effecting one’s “sex”-hormones. Those come in a variety of different drugs, applications and dosages. In some western-European countries, HRT is covered by health insurers. Often concerned people have to obtain diagnoses and expert opinions or wait three years to start treatment. Some trans people avoid these hurdles and do self-managed HRT. Thus, HRT is always individual.

Inter

Clinical staff earlier or later in life of that person claims a mismatch between sexual primary and secondary organs, chromosomes, hormones, etc. that hinders to define the person of having an endo typical male or female body. Note that the term inter is often used as intersex, however in regard of the decline in the use of sex in society to describe sex/gender, activists frequently omit that term and sometimes replace it with an asterisk as a wildcard e.g. in dos for any possible string (so any discretionary sequence of characters). Here, the * is consciously omitted since the meaning of the term as an abbreviation is clear without the *.

LGBTIQ

Lesbian, gay, bi(-sexual), trans, inter, queer. Sometimes an asterisk is added for the reason mentioned for trans and inter. Frequently, P for pan(-sexual) and A for asexual, aromantic or agender are added or replaced by a “+”. Further, Q can also mean questioning, so people who do not feel able to apply the labels to themselves though they would like to discover more of their sexuality and gender. Letters can be omitted for simplicity or for a reason: LGBT is rather narrowly focused on clearly defined and often binary categories, while LGB without T is used in cis-sexist contexts.

Mammography

Literally breast imaging. Usually carried out with an x-ray imager. Refers only to the process of generating images of the breast tissue for any purpose, including screening.

Pride

Prides are demonstrations by LGBTIQ+ people for their human rights and acceptance. The German term CSD is short for “Christopher Street Day” where the Stonewall Riots in New York took place. Prides can be radical demonstrations as well as commercial parades.

Queer

Queer is both, an umbrella term for LGBTIAP and a separate term. Particularly gay men may often not see themselves included by the term queer. It might criticise concepts such as homonormativity, which some gays might regard as an attack on their identity. Historically a slur for gay and trans people. Appropriated since the late 1980ies by people who experience sexual discrimination and sexism. Since the 1990ies also used in academic contexts as “queer theory” and created many eloquent descriptions of what it entails.

Sex/Gender

The term sex/gender is used as in the work of Fausto sterling A. Fausto-Sterling (2019). However, also from a historical and multilingual perspective it would be insufficient to speak in terms of either of both, since the current meaning of both words is not representing the meaning in past and non-english speaking cultures, e.g. German: “Geschlecht”. In contributions by German participants “Geschlecht” is translated either with “gender” or “sex/gender”

Trans

Trans is used as an abbreviation similarly to inter, solely as an adjective. There is still an intense debate among trans people on whether transgender or transsexual would be the right term. While usually people in favour of a Butlerian queer theory or constructivism support the term transgender, pathologizing and paternalizing clinical staff as well as so called trans-meds argue that trans(sexuality) is a condition of the body, being born in the wrong of a such, that requires medical cure to unbearable suffering. The outdated, but still applicable and extremely trans hostile diagnosis key ICD 10 identifies three “disorders”: “transsexuality”, “transgenderism” and “transvestitism”. These terms as well as possible other combinations such as “transident”, trans man, trans woman, trans feminine, trans masculine, ... have been unified by “trans*” with an asterisk to replace the possible continuation of the term. Further the asterisk was meant to include other meanings, such as agender, nonbinary, genderfluid or genderqueer. However, since the abbreviation is already established (see for example Duden, Meriam Webster, Oxford Learners Dictionary) I omit the * and value that the term trans with an open ending is a community term for self-description.

T4T

T4T is an abbreviation meaning “trans for trans”. It does not only refer to trans people supporting other trans people but also includes prioritising trans people for sharing intimacy and emotional care. The term is almost exclusively used by trans people.

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Appendix A—Cultural Probes Texts

1st Probe: Text of Pink Ribbon Card

Dear participant,

this is the first probe. It was Breast Cancer Awareness Month October and I would like to give you a pink ribbon.

Originally made as a peach-coloured ribbon in 1991, grassroots activist Charlotte Haley personally distributed thousands of postcards with a ribbon very similar to what you are holding in your hands right now. Her grandmother, her mother and her sister had breast cancer. Her cause was written on the card: “The National Cancer Institute annual budget is \$1.8 billion, only 5 percent goes for cancer prevention. Help us wake up our legislators and America by wearing this ribbon.”

Soon, the US-American magazine *Self* and cosmetics brand Estée Lauder planned to issue a similar ribbon, however after approaching Haley, she declined working together because the companies were “too commercial”. So, the companies chose pink as a “female colour”. It would oppose breast cancer, since for some people the disease would mean a “loss of womanhood”. It still features numerous products in the US during October raising awareness and millions of US-Dollars for health care and research causes on breast cancer every year.

However, there is also a lot of criticism on the excessive choice of pink when targeting women’s health. Further, the commercialisation made it a symbol of profit rather than personal health for other people.

I assume that breast cancer affects many genders and that people at risk of getting breast cancer have many different expressions of gender.

You are invited to try on the pink ribbon. Feel free to pin it somewhere, according to your comfort. Comment on the back of this card what you like or dislike about it. Further, you can find a choice of different stickers of which one or more symbols may look familiar to you. Feel free to stick them anywhere you like, probably also on the back of this card.

Can you refer to any of them as an expression of your gender? Would you express your gendered health differently? Feel free to write, scribble or draw your thoughts on this card.

2nd Probe: Master’s tools, Monster’s Tools

Witches, ghosts, vampires. The “Monster Theory” reads monsters as a metaphor for social structures. Often, humans are constructed as monsters in order to use violence and marginalisation. So, monsters are a creation of masters, but recently some monsters gained back their autonomy.

This and the next probe both allude to those monsters. The concept of monsters and masters is inspired by design researcher Ece Canlı. She refers to Audre Lorde, a “black, lesbian, feminist, mother, poet, warrior”, who also died of breast cancer. Lorde held the famous talk “The Master’s Tools Will Never Dismantle the Master’s House”.

Originally, both refer to colonialism and racism, but Canlı also draws parallels to the domination over women and LGBTIQ. In one way or another you might be affected by these tools. I would like you to find those Master’s Tools, the tools used by masters against you. And their counterparts the Monster’s Tools, the tools that help you to gain back your power.

Let’s expose the Master’s Tools and embrace the Monster’s Tools. I have prepared two picture frames for you. One for oppressive master’s tools and one for empowering monster’s tools.

If you found an object fitting to either of the frames – or even both – I would like to ask you to take a picture with your smartphone camera, but there is no need to stick to that procedure. Maybe writing or sketching something down feels more natural than a photo. There is some space left on this frame or in the journal for your comments.

You can send the pictures right away to s.t.denz@student.utwente.nl or by signal, telegram or whatsapp to me +*****. But you can also just collect your thoughts for now and we will take a look at it later. One tool for each frame can already be enough. But if it feels natural to you to find more tools, I’d be happy to see them, too.

MASTER’S TOOLS

For example, a Master’s Tool could be body scanners at the airport, that only allow men with penes and women with breasts. Trans and nonbinary people who have both breasts and penes cause an alert. A master’s tool could also be forcing women to veil their head, so a hijab, but also forcing women to unveil and prohibit hijabs is an oppressive tool. Further, covering up and censoring female breasts but not male breasts can be considered as a master’s tool.

MONSTER’S TOOLS

For example, a monster’s tool can be books written by monsterised people who tell their history and stories. As another example, on the Trans Day of Remembrance, we counteract the silencing of trans people through events and rallies like an annual ritual.

3rd Probe: Monster's Body

You can imagine, that your body was monsterised by a master. You can imagine that this master is similar to "bio-power". The French philosopher Michel Foucault introduced this concept as an interpretation of how modern states control bodies through means such as medicine technology or drugs supplied through a healthcare system. However, that "Bio-Power" is not affecting everybody the same. Those who are marginalised, in our case based on gender, are more strictly controlled. Monsters are being tamed.

This probe is a plush monster or monster doll. A few slips and safety pins are already attached to it. I ask you to use the pins to stick a slip to the monster's body with things that you would like to attach or give to your gendered body. There are already two examples attached. Write on a slip, what gives you the autonomy over your body and attach it to the monster. It can be a technology, a ritual or anything that you like to be connected to your body. Can you also indicate in short why it helps you?

Example: I got my ears pierced, so I can wear all kinds of earrings. I already have earrings in pride colours self-made by friend and would love to wear similar earrings as the strong queer characters in the old Almodóvar movies did.

Example: I got vaccinated and now I feel safe to date other queer people.

4th Probe: Screening Invitation

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25 November 2022

Invitation for Participation in Breast Cancer Screening Programme

Dear Mrs ...,

in many European countries a national breast cancer screening programme exists for women aged between 50 and 70 years. With a letter starting very similarly, you might get invited for this free medical examination earlier or later.

You will either be proposed an appointment right away or you will be asked to make that appointment yourself. You will also receive an additional folder to make an informed decision about participating or not.

Would you decide for or against participation?

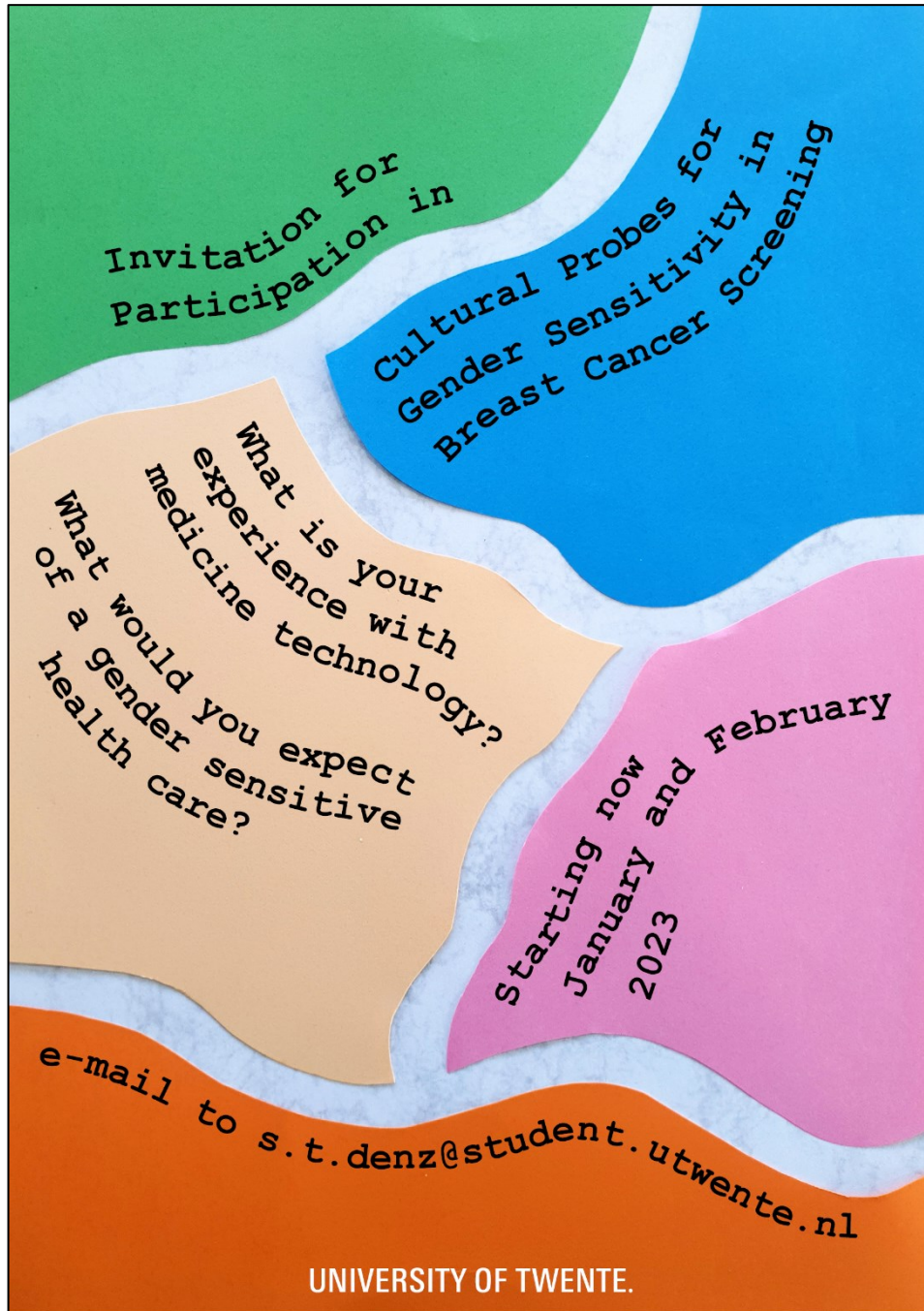
However, now, I would like to invite you to an interview. We will then talk about the finished probes and breast cancer screening technology more in detail. Depending on your location, we can have this interview personally or digitally. If possible I would also ask another participant to join us so we can have a diverse discussion on some questions.

Let me know if and when you would be available by sending an e-mail to s.t.denz@student.utwente.nl, call me or message to +[REDACTED].

Kind regards,

Lais Denz

Invitation for Participation



Hello,

I would like to invite you to an unusual design research project.

Who? Everyone with or without experience in breast cancer screening as well as anyone who could have gotten in the past, could get now or in the future examined for breast cancer. (e. g. women, lesbian, inter, nonbinary, trans and agender people of all ages)

When you ask yourself, if you can contribute, the answer is always: Yes!

You are especially invited if you experience discrimination because of your gender, sexuality, racialisation or disability, as this project aims to sensitise design for often marginalised people.

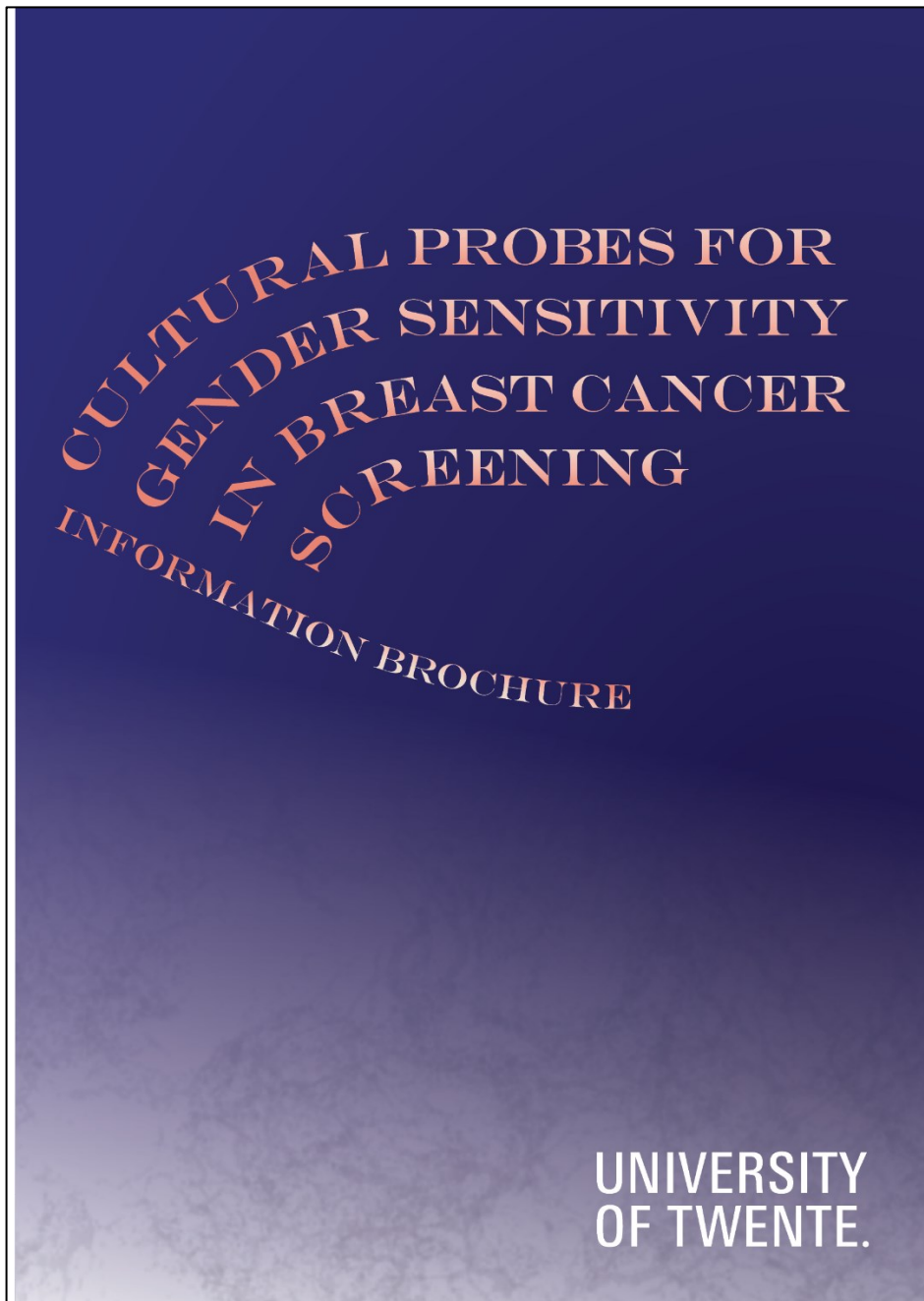
What? The University of Twente is developing a new technology for breast cancer screening. In this thesis project we will extend the research with a focus on gender sensitive medicine and technology together. You will be given „Cultural Probes“. These are small simple objects, such as postcards or figures, on which you can answer or draw in a tangible way.

Duration: Participation will consist of the Cultural Probes and an interview session. The probes only require your attention for a short time in between, whenever you feel comfortable. The interview session will take maximum 1:30 hours if you are available.

Please do not wait to reply to s.t.denz@student.utwente.nl

Best regards,

Lais



Dear participant,

I would like you to consider some information for your participation in this research project. The duration of your participation is several days, but requires your interaction only for a few hours. A first introduction meeting will take place in person, online or by other mean and at a date, that we appointed together.

In the research “Cultural Probes for Gender Sensitivity in the Design of Breast Cancer Screening” so called Cultural Probes are distributed among all participants in order to gain an intimate insight into their opinions, visions and attitudes. The aim of the research is to identify flaws and benefits of breast cancer screening as a gendered technology. Ultimately, we try out a way in which medical technology can be designed gender sensitively.

I may ask for example: What is the influence of technology on our bodies? What role plays technology in experiencing your gender? The research could contribute to gender medicine, a research field that respects health and medicine in relation to gender. Further, it may enable the development of technology to improve health issues concerning breast cancer.

The research is situated in the field of Human Centred Design and not in medicine or medicine technology. The facilitator of the study is not able to give you any diagnostics or medical recommendations whatsoever. The results from the research should not have any influence on your health. You do not require any specific skills or preparation to participate.

Cultural Probes are a design as research method. These are simple objects which are easy to handle, given to you like a present. Rather a means of communication, Cultural Probes help to establish a relation to the researcher and give them an empathetic insight into your life. In contrast to surgical probes, these objects are not gathering material and data by invading a body. Cultural Probes are handcrafted mainly from paper or fabric and resemble objects such as maps, post cards, pillows or puppets. Initially the name was an allusion to astronomical or surgical probes, that are left behind to produce data. These objects or probes are only crafted to a certain extent. They are unfinished. By finalising them with some guidance, you will give insight into your views, thoughts and ideas. Similar to a questionnaire or diary with different sections, but in a tangible way.

You will receive a package containing four Cultural Probes either by mail or given to you at an appointed meeting. You can go through and finish the objects in your own pace and order. However, I advise you to take a few days for each probe and use the order indicated on the objects. I would appreciate if the process of finishing the probes takes not more than two weeks, but you are free to take any time you want. Feel free to talk with friends, family and colleagues about the probes.

After you have finished the probes, I would be very happy to do a follow up interview to address certain question in a more direct way. When you finish the fourth probe you may indicate that you are available for such an interview. This can either be in a focus group or in an individual interview. I will schedule an appointment on which we also take a look at the probes together. If you are not available we can agree on a meeting or you can send back the probes by mail.

Your participation is entirely voluntary. Personal information (i.e., your name, address, contact details, and affiliations that could serve to identify you) will only be used for sending parcels and will not be shared with any third party. Independently, the University of Twente will have access to the informed consent agreement, that is handed to you by the researcher before the start of your participation. The results will be shared pseudonymised in the report (e.g., "participant 1 mentioned...") and the University of Twente holds the rights to use the data and intellectual property contributed by you in the research. You remain anonymous. If you wish to have only certain or none of the contributions of yours used in the research and/or the report you may indicate so by any means (e.g., a note added to the probe, in a phone call or in an e-mail).

You are free to withdraw at any stage from the project and you are free to keep the probes without giving any reasons. If you decide to do so I would be happy to get a short notification from you. At any moment during the research, you can contact the researcher for questions and remarks using the contact details mentioned at the end of this letter.

At the end of your participation, so after you submitted the probes or if applicable participated in the follow up interview or even declared to withdraw from the research, your personal data will be deleted, excluding the data on the form "Informed Consent Agreement". The results of the research i.e., the report and academic paper, that can contain excerpts of your contribution will remain publicly accessible at the University of Twente. The original contributions, are either given back to you, destroyed or, if not requested otherwise, stored by the researcher.

For all questions on the project, the researcher Lais Denz is happy to hearing from you. If you are remaining with questions concerning your own health and breast cancer, we advise you to contact your general practitioner or gynaecologist. You can obtain further information on breast cancer screening from the official websites of your national screening programme:

Germany: mammo-programm.de
+49 (0)30 31 99 851 0
info@koop-mammo.de

Netherlands: bevolkingsonderzoeknederland.nl/borstkanker
+31 (0)88 11 86 300
bkcontact@bevolkingsonderzoekoost.nl

The interaction is meant to be respectful and enjoyable. If you feel that the participation is causing discomfort or want to contact a third person you may want to approach either the Ethics Committee at the University of Twente (+31 (0)53 489 2547, m.c.kamp@utwente.nl) or the supervisor of this graduation project Cristina Zaga.

Cultural Probes are an unconventional design research method, that aims at connecting with participants through play and making presents. When the research and thesis project are completed, you are welcome to receive the results in form of the report or short research paper.

Yours sincerely,

Lais Denz

Researcher: Lais Denz, Master's Student Industrial Design Engineering
Tel: + [REDACTED]
e-mail: s.t.denz@student.utwente.nl

Project Supervisor: Dr. ir. Cristina Zaga, Department of Design, Production & Management (Human Centred Design), Faculty of Engineering Technology
Tel: + [REDACTED]
e-mail: c.zaga@utwente.nl
De Horst 2 (Building 21, HR W254), 7522LW Enschede
P.O. Box 217, 7500AE Enschede, The Netherlands

Informed Consent Agreement

Informed Consent Agreement

For participation in "Cultural Probes for Gender Sensitivity in Breast Cancer Screening"

I hereby declare that I have been informed in a manner which is clear to me about the nature and method of the research as described in the aforementioned information letter 'Cultural Probes for Gender Sensitivity in Breast Cancer Screening'. My questions have been answered to my satisfaction. I agree of my own free will to participate in this research. I reserve the right to withdraw this consent without the need to give any reason and I am aware that I may withdraw from the experiment at any time. If my research results are to be used in scientific publications or made public in any other manner, then they will be made completely anonymous. My personal data will not be disclosed to third parties without my express permission. If I request further information about the research, now or in the future, I may contact Lais Denz (s.t.denz@student.utwente.nl + [REDACTED]);

If you have any complaints about this research, please direct them to the Secretary of the Natural Sciences and Engineering Sciences Ethics Committee at the University of Twente, Maria Kamp, P.O. Box 217, 7500 AE Enschede (NL), telephone: +31 (0)53 489 2547; email: m.c.kamp@utwente.nl).

Signed in duplicate:

.....
Name participant

.....
Date, Signature

.I have provided explanatory notes about the research. I declare myself willing to answer to the best of my ability any questions which may still arise about the research.'

.....
Name researcher

.....
Date, Signature

Introduction Letter

Cultural Probes for Gender Sensitivity in Breast Cancer Screening

UNIVERSITY
OF TWENTE.

Dear participant,

Welcome to this unusual design research project.

In 1999 Bill Gaver, Tony Dunne and Elena Pacenti, a group of design researchers collected intimate knowledge about some realities in which people live. All without the researcher being present with the participants during the research. They introduced a new design research method called "cultural probes". Like space probes, they would send them out and wait over time to let them return data. Like medical probes it would intrude the life of the participant and give insight into their reality. However, unlike their eponyms, cultural probes are neither technologically sophisticated nor intruding the body of their subjects. The objects presented to the participants were small simple objects like maps and postcards on which the participants could draw or comment in a tangible way. Like presents they are given to the participants and remained for several weeks after they were sent back to the researchers.

Much alike, you offered to take part in a similar study. However, the initial incentives of cultural probes changed in the past 20 or so years and became more specific tasks. In our case, we will deal with a particular topic: Breast Cancer Screening Devices in a narrower and Gender Medicine in a broader scope. →

At the University of Twente a new technology of breast cancer screening is being developed. The Photoacoustic Mammoscope promises to be more sensitive and cause less discomfort. The technology does not make use of ionizing radiation like conventional x-rays in mammography screening. However, similar to many early development processes, the perspective of the researchers remains in the field of physics and has only little insight into the diverse circumstances in which later users live. The Cultural Probes are now sent to you to add your perspectives and knowledge to the research of breast cancer screening. Some probes might appear only indirectly connected to breast cancer screening. They will help us to have a profound conversation in the following interview.

You will find four of these probes, numbered with one to four. I advise you to use the order indicated but please do not feel obliged to follow this rule strictly. Do not stop yourself from enjoying doing the things in your own way. Generally, you only need a pen and a device that can take photos. But if you have more tools or craft stuff that help you to finish the probes, please feel free to use them.

You are further given a small journal. The journal should give you space for your thoughts and opinions that you could not bring on the probe. You might want to write or sketch your ideas there and comment what comes to your mind.

In the end please collect all probes and depending on our arrangement bring them to the interview or send them back to me. You do not need to include everything. Feel free to keep for example the journal or any probe if you would prefer not to share what you put on the probe.

But first, I wish you a pleasant time going through the probes,

Lais