Designing for Ambivalence

A designer's research into the role of smartphones for mothers and young children

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DECLARATION

The work presented in this thesis is my own.

Paulina Yurman

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Abstract

This practice-based research explores the role of smartphones for mothers of pre-school children who are their primary carers. For many women, the first few years of motherhood demand the complex negotiation of maternal and non-maternal identities. A period loaded with idealisations of motherhood and childhood, this is often a time of isolation in which mothers use and adapt surrounding resources to respond to multiple demands. In this context, the smartphone is at times used for connecting to work or to non-domestic realms, and at others is given to young children to keep quiet or entertained. Transforming from tool into toy, the smartphone becomes object of competition for parental attention, but equally turns the mother into a rival since its use is often shared. Smartphones represent work, autonomy or distraction for the mother, but also play and pacification for the child, offering multiple and competing discourses that this research explores.

During the trajectory of this research, I have developed a series of experimental and critical design proposals that give form to behaviours brought by smartphones in the childrearing task. The development of these proposals formed the first stage of exploration in this research. A second stage took place in the encounters between people and the designs. At times producing both attraction and rejection, the design proposals helped me engage in conversation with others about practices, often private, that are ridden with ambivalence and guilt.

Informed by critical design, psychoanalytic and feminist perspectives, this research is an example of the possibilities for design to expose unintended uses of technology, to challenge conventional user portrayals by depicting mothers as complex users and to explore potentials for change.

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Timeline

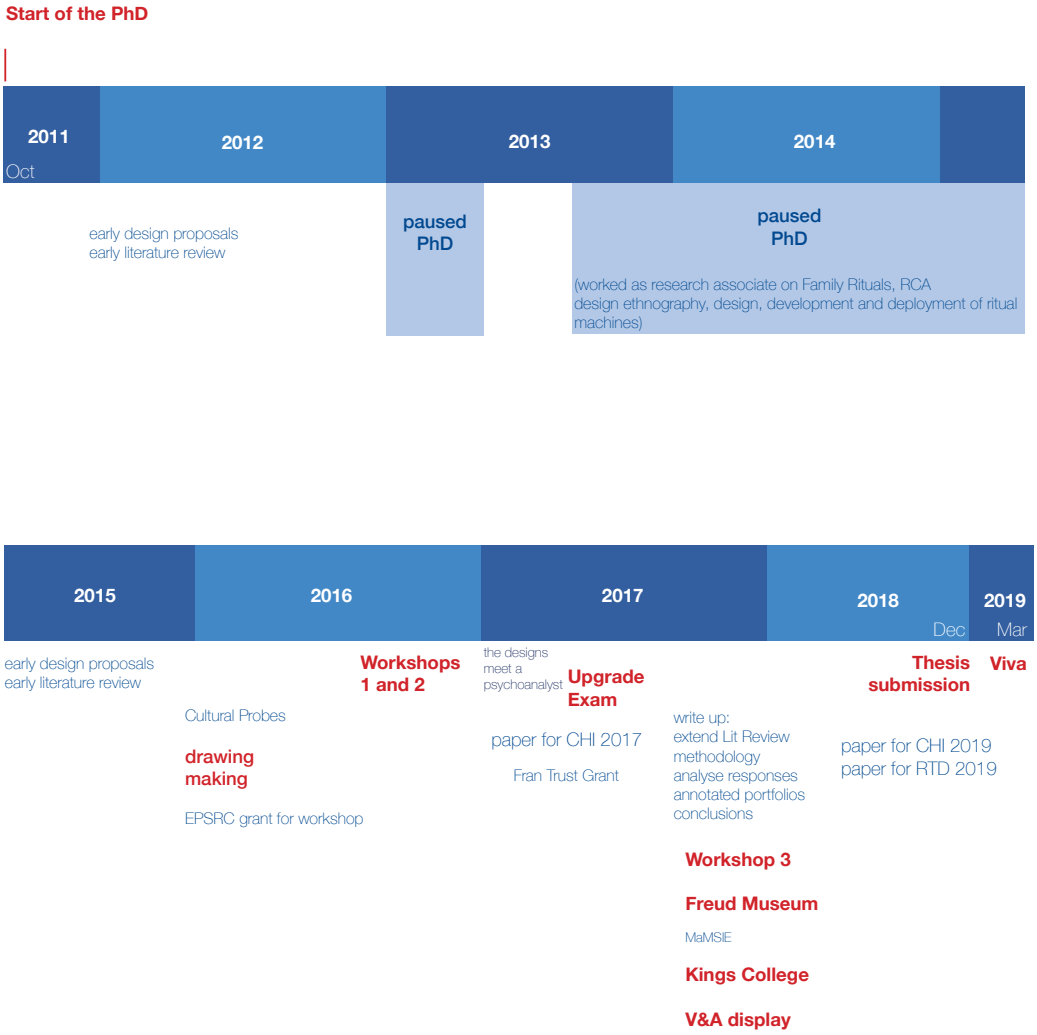

Figure 1. Timeline

Introduction

A Story, told by Siri

There is usually a meltdown in the evening, when baby Fay's colic pains kick in, and two-year old Tom starts to get tired and wants food, a game or a bath. At this point Anna breaks the rules about how much screen time Tom is allowed. She lets him play with me. I am supposed to be only for Anna to use, but now I become Tom's plaything.

When Anna is using me, Tom wants her to stop and play with him. But Tom also wants to play with me. He was once given a plastic toy phone that made a ring when a button was pushed. But this fake phone is usually gathering dust under his bed.

At playgroups, Anna and other parents brag about how good their children are with technology. Tom once changed my settings and Anna never managed to change them back.

As I oscillate between being Anna's tool and Tom's toy, a game of tensions and rivalry unfolds as I go from one end to the other.

Introduction

The story in the previous page, partly based on autobiographical accounts, was used at presentations, narrated in audio through the simulated voice of my smartphone[1]. I use it here to introduce the reader to the general topic of my research.

Smartphones blur the boundaries between the domestic and the public and between work and play. Using them while looking after young children can produce a complex set of behaviours as both parental and non-parental roles are operating. This research explores the particular situation of mothers of young children who have the role of being their primary carers. The period of the first years of a child's life is complex and is extensively studied by psychologists and psychoanalysts, who have paid attention to the significance of toys and preferred objects. D.W. Winnicott (1953) famously developed his theories of transitional objects, items such as a teddy bear or a blanket, to which young children are addicted. These special objects have an important role in the development of the child's identity, but also offer a distinct set of functions to the mother, who learns to use and adapt them as needed, recognising their value and often incorporating the name designated for them by her child into the family's vocabulary.

Much of my practice work is inspired by my own experiences, anecdotes and observations, noticing that the relationship with technologies in family life is complex and can vary according to parents' assumed roles and age of their children. In its versatility, the smartphone can function as helper, entertainer and toy, but is also a connection with the world of work or social interactions, the realm of non-parental identities. In the case of mothers who have the primary task of childcare in the early years, the smartphone can intensify a necessity to manage blurred boundaries. Children are also faced with a tangled relationship with the device: transforming from work tool into toy, it becomes an object of competition for parental attention, but it equally turns the mother into a rival for access to its use. As a result, the smartphone offers multiple and competing discourses.

1. This can be accessed at https://vimeo.com/226111034

Smartphones have pervasively affected all aspects of family life, including the particular dyad between mother and child. Following Winnicott, who with his theories of transitional objects explored their symbolic meaning, and the work of feminist psychoanalysts who presented maternal subjectivities, I soon started to wonder if smartphones have a significant and complex role for both mother and child, and my research explores this space from a design perspective. Through the creation of experimental and critical design proposals, documenting the responses that they raised, I have used the phone to expose tensions and create narratives around the role of technology in the context of mothers and young children. This project is an example of how design can spark critical dialogues and reflections about motherhood, maternal ambivalence, work and life balance, and the role of technology in family life. By presenting previously unexplored portrayals of mothers as complex users, this work explores design's possibilities for critiquing and exposing current scenarios, and for searching potentials for change.

About this thesis

This thesis is accompanied by the book *A Smartphone in the Nursery*, which presents images of the practice of this research, anecdotes and selected responses from those who encountered the work.

The thesis document presents the trajectory of my research, including the literature and methods that inform it and detailed descriptions of the practice, together with documentation, analysis and reflections of the responses that the work produced.

In this introduction I present the main context of my investigation, its research questions and objectives, together with its output, significance, ethical issues, research approach and structure of this thesis.

The context of this research

This research particularly focuses on mothers of pre-school children, who normally have the role of being their main carers and, indirectly, their children. The decision to place the focus of my work on mothers (and not fathers or other care givers of young children) sprung from an intimate and autobiographical understanding of the research situation, and the recognition of a need to voice the lived experiences of mothers going through similar positions. While the work engages with the particular pressures and expectations faced by mothers who assume the primary responsibility of care, many of the experiences that I expose here may also resonate with or affect other types of carers.

In the early period when a child is still small, maternal identities may begin to exist in tension with work or non-maternal roles. This is often a time of isolation and I have noticed (through anecdotes, observations and personal experiences when my children were little) that many mothers create solutions to accommodate simultaneous demands, using digital devices as a form of childcare, though often with reluctance. I have also witnessed criticism of mothers making use of their smartphones during childcare: either for not paying enough attention to a child while being absorbed with the device, or by letting a child use it as distraction. The regular passing of judgment of mothers is not new, particularly in public places, and the involvement of the smartphone here represents a more contemporary version of this exercise (I address this in chapter two). What is slightly new though, is that the smartphone serves both as an extension of the mother's identity and connection with the outside world, and as a toy or entertainer for the child, becoming a partner in the childrearing task. This mediating function of the phone can enhance the paradoxes that are normally inherent in motherhood: mothers regularly need to negotiate between how much they give to their children and how much they keep to themselves, between external and internal demands. Either used in public or in private, the double function of the smartphone is ridden with conflicting discourses and form part of what this research investigates.

Research questions

Ambivalence is the experience of having conflicting reactions, beliefs, or feelings towards a person, object or systems. In psychology and psychoanalysis, it is used to describe states of mind that are complex, often existing in suspension and contradiction with each other, forming part of the human psyche. Ambivalence has become a fertile and useful term and is also used in other social disciplines beyond psychoanalysis. From a design perspective, ambivalence can open a space for proposals that could be intentionally ambiguous, uncanny, open ended or provocative. I ask:

- How can critical experiments in design explore the role of smartphones in the particular context of mothers who have the primary role of care of their young children? This question aims to engage with the ambivalence produced by the competing functions offered by smartphones to mother and child, exploring it through experimental and critical designs that seek to expose it and give it form.

- How can these experimental design proposals be used to provoke responses from diverse publics? First and foremost, I seek to understand how these designs can be used to provoke responses from mothers who are the main carers of their young children (the main context of my research), in an attempt to understand their experiences using smartphones during the childrearing task. I also seek to prompt responses from other audiences: designers and researchers, psychoanalysis scholars and members of the public, pursuing a wider understanding of ambivalence towards motherhood and technology.

- What are the possibilities for design to reshape the tensions brought by smartphones and our relationship with technologies in family life? This research aims to identify potential opportunities for managing the presence of smartphones in the world of mother and infant, explored through experimental artefacts.

Aims and Objectives

This research aims to explore the ambivalence of technology and motherhood through design research. The ambivalence that I engage with is twofold. I first engage with maternal ambivalence, explored by feminist psychoanalysts who examined the complex and at times difficult aspects of motherhood. This complexity is often overlooked in general representations of mothers, including the ways in which design depicts them as passive users of objects and technology. I address this complexity through my perspective as a designer, informed partly by my experiences as a mother who encountered this misrepresentation, both as user and as designer. As a user, I have felt unrepresented in the ways mothers are portrayed as idealised and uncomplicated consumers of goods, depictions that fail to acknowledge complex psychological landscapes. As a designer, I have encountered a need for multiple perspectives to be voiced and understood as valuable sources for informing design processes and for helping diminish the space between designer and user (Bardzell and Blevis, 2010). The recognition of my own and of other women's experiences as standing points for research, exposing unexamined subjectivities and a diversity of lived experiences of mothers as users of technology aim to contribute to feminist design related debates.

I also seek to explore an ambivalence that is a distant cousin of maternal ambivalence: one that is felt towards the presence of smartphones in the world of mother and infant. Motherhood and childhood are often idealised and socially constructed as related to nature and the biological. These constructions are commonly perceived as belonging to a sphere that is at odds with the technological realm associated with smartphones, despite the fact that smartphones are very much part of our daily lives. The interweaving of these seemingly binary poles is entwined with ambivalence: smartphones are simultaneously understood as empowering, educational and polluting. The uncertainty commonly felt by many new mothers as they develop their new maternal identities is entangled with that of current debates about the possible negative impacts of smartphones on health and social wellbeing.

Managing the presence of smartphones in family life can become yet another maternal task. From my view as designer and researcher, I seek to understand the way in which uses of technology in the context of smartphones can be gendered, but within the constellation of motherhood, involving all the emotional contradictions and social expectations women face once they become mothers. As such, this work aims to contribute to an understanding of the complex nature of motherhood and the uses that mothers make of technology to face this complexity. By articulating some of these issues through design, giving them form through suggestive and experimental artefacts that translate critical thoughts into materiality (Dunne & Raby, 2013, p. 35), I aim to bring this debate to wider audiences and challenge conventional depictions of mothers in design. In doing so, this research also intends to contribute to critical design's ambitions to recognise users as complex and contradictory.

I engage with the unresolved ambiguity of ambivalence, here used as a source for design exploration that fed into the practices of drawing and making, giving visual and material form to themes in my research. As the work engaged with uncertainty, I also aimed to playfully portray ordinary moments of motherhood with some humour.

Integral to my research, drawing and making enabled an intimate exploration of the topic, working in tension between the known and the unknown. My description of these processes, acknowledging them as epistemological tools, is an ambition to contribute to a better understanding of the value of creative processes in design for addressing complex situations.

My approach is also an ambition to interweave practices that, although conventionally unrelated, share common perspectives. Feminism, psychoanalysis and critical design aim to question present situations, working through processes of interpretation and debate in search for new insights. I hope that this particular intermarriage of disciplines can contribute to designers' reflections on the multiple, psychological meaning of objects and technology, which may draw inspiration from practices beyond design, and for other disciplines to appreciate what design research can offer beyond its own sphere.

Research approach

This is a piece of practice-based research. The written part of this thesis has been developed to work in combination with a collection of design proposals, in the form of experimental and critical drawings and objects, material representations of my design exploration into the research space. I used these designs to stimulate conversations with participants in three workshops and in a meeting with a psychoanalyst, enabling discussions about practices that often take place in private. The exposure of the work through conferences and displays, to both public and specific audiences such as designers, psychoanalysts and HCI scholars also produced responses that contributed to my understanding of the research space.

The design of these suggestive and experimental proposals emerged from an intimate knowledge of this topic through autobiographical experiences, conversations and observations of other mothers throughout the years. These lived experiences became useful resources that provided me an intimate understanding of the sensibilities of the research, that I used as I aimed to give visibility to situations that often take place privately. My personal background also became relevant through my familiarity with psychoanalysis: I come from Buenos Aires, a city with more psychotherapists per capita than New York (Landau, 2013) and the intellectual culture I inherited from it offered a familiarity with psychoanalysis and with the questioning of family dynamics.

My understanding of the role of objects in the early years of a child's life has used Winnicott's psychoanalytical theories of transitional objects (1953), to which young children may develop a particular attachment, introduced to the reader in chapter 1, where I then move on to feminist psychoanalysts such as Parker (1995) and Baraitser (2009), who have questioned the traditionally child centric perspective in psychoanalysis and explore the mother's standpoint. With this in mind, I look at the mother's particular relationship with transitional objects and with the smartphone. By creating proposals that represent ways in which mothers make use of smartphones during childcare, I am presenting unexamined perspectives of mothers as complex

users of technology, and by implication, those of their young children. Such an approach, exposing the subjectivities of what Bardzell calls the marginal user (2010), stems from feminist design perspectives.

By generating designs that provoke and explore alternative uses of design and technology, I am adopting aspects of critical design perspectives as proposed by Dunne and Raby (2007; FAQ 11) that work on the depiction of users as contradictory and complex. I use this perspective to challenge conventional portrayals of mothers as uncomplicated and passive consumers of goods.

In using my design proposals to produce conversational engagement, inviting subjects to interpret them and to tell me of their own experiences, I am embracing practices that give design proposals performative qualities. Such an approach adopts aspects from established design research practices (both from the UK and abroad) that use design proposals to draw out responses from participants. Examples can be seen in the work produced by the Goldsmiths' Interaction Research studio, in the multidisciplinary project Family Rituals 2.0 (Kirk et. al, 2016), on which I worked as research associate, and in other projects such as Counterfunctional Things (Pierce and Paulos, 2014) or Flaneur's Phonograph (Wang et. al, 2019).

Critical design, feminist perspectives and psychoanalytic approaches are disciplines that work towards exposing what is usually unexposed. Bowen (2009), Bardzell & Barzdell (2013) and Prado (2014) suggest that critical design has recognisable affinities with critical theory traditions that owe their origins to the Frankfurt School, where semiotics, poststructuralism, feminism, psychoanalysis, and Marxism where of primary interest (Bardzell&Barzdell, 2013; Jansen, 2009). Bardzell & Barzdell suggest that critical design could also find powerful resources in feminism and psychoanalysis (2009, p.3302), a theme that I explore here as I find common grounds amongst these perspectives. In psychoanalytic practice, there is a process of discovery through conversation, where uncomfortable silences or slips of the tongue (for example) are useful signals for digging and working around the difficult (Leader, 2015), questioning how things are and how they could be different. By presenting designs that provoke and challenge, stirring at times unto the uncomfortable to engage in conversation and voice multiple experiences, I am

merging and adapting aspects from critical design, psychoanalysis and feminist research to address my research questions and generate new knowledge.

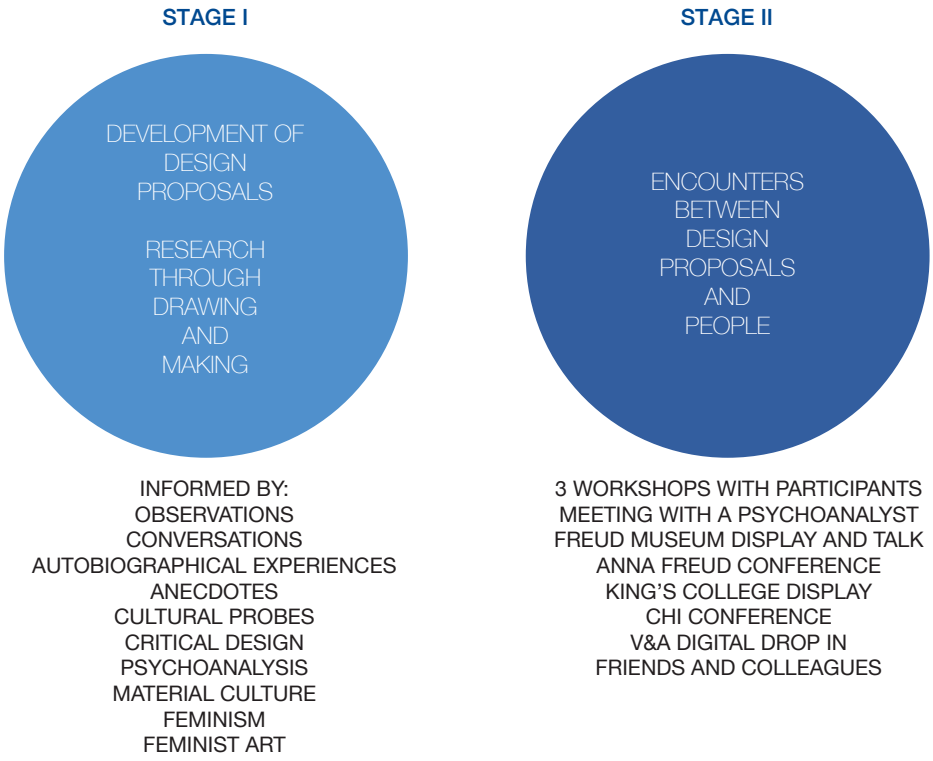

Figure 2. Research overview

Research output

The main output of my research will be this thesis, the images, design proposals, drawings and artefacts that I created to give form to themes in my investigation. Accompanying these proposals are the reactions that they raised with audiences through tailored encounters as described in chapters six and seven, incidents described through anecdotes and a critical reflection of the processes and responses that I engaged with.

The exposure of my work through conferences, publications and exhibitions to design and HCI scholars, to psychoanalytic and feminist audiences, as well as to the public in general, contribute to a wider understanding of design research beyond its more immediate circle of practitioners. Descriptions and reflections of these events can be found in chapter seven. The dissemination material produced in this research

can be seen in Appendix 2.

The book *A Smartphone in the Nursery* accompanies this thesis, designed to present images of the material generated, selected responses[1] and anecdotes.

Ethical issues in this research

This research was carried out within Goldsmiths ethical guidelines[2] and as identified in The Concordat to Support Research Integrity and in accordance with the RCUK Policy and Guidelines on Governance of Good Research Conduct and UK Research and Integrity Code of Practice for Research. Ethics forms were submitted and approved by findings by Design's departmental Research Ethics and Integrity contact.

For every activity that was carried out with volunteers in this research, information and consent forms were given to participants beforehand. They included information about what the research is about and detailed information about participation in each activity (all consent forms and information sheets can be found in Appendix 1, page 244). This information was also communicated verbally to participants, making sure that they understood that they could change their minds at any time and request that their information be retrieved. All names have been changed to ensure anonymity. I address the particular ethical issues of each of these activities when I describe them in detail in chapters six and seven. No children took part in the tailored activities, although in the third workshop, at the home of a participant, young children were present, and I had to make sure that the designs were out of their reach. A public display at the V&A in London attracted visitors, some with children.

1. This book was funded with a small grant from Goldsmith's Graduate School Fund. Further publishing possibilities will be looked into (with Unbound publishers, for example).

2. Which can be found here:
https://esrc.ukri.org/funding/guidance-for-applicants/research-ethics/ and
http://ukrio.org/publications/code-of-practice-for-research/

Significance of this research

This research seeks to bring fresh perspectives for understanding the system of relationships between mother, child and smartphone as participants in a complex triangle. The work draws from feminist psychoanalytic perspectives that explore maternal subjectivities and challenge conventional narratives in psychology that are mainly child centric. Critical design and its exploration of users as contradictory, *even neurotic* (Dunne and Raby, 2007) has also influenced my design of proposals portraying mothers as complex users. Merging aspects from these various perspectives, this work offers an exploration of their common grounds: their ambitions to unravel and expose commonly overlooked psychological aspects in subjects. In doing so, one contribution of this work is the drawing together of critical design and feminist psychoanalysis. The use of critical and experimental designs for exploring my research and for provoking conversation with diverse audiences is also a contribution to an already solid body of work in research through design approaches, where artefacts are understood as the embodiment of designers' discernment of how to address complex situations and are used to draw responses from participants. An important aspect of this contribution lies in the value that the work places on suggestive and evocative designs that invite subjective interpretations, viewing ambivalence and ambiguity as fertile sources. Evoking uses of technology during childcare and private behaviours that are often difficult to articulate, the designs prompted participants to see aspects of themselves being represented, inviting them to voice their own lived subjectivities, an empowering act. This research presents a diversity of experiences previously unrepresented.

Through the creation of objects with emotionally appealing and repellent qualities, used to elicit responses and expose subjectivities, I am also taking an active role looking at the possibilities for design to offer change. Some of the proposals created in this research explored potentials for playfully managing the tensions and intrusions brought by smartphones in family life. These designs, together with the responses that they raised, have opened up a number of possible research directions

to be explored, contributing to further opportunities in design and research.

Industrial design has recognised the commercial opportunities offered by parental fear (through tracking devices, digital temperature and sleep trackers for babies, for example). Many commercial mother and child related products are the result of traditional design perspectives that offer ergonomic solutions but present the experience of looking after young children as full of worry, overlooking the psychological landscapes of mothers as separate subjects. Such conventional approaches leave little room for reflecting on the conflicts in the juggling of demands between family life and personal desires or aspirations (I address this in chapter two). The collection of critical and suggestive designs created in this research expose existing practices that mothers adopt, using technology as part of their childcare strategies. These designs portray a complex picture of motherhood and reveal unexamined standpoints that challenge dominant views. In this questioning of conventional perceptions, it is important to emphasize that the research's focus on the maternal does not claim that the experience of parenthood is the unique privilege of mothers. The idealisation and veneration of motherhood affect mothers as well as fathers and carers who are left excluded from traditional and binary models of parenthood. By questioning the portrayals of mothers as impossible icons, I am thus challenging the gender stereotypes that exist in predominant perspectives.

Structure of this thesis

This thesis is structured into two parts formed by seven chapters, plus conclusions. The introduction of this thesis presents the main topic of my research, research questions, approach and ethical issues. The first part of the thesis presents the theoretical framework that informs my research, while the second part is a description of my methodology and practice. Chapter one focuses on the role of objects for mother and infant from material culture and psychoanalytic perspectives. In chapter two, I dig into feminist and psychoanalytic understandings of the maternal and I explore how consumer goods and smartphones' feature in constructions of

motherhood and on how mothers are judged while using smartphones. In the third chapter, the last of part one, I explore critical design as an approach that aims to expose unexamined subjectivities and viewpoints, ambitions that are also part of the feminist and psychoanalytical stance.

Part two presents the actual practice of my research and might be of particular interest to research through design practitioners and practice based researchers in general. Chapter four gives a description of the methodological mixture of approaches that I used and adapted for this research. I describe the use of artefacts as a form of inquiry, together with Cultural Probes, design-led methods which value interpretation and subjectivity. Here I discuss anecdotes and autobiographical experiences as valuable sources, together with drawing and making as forms of research, integral activities in this work. In this chapter I also present Annotated Portfolios, a useful method for communicating design research and the discourses embedded in collections of artefacts.

Chapter five gives a detailed account of how I explored my topic through drawing and making, visually articulating themes in my topic. I describe how I used Cultural Probes and what I learned through them. I end this chapter with an annotated account of the most significant artefacts I developed and the group of ideas they embody.

Chapter six describes in detail three workshops in which I engaged with participants, using my designs to prompt conversations. This chapter presents an analysis and reflection on the responses and themes that emerged in these events.

In chapter seven I describe other types of encounters, when my proposals met scholars from design and other disciplines, as well as members of the public. I give an analysis of the responses from these audiences.

The thesis conclusions present my reflections about the main contributions of this research and offer a reflective analysis on the work's findings. I discuss considerations on the implications for designers who may work in this field, and perspectives on future possibilities for developing ideas stemming from this research.

Introduction
Context, research questions, approach, output, significance

Anecdotes

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From a psychoanalytic perspective: Transitional Objects
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Ambivalence, Maternal ambivalence
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Chapter six: Encounters with participants
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Analysis of responses
Themes

Chapter seven: Other encounters
Meeting with a feminist psychoanalyst
Freud Museum
Anna Freud and Play conference
CHI
V&A

STAGE II
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Chapter eight: Thesis Conclusions

References
Appendix 1
Appendix 2

Figure 3. Structure of the thesis

Before I present the first chapter of this thesis, I narrate a series of anecdotes that describe situations I witnessed as I gradually developed a sensitivity to mundane events that relate to my research topic. Partly observational and partly autobiographical, the incidents I present here describe situations from the social life of mothering and uses of smartphones, events that affected me as researcher beyond the more private practices I undertook during the design stages and the activities I carried out with participants. I narrate these anecdotes as a collage of moments, as examples that illustrate the complex aspects of the context of this research.

Anecdotes

Anecdote 1
Bus 73, London, June 2017

I am on a bus travelling from Kings Cross towards Hackney. A teenage mother gets on near Essex Road. She is a large girl wearing a t-shirt with the words Dream printed on it, with black leggings and Birkenstock sandals one size too small, worn out under the weight of her large feet. She skilfully manoeuvres her pushchair through the interior of the bus, carrying a toddler. Mother and child sit towards the middle of the bus, becoming centre stage, exposed to the gaze of us, the other passengers. A few minutes into her journey, she takes out her smartphone and starts watching a rap video, the little girl looking expectantly for her mother's next move towards her.

Having myself occupied that physical bus space when my children were little, I can perceive her self-consciousness, our eyes looking at her, judging every move. I can see her seeing me seeing her, and I have felt and understood the weight of the judging gaze of others. On other journeys, I have witnessed mothers sanctimoniously telling their children why they are being strapped to their buggies, why they are being told off. Explanations given loudly for the benefit of onlookers in the confined space of a bus.

She watches her rap video, but every now and then plays a quick peek a boo with her daughter, before getting back to her screen, thus alternating between her maternal role and her individual use of the phone for distraction. After a while she places the smartphone facing the opposite direction, in front of the toddler's face, while she looks out the window at the moving street scenery. The smartphone is her companion, a mobile escape, a shared pacifier for her and her child. I try not to judge, though sometimes I catch myself judging.

Anecdote 2
London, August 2017

After I tell the topic of my research to an acquaintance, he tells me of his two-year old son's eating habits. He was small as a baby and a fussy eater. His mother, anxious to feed and fatten him up, started using the screen of her smartphone or tablet to distract him, so that she could spoon food into his mouth without him putting up too much of a fight. Now that he is a toddler, he will only eat in front of a screen.

Anecdote 3
A&E, Homerton Hospital, London, June 2017

I am with my son at Homerton Hospital, as we believe he has broken his arm. He is now twelve, but he can still be seen at the children's section of A&E. We have been in this room before, the last time when he was four or five. I am suddenly aware that most of the worn-out toys and books in the room my son used to play with, distracting him from a fever, bump or rash, are now left untouched. There is a large TV, but this is off. Most of the children are sitting, absorbed into the games and movies played in their parents' smartphones, keeping them quiet and diverted from their pain.

Anecdote 4
Fracture clinic, Homerton Hospital, London, June 2017

I am at the fracture clinic at Homerton Hospital, waiting for the specialist to check my son's arm. The waiting room is full, and there are a few parents with young children. A mother is trying, unsuccessfully, to calm her baby, who has been crying loudly, non-stop. She is clearly aware that others are looking at her, and visibly tries to calm her baby, now by moving the buggy, now by cuddling her. I try not to look, as I know how stressful a moment like this can be: the gaze of others judging a maternal performance. An elderly lady, whose leg is in a cast, is sitting nearby. She seems annoyed at the mother's inability to make her baby quiet and often looks up from her newspaper, with a disapproving expression. A nurse tries to distract the baby, but to no avail. I offer to fetch some water and the mother explains to me in her precarious English that her baby has missed her nap routine and finds it difficult to sleep away from her cot. The crying becomes louder, as if the baby were crying for the pain of all the patients, who have been waiting in the room for over an hour. A tall woman stands up, approaches mother and baby, and takes out a large smartphone from her bag. She holds the device, playing a loud animation, close to the baby's face, in an attempt to soothe her. A part of me becomes furious, and wonders if the tall woman would had behaved in such a way towards me or other parents in the room who, unlike the mother, do not look like an immigrant. She felt entitled to intervene. Her 'helping hand' is an act of intrusion, ramming her phone, possibly introducing an uncalled for tech addiction into mother and child. The baby does not seem to respond well, and the crying intensifies to such a point that she vomits. Some milky fluid falls over the tall woman and her smartphone (and deep inside me, I feel something like karma). The tall woman quickly moves away in disgust and goes back to her seat. A nurse comes to help and clean the floor. The mother puts the baby in her buggy and goes for a walk, returning some minutes later, with the baby fast asleep.

Anecdote 5
London, July 2018

I am chatting outside my children's school to a mother who knows about my research. She tells me that she sometimes breastfeeds her daughter in order to have a quiet moment when she can check things on her smartphone. She prefers to feed her on her left breast, so she has her right hand free for swiping.

Anecdote 6
London, November 2018

An acquaintance shares a photo she found online, which has produced many angry replies. It shows a mother at an airport, using her phone while her baby lies asleep on the floor next to her. The photograph, which has gone viral, has attracted a large number of condemning responses. After doing some research online I find that the mother in the photo later publicly responded[1], explaining that she had been stranded at the airport and had to sleep on the floor with her baby. When the photo was taken she was using her phone to find out about travel updates and contact her relatives while letting her baby continue to sleep. To accompany her explanation, she has produced a number of photos of herself in more domestic environments. One photo shows her standing with her husband, baby and other children on a countryside field, next to a cow.

1. https://www.scarymommy.com/molly-lensing-airport-viral-photo-facebook/

The previous collage of moments presents examples of incidents I witnessed, where the smartphone was shared between mother and child, used as a pacifier, employed by strangers attempting to silence a child, of mothers being judged for using smartphones while looking after children, of accounts of the use of smartphone during feeding moments. These anecdotes offer a range of narratives that illustrate the lens of my research as I seek to understand diverse experiences about the use of smartphones by mothers who look after small children.

Chapter One

The Meaning of Objects for Mother and Infant

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Introduction

To begin this thesis, I start with an exploration on the role of childhood toys and objects from material culture and psychoanalytic perspectives in relation to identity. I explore the meanings that objects have for mothers and infants.

Child psychologists and psychoanalysts recognise the role of toys and objects in the development of a child's early years. In this chapter I present Winnicott's theories (1953) that look into children's attachment to particular objects (for example a blanket, soft toy or doll), first possessions that provide comfort when the mother is unavailable. Although normally outside the disciplinary realm of design, these perspectives can be valuable for designers of objects, as they focus on symbolic meanings. Readings and inspiration drawn from psychoanalysis in creative practices is not new, as can be seen in the work of surrealists, who used the symbolism of dreams and the unconscious, or in contemporary artists such as Louise Bourgeois and Sophie Calle, who have used and interpreted some of its ideas to inform their work. Psychoanalysis has also offered useful insights to media and communication practices, acknowledging that much of what is in the mind is hidden in the unconscious, fuelling the use of subliminal advertising, for example. In contrast, psychoanalysis is seldom made reference to in product or industrial design. Generally speaking, mainstream design tends to adopt pragmatic, ergonomic, perceptual and sensorial approaches that can lead to solutionist outcomes. By bringing psychoanalytic perspectives into the design of objects used by mother and child I expose previously unexamined subjectivities into this discipline.

The role of objects

> *To understand what people are and what they might become, one must understand what goes on between people and things.*
>
> Csikszentmihalyi, 1981, p.1

The domestic space is an arena of performance and interaction with objects, each with significances and associations with its owners' histories and experiences. In material culture, Daniel Miller (2010) writes about the importance of looking into the meanings we give to objects as they represent aspects of our identity, our past, culture and preferences. Miller proposes that everyone is a curator. People's homes are the gallery space in which identity and personal histories are presented through material possessions. He suggests, for example, that an old clock may eventually come to stand for a grandparent, and gradually the family's ancestors (Miller, 2010, p. 150). There is an investment in the meaning of objects that play a role in the memory of relationships, periods or events, representing mementos of a past, often idealised. Such a perspective provides an understanding of the emotional relationship with everyday objects and I explore these ideas from the context of a new mother.

Becoming a parent is one significant event that marks a new beginning, bringing meanings to the present, but also to the past. Before and after giving birth, many new mothers, when circumstances allow it, spend more time at home than at previous periods. There is a popular idea that pregnant mothers often nest and prepare their home in preparation before birth, turning the space into what they feel should now become a family home. Blankets, soft toys, newborn clothes, nappies, moses baskets and a myriad of other baby items form part of all the *stuff* that is bought in preparation for the baby's arrival. It proliferates and takes over the space, representing, materially, the installation of new demands that need to be managed as the baby grows. The home, perhaps now understood as a nesting refuge for the family, can also be entrapping, since leaving the house can at times be taxing, requiring careful preparation and packing of equipment, also resulting in much time spent at home (Smith, 2014). The baby being often the only companion can at times

make a mother feel lonely and isolated (Lang, 2017).

Pre-maternal objects such as laptops and smartphones can represent a connection with work or aspirations, the non-maternal world. The smartphone in particular, this portable, versatile device is a tool that serves at times for distraction, at others for connection to work and social groups while also offering technological support (with breastfeeding apps, for example). In its flexibility to perform multiple functions, at times shared and used to keep a young child quiet or entertained (on a bus or waiting room, for example) it muddles the division between maternal and non-maternal occupations.

Sociologist Nippert-Eng noted in her investigation about the negotiations between the realms of home, family and work, that the blurring of boundaries between them tends to be particularly noticeable in parents, predominantly when children are young, and this is more visible in mothers (Nippert-Eng, 1996, p. 203). Smartphones echo mothers' assumed ability to flexibly adapt to many demands. A useful object for the mother, the smartphone is gradually understood by the growing child as important. It becomes a coveted object that takes away parental attention and eye contact and is at times shared and at others denied, having a role in the dyad between mother and child. Before I further explore its role, I want to discuss how psychoanalysts have understood the meaning that objects have in the development of the child's identity and their relationship with mother and child.

Transitional Objects

The period of emergence and management of new maternal identities coincides with the gradual development of a child's own identity as a separate being. While the mother experiences baby objects as signalling the arrival of the new baby and her maternal role, the growing infant gradually establishes its own relationship with the surrounding world, first in sensorial exploration and slowly developing particular attachment to some objects. In 1953 child paediatrician and psychoanalyst D.W. Winnicott published his hypothesis on the Transitional Object and Transitional

Phenomena, in which he proposed that infants establish strong relationships with some objects:

> *Most mothers allow their infants some special object and expect them to become, as it were, addicted to such objects.*
>
> *By this definition an infant's babbling or the way an older child goes over a repertory of songs and tunes while preparing for sleep come within the intermediate area as transitional phenomena, along with the use made of objects that are not part of the infant's body yet are not fully recognized as belonging to external reality.*
>
> (Winnicott, 1953, p.1)

For Winnicott, a child's preferred object, is its first possession and lives in a space that is in transition between mother and infant, between the internal and the external, signalling the beginning of the process of experiencing the world as a separate identity from its mother:

> *It is true that the piece of blanket (or whatever it is) is symbolical of some part object, such as the breast. Nevertheless, the point of it is not its symbolic value so much as its actuality. Its not being the breast (or the mother), although real, is as important as the fact that it stands for the breast (or mother).*
>
> *I think there is use for a term for the root of symbolism in time, a term that describes the infant's journey from the purely subjective to objectivity; and it seems to me that the transitional object (piece of blanket, etc.) is what we see of this journey of progress towards experience.*
>
> (Winnicott, 1953, p.8)

The relation with the favourite object (a teddy bear, doll, blanket or soft toy) signifies the infant's capacity to recognize it as 'not-me' and is called for at moments of anxiety. It is a symbol of security that provides relative contentment and the parent learns to know its value as it signals the child's own ability to comfort itself. In Winnicott's psychoanalytic narrative, which conventionally assumes the mother as the main figure caring for the child, the transitional object is a symbol that stands for the maternal breast (or mother).

Winnicott describes the nature of the relationship with such an object and values the importance of the name it is given, incorporating it in the family's

vocabulary. The main characteristic of the transitional object is that it is both a symbol for the maternal breast, although it is clear that it is not the breast, helping the infant develop a distinction between fantasy and fact. Winnicott created a list, a summary of the special qualities in the relationship with this object:

- *The infant has total rights over the object, an absolute omnipotence*
- *The object may be cuddled, loved and mutilated*
- *It must never change, unless changed by the infant*
- *It must survive loving and hating, sometimes pure aggression*
- *It must seem to the infant to give warmth, or to move, or to have texture, or to do something that seems to show it has vitality or reality of its own.*
- *It comes from without from our point of view, but not so from the point of view of the baby. Neither does it come from within; it is not a hallucination.*
- *In the course of years it becomes not so much forgotten as relegated to limbo, where it is neither forgotten and it is not mourned.*

(Winnicott, 1953, p.7)

An aspect of Winnicott's theory on Transitional Objects that is relevant for this research is in the understanding of objects as both physical and symbolic items, something that I later explore through designs that play in tension between the symbolic and the functional (I describe this process in chapter five).

One challenge to Winnicott's theories is that they tend to ignore what occurs from the perspective of the mother. The mother is often portrayed as an entity working and existing solely around the development of the child. The mother's own subjectivity is often overlooked in early psychoanalytic narratives and in recent decades feminist psychoanalysts have challenged this child centrism, offering also the perspective of the mother as an important reference point.

A feminist psychoanalytic perspective

Transitional objects also have a distinct significance for the mother. Feminist psychoanalysis scholar Lisa Baraitser has noted that

> *Winnicott famously reminded us that there is no such thing as an infant. A mother and baby cannot be thought of in isolation from one another, but are both essential components in a relational dyad…. However, what is lacking in this account is the role of objects or 'stuff'*

> *through which this relationship is enacted. What would be more accurate to state is that there is no such thing as a mother-infant dyad...*
> *cultures consist not only of social relations, but also of material relations…. Where there is a mother and infant, there is always some stuff.*
>
> Baraitser, 2009, p. 125

Drawing partly on Latour's actor-network theory (Latour, 1992), Baraitser explores the relations that exist between a mother, a child, and the objects that feature prominently in the maternal work. Acknowledging a triangle of relationships, Baraitser brings the mother's own relationship with such paraphernalia, independent from that of her child's. She observes:

> *The mother has her own distinct relation to the child's transitional object, beyond the specific and special relationship the child has developed with the object itself.*
>
> Baraitser, 2009; p. 1257

Baraitser refers to childhood objects and maternal *tool-beings*, challenging the child-centrist angle by presenting them as the necessary tools for a mother's work. Describing her own experience when her son's blanket fell off a pier into the cold sea, wondering how she would manage to get him to sleep when she needs to walk back home (*'there is no replacement for a lost transitional object'* (Baraitser, 2009, p. 122)), Baraitser is able to offer a useful insight into the relationship that mothers have with the material world surrounding children (toys, prams, cots, baby bottles, etc.). Writing about how indebted she feels towards the creators of Lego and plastic toy phones that mimic real (forbidden) phones and their ability to withstand being used as a hammer, she exposes the dual uses and meanings of toys.

Although not using the term, Baraitser is describing the affordances[1] of the transitional object. Maternal and child related materials exist in a set of interconnected uses that are distinct for mother and child: a teddy bear can offer relative separation through the comfort it provides a child and through the relatively short freedom to be occupied elsewhere it offers the mother. For the mother, transitional objects offer distraction and comfort when it is not possible to provide it (for example when a

1. I am using the term affordances in the extended form, derived from Norman's (2001), who uses it to describe the perceived and potential uses of a designed object: for example, a chair is for support and therefore affords sitting.

parent is driving with a crying child in the back seat) or when the mother is in need of a break from the frequent demands of a small child.

Following Winnicott's list of qualities of the transitional object, I have created a visual model to illustrate the affordances of the transitional object and its triangle of relationships:

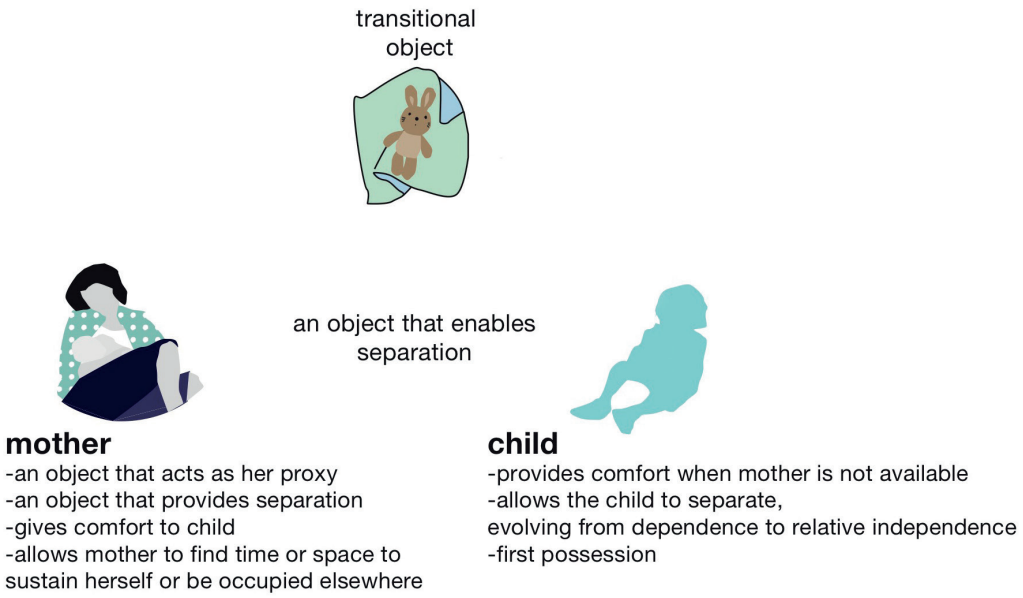

Figure 4. Uses of the transitional object

Designers of toys for children in this age group regularly deal with the challenges of designing for multiple stakeholders. I have experienced this personally, during my years as a designer at LEGO[2], where the design briefs I worked on had to respond to the play fulfilment needs of the child, the educational aspirations of the parent, the particular ethos of the brand and health and safety regulations. LEGO designers Caglio et al. (2016) recognise that parents and children have different needs and expectations: children may be interested in "messy" and "silly" repetitive play, while parents may be more interested in variety; the convenience when it comes to storing toys, and the toys' benefits for the child's development (ibid, page 96). The duality of meanings and functions is both ergonomic and psychological. In the case of smartphones, often shared and alternating between tool and toy, there is a blurring of boundaries between adult and child's needs which I unpack next.

2. I worked as a product designer at LEGO in Denmark from 1997 to 1999.

Blurred boundaries: The added complexity of the smartphone

Winnicott's theories of transitional objects are still relevant and valid today. Teddy bears, blankets and preferred toys are still objects that form the material landscape of family life in early childhood and many child therapist scholars today still base their work around his theories[3]. However, young children are nowadays also exposed to a variety of digital devices that include tablets and smartphones and the use of digital devices is prominent in the way that many choose to play. This is evident in the number of articles in the press and in scholarly papers about young children and their increasing exposure to screens (Alter, 2017; Glaser, 2018; Tucker, 2017; Hoyle, 2018; Brockes, 2017; Haddon and Vincent, 2015; Genc, 2014; Livingstone et.al, 2014; Slutsky & DeShetler, 2016; Rideout, 2013). The multiple affordances offered by objects at this early period has added complexity in the case of the smartphone, as it is shared between mother and child, blurring multiple boundaries. I have already written that the smartphone can come to represent a mother's sense of autonomy and other non-maternal roles[4], representing a break from motherhood or domesticity. It can also, significantly, help maintain a line of contact with others, providing social support and information networks (Johnson, 2014; Morris, 2014; Balaam et al. 2015).

Smartphones can bring complex attitudes towards its use: fascination at how able children are with the technology, mixed feelings for allowing too much screen time, or guilt for using it while doing childcare, as Hiniker et al. (2015) account in their research about parents using mobile phones while caring for their children. The smartphone can allow a parent to check emails or social media while providing a distraction from monotonous routines. In a workshop with participants, which I describe in chapter six, a mother spoke about the boredom and repetitiveness at feeding time that the smartphone could help alleviate by connecting her to the

3. In chapter seven I describe a conference on Play and Psychoanalysis, in which I met child play therapists, many of which worked directly with Winnicott and whose theories still form much of the basis of their work.
4. I am drawing this insight from my own experience and from conversations with many mothers socially and in playgroups over several years. I am aware that it situates this insight in a particular white, urban middle-class position.

outside world. Another mother recounted how she would check emails while her son ate, secretly, to avoid his asking for it. She described feeling regret about previouly combining food and screen time, and a sense of guilt that it may have delayed his speech. These conversations reflect complex and ambivalent relationships with the device, at times bringing relief and distraction, at others intrusion.

Children can also develop ambivalent feelings towards the smartphone. The child competes against the smartphone for parental attention, but also competes against the mother for access to its use, recognising the smartphone as a coveted object, perceiving the significance it has for the mother. The child's appropriation of the mother's tool, transforming it into a toy can also exacerbate feelings of sacrifice of self and work identity for the benefit of the child. To represent this complex triangle of tensions, I have created another visual model, this one illustrating the multiple functions and meanings of the smartphone. Here, there is no longer a triangle of relationships, but rather there are two: one with the smartphone as tool for parent, another with it as toy for child.

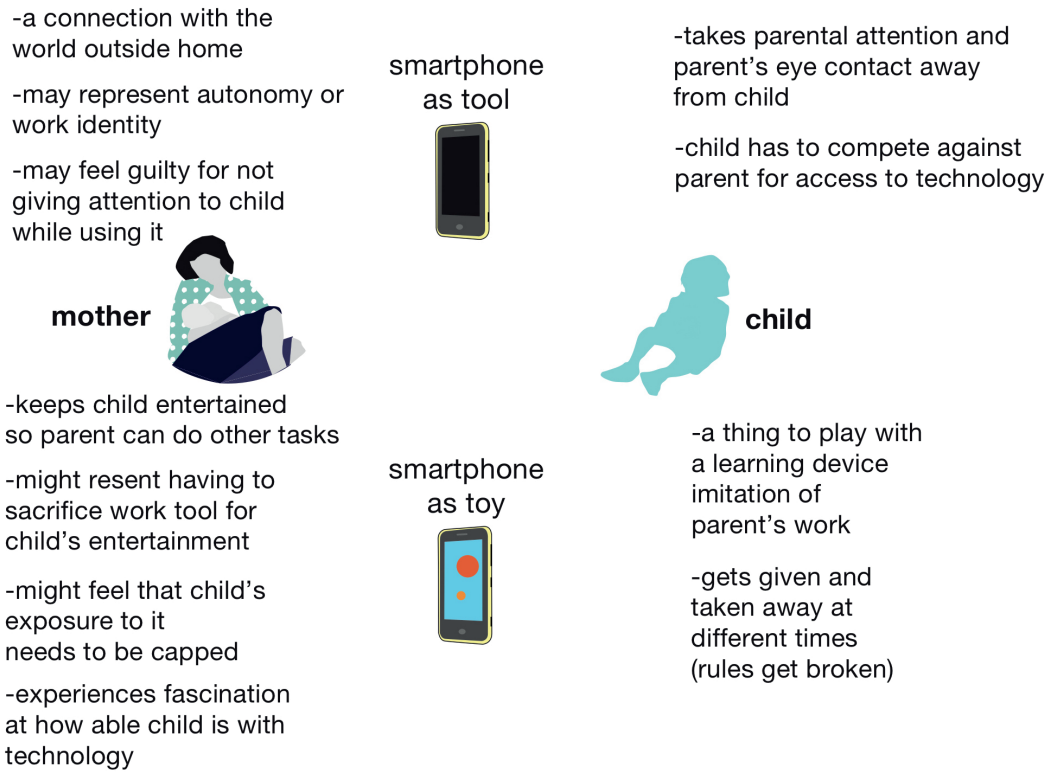

Figure 5. The competing affordances offered by smartphones

If the phone is both companion to the mother and toy for the child, where does it stand? In its multiple, contesting affordances, the smartphone both brings and enhances existing ambivalences. Miller and Sinanan (2012) write that the impacts of new technologies in cultures need not necessarily be understood as intrusions to the way we function as societies, but rather, the way we relate to them reflect the way we relate to each other. Their Theory of Attainment is one in which new technologies are seen as facilitators of behaviours that were already latent, rather than as disruptors to prior modes of beings (Miller and Sinanan, 2012, p.3). Similarly, the way that mothers make use of smartphones to manage their identities, both maternal and non-maternal, and to perform their tasks of childcare, makes evident many of the complexities inherent in motherhood, explored in the next chapter.

Chapter conclusions

In this chapter I have elaborated on the importance of understanding the meanings and associations of objects in the formation of identities for both mother and child. I have mentioned Winnicott's theory on transitional objects, important in the child's development as an independent being. I have looked into feminist perspectives that question Winnicott's child centric approach and suggest that the mother also has a distinct and unique relationship with transitional objects. I then used this view to explore the multiple affordances offered by smartphones to mother and child.

I have suggested that the way that mothers make use of smartphones to manage their identities and childrearing tasks reflect the contradictory complexities of motherhood. In the next chapter I explore the concept of ambivalence, which is present in the dyad between mother and child and in the mother's own management of aspirations and identities, affecting her relationships with objects and technologies surrounding her.

Chapter Two

Ambivalence

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Ambivalence

Introduction

In this chapter, I further look into psychoanalytical and feminist explorations of the emotional landscape during the early period of motherhood and infancy. Motherhood is a notion that is heavily loaded with idealisation (Rose, 2018), leaving little room for difficult, contradictory and often negative feelings that mothers may feel towards their position or towards their children (Parker, 1995). Mother and child related products often work from benevolent depictions of their users and I want to challenge these representations, in order to expose how they tend to overlook emotionally complicated states and contribute to gender stereotypes. I start by a general view of ambivalence and maternal ambivalence before I look into how motherhood is currently represented through consumer goods and the ambivalences raised by smartphones in such constructions.

Ambivalence

Ambivalence is a rich term, useful to describe multiple coexisting and conflicting views. It was first coined by the Swiss psychiatrist Eugen Bleuler around 1910 and was used as the oscillation between love and hate and as the inability to make decisions in action (Bleuler, 1910). Sigmund Freud, the father of psychoanalysis, adopted the term, concentrating mainly in the first of these senses. For Freud, love originates from the ego's instinctual ability to obtain pleasure and is originally narcissistic. Hate, on the other hand, originates from the narcissistic ego's instinctual repudiation of the external world. For Freud, the desire to both incorporate and devour the love object - indicating its destruction - is thus a description of the complexity of ambivalence (Freud, 1915).

Working from Freud's work, psychoanalyst Melanie Klein later presented theories emphasizing the relations in the family, particularly between mother and child, and developed what she called the Paranoid-Schizoid Position: a set of psychic functions in the child's development. According to Klein, the infant's ego experiences from very early on the anxiety caused by the death and life instincts. It is exposed to the reality of the trauma of birth and the life-giving function of the mother, through her love and feeding role. The baby gradually loses the image of the all-loving mother, and accommodates for the good and bad mother, an acceptance that the mother is a real, separate entity, with both good and bad qualities (Segal, 1973). For the infant, to recognise good and bad qualities in the mother is part of the process of separation for the development of an identity as a separate being, involving the r*ecognition that the loved and hated mother are one and the same* (Parker, 1995, p.17). This negotiation of the good and the bad also takes place within the mother. It allows her to differentiate herself from her baby and to recover her own spaces, forming part of her maternal ambivalence (Parker, 1995), as we shall see next.

Maternal ambivalence

Winnicott addressed ambivalence, in particular maternal ambivalence, recognising its significance for the development of the baby. Winnicott looked into the complexity of feelings, both positive and negative, that a mother may feel towards her child, proposing that the job of the mother is to bring to the child disillusion about her, a process that will enable separation. He created a list of why a mother may feel ambivalence towards her child:

A. The baby is not her own (mental) conception.
B. The baby is not the one of childhood play, father's child, brother's child, etc.
C. The baby is not magically produced.
D. The baby is a danger to her body in pregnancy and at birth.
E. The baby is an interference with her private life, a challenge to preoccupation.
F. To a greater or lesser extent a mother feels that her own mother demands a baby, so that her baby is produced to placate her mother.

G. The baby hurts her nipples even by suckling, which is at first a chewing activity.
H. He is ruthless, treats her as scum, an unpaid servant, a slave.
I. She has to love him, excretions and all, at any rate at the beginning, till he has doubts about himself.
J. He tries to hurt her, periodically bites her, all in love.
K. He shows disillusionment about her.
L. His excited love is cupboard love, so that having got what he wants he throws her away like orange peel.
M. The baby at first must dominate, he must be protected from coincidences, life must unfold at the baby's rate and all this needs his mother's continuous and detailed study. For instance, she must not be anxious when holding him, etc.
N. At first he does not know at all what she does or what she sacrifices for him. Especially he cannot allow for her hate.
0. He is suspicious, refuses her good food, and makes her doubt herself, but eats well with his aunt.
P. After an awful morning with him she goes out, and he smiles at a stranger, who says: "Isn't he sweet!"
Q. If she fails him at the start she knows he will pay her out for ever.
R. He excites her but frustrates-she mustn't eat him or trade in sex with him

Winnicott (1949)

Later on, he adds

A mother has to be able to tolerate hating her baby without doing anything about it. She cannot express it to him. If, for fear of what she may do, she cannot hate appropriately when hurt by her child she must fall back on masochism, and I think it is this that gives rise to the false theory of a natural masochism in women. The most remarkable thing about a mother is her ability to be hurt so much by her baby and to hate so much without paying the child out, and her ability to wait for rewards that may or may not come at a later date. Perhaps she is helped by some of the nursery rhymes she sings, which her baby enjoys but fortunately does not understand?

'Rockabye Baby, on the tree top, When the wind blows the cradle will rock, When the bough breaks the cradle will fall, Down will come baby, cradle and all.'

Winnicott (1949)

In Winnicott's perspective, the mother has to be able to tolerate the difficult, positive and negative feelings she has for her baby, without doing anything about it. Although Winnicott's contribution to child psychoanalysis is unquestionable, there has been growing criticism of the role Winnicott assigns to the mother, making her solely responsible for the development of her child. Feminist psychoanalyst Roszika Parker (1995) challenged this child centric approach to ambivalence and investigated the nature of maternal ambivalence. In her book *Torn in Two*, she illustrates maternal

ambivalence with material gathered from interviews and from her work as a psychotherapist, recognising that this material does not provide scientific proof nor indisputable evidence, but rather suggests diverse experiences, with the intention of presenting mothers' positions as separate subjects, rather than as their children's objects (Parker, 1995, p. 9). Parker questioned the psychoanalytic narrative that placed the mother as an all-giving entity and studied ambivalence from the maternal angle. She proposed that there is a contradiction in the maternal ideal: while unity and harmony are at the heart of mothering, the pursuit of closeness and oneness is also considered a symptom of the maternal inability to separate:

> *Mothers are expected to function as their children's sole life support system and then to drop them off unproblematically at school or the playground door.*
>
> Parker, 1995, p.41

> *Mother and child face the task of negotiating a sequence of separations from the moment of birth onwards. However, while children move with more or less difficulty towards an ever-increasing sense of themselves as individuals separate from their mothers, women evolve from one maternal identity to another.*
>
> Parker, 1995, p.103

Parker's study of maternal ambivalence, offers an insightful and provocative description of the contradicting demands that motherhood entails. These are created when society and personal ideals of motherhood are confronted with the realities of a child's development as an independent other, and the mother's own desires to resolve conflictive identities within herself. In the familiar fantasy of the ideal mother that many women consciously or unconsciously pursue, there is also the desire that motherhood will heal the deficiencies of her own childhood, that she will not repeat her mother's shortcomings with her baby, who stands for a baby version of herself. Mothers often feel a yearning for moments when both their children and themselves feel satisfied and well fed, free of conflict and full of warmth, which seem to exist at odds with negative feelings towards her child. Parker suggests that the problem is not so much ambivalence itself, but rather how a mother manages the guilt and anxiety that this ambivalence provokes, suggesting that, if managed well,

these conflicts can potentially pave the way towards a healthy separation. Maternal ambivalence represents the mother's inner ability to understand and tolerate her own shortcomings and difficulties by accepting the accommodation of opposing feelings in herself, and by extension, those towards her child. Acknowledging the coexistence of feelings of love and of hate is painful for the mother, and Parker suggests that this is the equivalent of Klein's position of the baby's loss of the image of the all-loving mother, for the good and bad mother. When ambivalence is present, and accepted, the idealisation and denigration (which are two sides of the same coin) towards herself and her baby diminish. This is potentially achieved if the mother is able to separate herself from her child, accept her own limitations, and create solutions for compromises between simultaneous demands.

> *Maternal ambivalence signifies the mother's capacity to know herself and to tolerate traits in herself she may consider less than admirable.*
>
> Parker, 1995, p.17

Parker argues that maternal ambivalence is particularly difficult to accept in culture: negative, ambivalent or complex feelings that mothers may feel towards their children are unacceptable. In her view, the cultural image of the maternal experience points to a desire to banish ambivalence and to maintain love alone, creating resistance towards more complicated portrayals of the reality of motherhood. Parker proposes that there is an ambivalence about ambivalence, felt by both parents and non-parents alike, embracing the benevolent image of motherhood alone and placing mothers as impossible icons. This is also succinctly described by Jacqueline Rose in her essay on motherhood:

> *Motherhood is in the western discourse, the place in our culture where we lodge or rather bury the reality of our own conflicts, of what it is to be fully human. It is the ultimate scapegoat for our own personal failings, for everything that is wrong with the world, which it becomes the task - unrealisable, of course - of mothers to repair.*
>
> Jacqueline Rose (2018)

The embracing of the ideal image of motherhood is also present in the portrayal of mothers in consumer goods, as I explore next.

Motherhood and consumer goods

> *Women's use of consumer goods and services shapes how they mother as well as how they are seen and judged by others.*
>
> O'Donohoe, 2014

Parker suggests, as we have seen earlier, an ambivalence towards maternal ambivalence and an embracing of the positive aspects of motherhood alone. The mythological image of the good mother is at odds with the reality of motherhood, which can lead to feelings of inadequacy, as explored by Choi et al. (2005), who found participants' need to hide the image of the incompetent mother, resulting in self portrayals of the supermum and superwife. Cook (2011) suggests that contemporary constructions of motherhood often work on ideologies of complete devotion to children; with fears of being a bad mother presenting market opportunities for products promoted to assist mothers into 'good' motherhood. Popular representations of motherhood are closely paired with domesticity and while notions of parenthood, family and home are constantly changing, there may still prevail a notion of the home as a feminine concern (Hochschild, 1989; Sparke, 1995; Beagan et al., 2008). Cultural resistances towards complex portrayals of mothers also affect design conceptualisation of products. Maternal and baby consumer goods inherently carry narratives that are often based on idealised notions of mothers as users. Resulting from solution driven design approaches, these goods tend to respond to ergonomic needs. Some psychological aspects of parenting, such as fear and uncertainty are addressed through electronic products. Examples of these types of products are pacifiers that measure a baby's temperature regularly, sleep trackers or tags for alerting a parent when a child wanders out of proximity. Child monitoring is an example of how technology can address the emotive aspects of parents as users (Beaver et al., 2009, p. 69 and Kerridge, 2015).

Figure 6. Pacifier-thermometer by Summer.
Image from https://www.amazon.com/Summer-Infant-Pacifier-Thermometer-White/dp/B00BRHSD5Y

Figure 7. Pacif-I Bluetooth thermometer.
Image from www.pacif-i.io

Figure 8. Buddytag
Image from mybuddytag.com

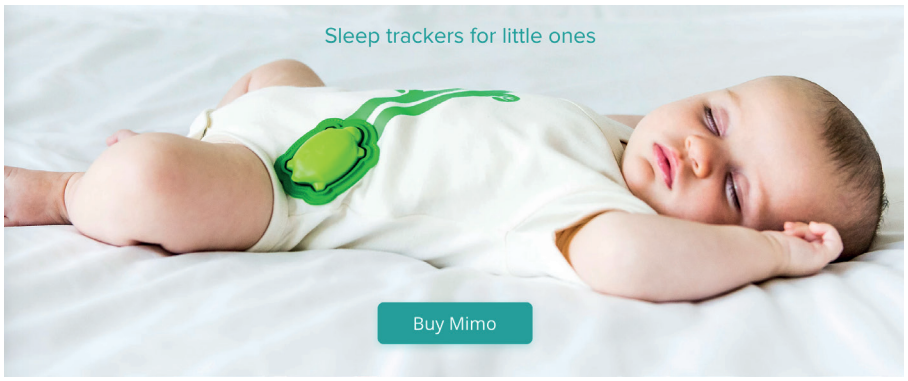

Figure 9. Sleeptracker Mimo
Image from www.mimobaby.com

Parental fear offers abundant marketing opportunities, but reinforces the experience of parenthood as full of worry and mainly child-centric. Such a perspective overlooks the subjectivity of the parent as a separate being. While the good mother is often viewed within the consumption choices she makes for her family and her attitudes towards mothering (Clarke, 2014), little attention being paid to her internal conflicts and the manners in which she negotiates her previous and new identities, as I explore next.

Management of maternal and non-maternal identities

The uses a mother makes of her available resources are the result of complex negotiations between the needs of her child and of her own demands or aspirations. The logistics involved, for example, in the solutions created by a mother who needs to reply to an important message or call while attending to a small child are complex and may involve the engaging of multiple products. Maternal and work identities are often felt at conflict with each other, and this is more acute when children are little (Nippert-Eng, 1996, p. 203). In this crossing of demands, the smartphone sits in the middle, intersecting multiple identities. Any internet image search for the term 'working mother', will produce a number of pictures of women holding a small child while using a phone or laptop. In these popular images, these devices stand as icons of the work identity, while the baby holds a place for the maternal persona, a crossing of the biological and the social, the technological and the organic. Sociologist Arlie Hochschild (2012) suggests that popular images presented by the media give the impression that successful working mothers are doing well because they are personally competent. They manage because of some inner quality that helps them to successfully handle both work and motherhood, not due to any social infrastructure. Different households might develop a diverse set of strategies for managing childcare and domestic maintenance, although research points to an unequal gendered division of labour (Hochschild, 2012; Lake et al., 2006). By ignoring the conflicts and difficulties present in the lives of most working mothers, these popular images create an idealised portrayal of heroic working women because of their personal characteristics (Hochschild, 2012). Their efficiency lies on an inner ability to make use of material paraphernalia and these portrayals are modern day equivalents to advertising images from the 50's used to depict women and household appliances working as a team (Lupton, 1993), their primary identity as home makers and carers.

Figure 10 Google™ image search results of the term 'working mother'

Figure 11: 1950's adverts of house appliances: housewife and artefacts working as a team
Credit: The Advertising Archives (left) and Hobart Ad from www.magazine-advertisements.com (right)

A particularly telling example of an inadequacy in design to address maternal and non-maternal identities is seen in the Be-Cot (figure 12), a cot that can be transformed into a desk. Harnessing the assumed universal ability of mothers to create and recycle, the implicit narrative is one of transformation: as the baby grows enough to leave the cot, the mother regains her previous work identity, having 'bounced back' her body into pre-pregnancy shape (Patterson & Malley, 2014). What is being presented is the idea of continuity and that separation between motherhood and work identity is only a matter of repositioning here. The cot, transformed into a desk, represents the assumed adaptability of mothers to switch from one occupation to the next. While the internal struggle of mothers is often about how to calibrate the levels of separation, separation here is 'safe' because although the mother is working, there is still a connection between desk and cot, and the transformation is not so much a matter of distance but of rotational angle, and the product would still primarily exist within the domestic realm. Additionally, this separation is reversible if a new baby arrives and switching to the previous mode is required. The happy seamless transition is played out by the image of the mother working at her desk, throwing the paper ball in the air as if it were her worries.

Figure 12: Be-Cot desk
Image source: http://www.fabmums.com/2009/08/19/from-bed-to-desk-with-a-simple-switch/

Other attempts have been made to address the conflictive management of identities in mothers. The Hands-Free Breast Pump, for example, allows mothers to pump milk and achieve relative mobility away from their children. In my early pilot interviews during this research I heard accounts of mothers telling of their experiences of using these machines at work, often at toilets. The stories, describing uncomfortable, slightly undignifying experiences, were often told in a hushed voice and an air of secrecy. Having to express milk in a toilet between meetings, concealing leaking milk from a breast and its stain, keeping this call of the biological as clandestine, are alienating and deeply impressing experiences.

Figure 13: Breast pumps
image sources : http://www.amazon.com/Simple-Wishes-Hands-Free-Breastpump-XS-L/dp/B00295MQLU/ref=pd_bxgy_ba_img_y
http://www.busymomboutique.com/pump-a-pair-hands-free-pumping-bra-strap.html

The ambiguous nature of the breast pump images (are the mothers at work or at home?) also reflect issues raised by the maternal body in the work environment, particularly in male dominated corporate environments (Gatrell, 2007). The simultaneous presence of the work tool and the breast pump machinery, with tubes and cables that resemble umbilical cords, seem to imply that the mother can safely concentrate on her work because, although she is still connected to her own biology, she is plugged into the sucking devices that take care of her mother mode while she can focus on her work persona. The cables and tubes can in parallel connect her to the work sphere and to her biological sphere without crossing each other, flowing without conflict like a super highway of the future, an ultimate cyborg (Haraway, 1991). While in the Be Cot-Desk the metamorphosis happens to the product - from

cot to bed, in these images it is the female human that transforms through plugging herself to two objects that represent the modes of worker and of mother. There is no demand of transformation here, but rather to be two things at precisely the same time. The smiling faces of the models seem an attempt to smooth a conflicting set of discourses.

Having explored consumer goods and services that offer market opportunities for assisting mothers into 'good' motherhood, I now want to look into the particular role that smartphones have as part of the experience of motherhood and childhood, perceived as both empowering and intrusive, bringing along a series of conflicting attitudes.

Children and smartphones: rejection and fascination

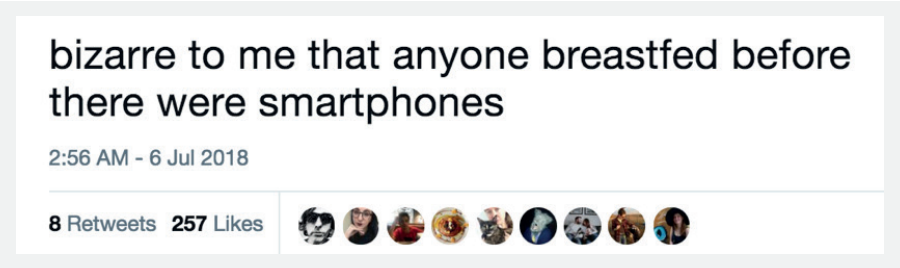

Figure 14. A tweet about smartphones and breastfeeding

Participants in this research told me of using their phones while breastfeeding their babies (in Anecdote 5 in the introduction, and in chapter six, where I describe workshops with participants). The smartphone can have a role in allowing a mother to connect to aspects that are separate from the maternal, while still attending to immediate tasks. Some mothers find the smartphone a useful breastfeeding support: there are a number of apps for monitoring feeding times and schedules or accessing informative tips and videos[1] or for finding and reviewing public breastfeeding places (Balaam et al., 2015).

Using smartphones while breastfeeding raises contradictory attitudes. Some parents see this as a form of intrusion in the biological link between mother and

1. Which can be found at www.parents.com/baby/breastfeeding/tips/best-breastfeeding-apps/ or www.momjunction.com/articles/apps-for-breastfeeding-moms_00382308/ [Accessed 22/11/18]

child, while others might see it as empowering. These discourses resonate with the politics of biomedical mediations in pregnancy and childbirth, where responses towards medical interventions will differ: for some, they will be seen as oppressive, while for others they will signify privilege and status (Johnson, 2014). Science and technology studies scholars Woolgar and Cooper propose that it is important to engage in the ambivalence of artefacts: technology is both good and bad, enabling and oppressive, pointing out that these tensions are manifestations of our competing discourses in our relationships with them (Woolgar and Cooper, 1999; p. 443). The ambivalence towards the intervention of technologies in childcare can be seen in reactions towards designs that incorporate smartphones or tablets. The Kickstarter project *Swipe and Feed*[2], a feeding bottle with an extended holder for the smartphone or the *iPotty*[3], a baby toilet seat with a holder for a tablet, represent designers' intents of commercialising the ubiquitous use of technology during childcare, but as seen in the titles describing them in the media, they were received with great criticism.

Figure 15: Swipe and Feed
Source The Telegraph 17/10/16

2. www.kickstarter.com/projects/1625157232/swipe-and-feed-bottle-feed-your-baby-while-using-y/description
3. www.amazon.co.uk/CTA-Digital-iPotty-Activity-Seat/dp/B00B3G8UGQ

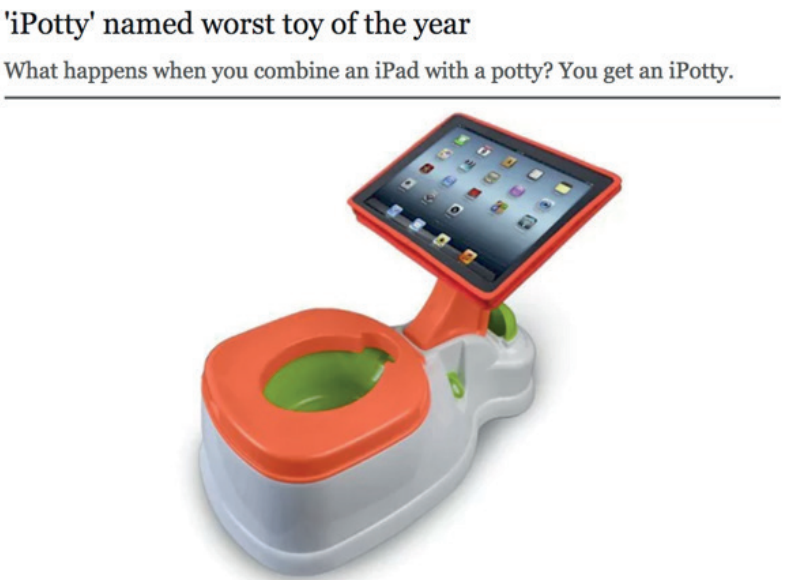

Figure 16: iPotty
Source The Telegraph 20/12/13

Debates about young children using smartphones and tablets are contested, as seen in other media articles (Tumbokon, 2018; Cocozza, 2014; Anderson, 2018) since smartphones are also perceived as educational.

Figure 17: Article about children and smartphones
Source: https://www.raisesmartkid.com/all-ages/1-articles/smartphone-and-tablet-screen-time-good-or-bad-for-kids

In contrast, the notion of mothers using smartphones for themselves in the presence of their children is often viewed with condemnation, as illustrated in anecdote six. I now want to unpack this a little.

Judging mothers with smartphones

The particular condemnation of mothers for using smartphones while they look after their children can at times be acute and represents the social judging of mothers and the impossibility of the icons they are expected to become (Rose, 2018). An example can be in the responses produced by a photo that went viral on social media:

Figure 18: Scarymommy article
Source: https://www.scarymommy.com/molly-lensing-airport-viral-photo-facebook/

The photo showed a mother on her phone while her baby was lying on the floor next to her and produced a great deal of scorn. The mother in the photo made a public response and explained that she had been stranded at the airport for many hours and had to sleep on the floor with her young baby (I am unsure if anyone raised the question on whether help was offered at the airport or if she was left to cope alone). When the photo was taken she was using her phone to find out about travel updates and contact her relatives while letting her baby continue to sleep. To accompany this explanation, she produced a number of images of herself with her baby, husband and other children. I see her shared images as an attempt to depict herself in a more domestic, redeeming light and at one with nature, a response to the viral questioning of her competence as a good mother. Such reactions represent how the smartphone is implicated in contemporary constructions of motherhood, becoming a vehicle of the cultural and social expectations we have of mothers, often unrealistic and cruel.

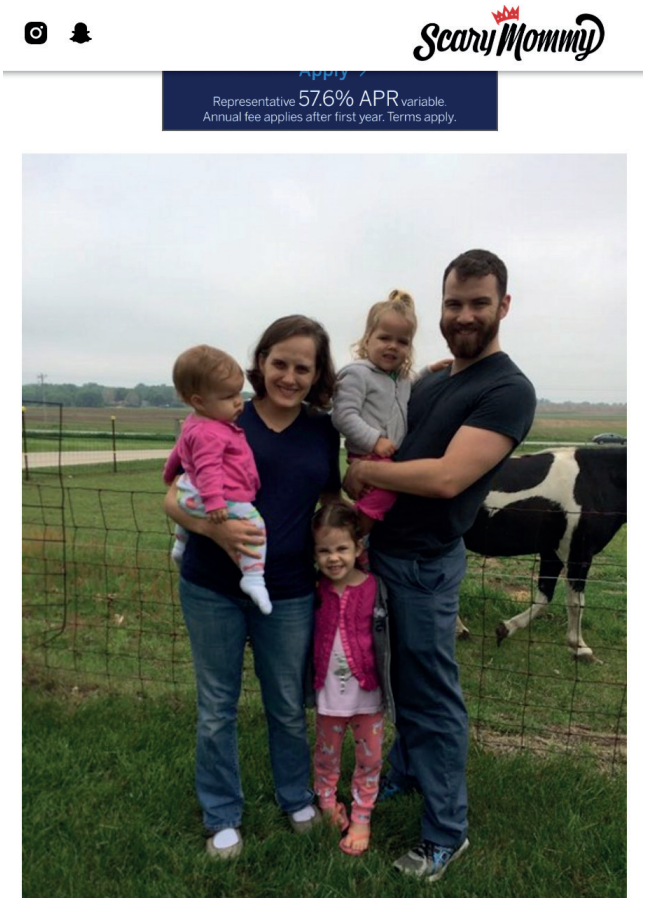

Figure 19: Scarymommy article
Source: https://www.scarymommy.com/molly-lensing-airport-viral-photo-facebook/

Part of the rejection towards smartphones, mothers and infants lies in the notion that mothers are expected to be constantly available to their children, providing care, nourishment, education, love and attention. As the smartphone is used variably to support these functions I have created another diagram of its multiple roles.

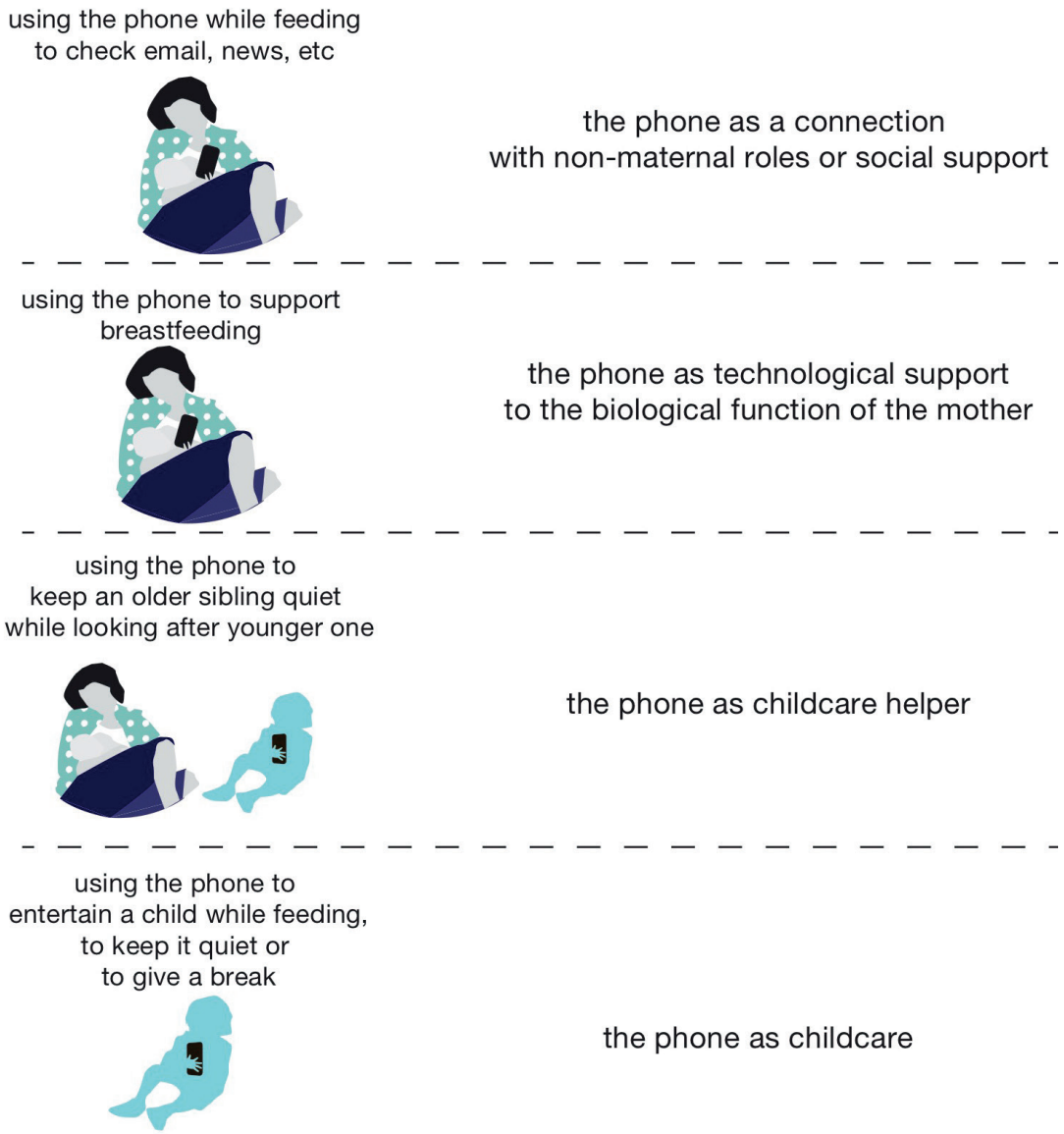

Figure 20: The multiple uses of the smartphone.

I have noticed in conversations throughout the years that some parents affirm that they limit their children's exposure to technology in favour of play, reading or physical activity (fears of exposing children to news, pornography, cyberbullying or radiation are also mentioned). I have also noted that when I ask how much screen time they allow their children, first accounts tend to be conservative (only half an hour per week, for example), but upon further conversing or asking their children it soon emerges that in reality they often have longer periods of screen time, that rules are broken, or that a partner follows a different rule.

The creating and breaking of rules to keep smartphones away from children, can be a reflection of parents' internal conflicts. There is a contrast between the role of the educational, aspirational parent and the one who gives in to technology for play, between a desire to limit children's screen time, and the parental own use of digital devices, which can be for long periods. As these devices are often shared, there is also the wrestling between answering to the needs of the child and to the personal needs of the parent. As one participant put it during a workshop in this research: *"in reality it is all about the parent questioning 'is it ok to leave my child now so I can go and work? is it ok for me to stop reading this bedtime story and go have some wine?"* (Janet, workshop 2, chapter six)

The reluctance to give the smartphone to a small child is also mixed with fascination at how able children can be with it. Parental aspirations are often projected onto the child, who is seen as a future personification of the parent self, but more at ease with new technologies. On one hand the feeling is that children should be protected from the dangers of too much technology, but on the other hand, there is a bit of social bragging of how able they are at using them. It is probable that this fascination is more pronounced with parents of a certain generation, like myself, who did not grow up with smartphones, tablets and laptops and perhaps tend to view children and digital devices as compatible because they are both new.

Class and cultural background will also affect how we view technology and children. For example, in my children's primary school in Hackney (London), which has children from British and immigrant working and middle-class homes, attitudes towards letting children use phones and tablets can vary greatly and is often the case

that children from professional middle-class parents do not have their own phone, or if they do, they have an old model, with very basic functions. In contrast, it is more common to see children from working class households with the latest models of tablets and smartphones, often given with unlimited use. Class and background will inevitably affect the aspirations of each parent, the information they hold true about the dangers and benefits of children using technology at a young age, together with the resources they may or may not have during childcare. This will affect the choice of devices they give to their children and the rules about their use.

Chapter conclusions

In this chapter I have explored ambivalence and in particular maternal ambivalence, an uncomfortable concept that challenges idealised constructions of motherhood and exposes our culture's resistance towards its complexity. I have discussed how consumer goods for mother and infant often work around idealised representations of mothers and I have offered an analysis of societal ambivalences towards the presence of smartphones during the childrearing task, seen as both enabling and oppressive and felt with both fascination and rejection.

Having navigated through these ideas, I now turn to design, the discipline of my practice, to investigate the ways in which these views can be interpreted and given visual form through proposals, while addressing the questions of my research. In the next chapter I explore perspectives from critical design and feminism, approaches that I have found useful for exploring mothers' relationship with smartphones and that share some affinities with psychoanalytic views.

Chapter Three

Disciplines that expose: critical design, feminist and psychoanalytic perspectives

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Disciplines that expose: critical design, feminist and psychoanalytic perspectives

Introduction

In the previous chapter I described how commercial goods for mother and baby often work on portrayals of motherhood as one of uncomplicated benevolence.

I now want to explore design led and feminist approaches that can be useful in challenging these conventional depictions. Critical design is an approach that exposes psychological, often dark emotions in users, beyond ergonomic perspectives. In this chapter I explore these views, which share some common ground with psychoanalysis and that inform my research practice as I give form to the uses and misuses of smartphones during childcare.

Critical design

Anthony Dunne and Fiona Raby coined the phrase Critical Design in the late 90's, although they state that they simply gave a name to an activity that was already widely practiced (Dunne & Raby, 2007; FAQ 1). Their approach values an understanding of our complex relationship with objects, and critical accounts of the changes in society that they can encourage (Dunne, 1999, p.19):

> *Critical Design uses speculative design proposals to challenge narrow assumptions, pre-conceptions and givens about the role products play in everyday life.*
>
> (Dunne & Raby, 2007; FAQ 1)

Critical Design grew as a response towards the 'uncritical drive behind technological progress, when technology is always assumed to be good and capable

of solving any problem' (Dunne & Raby, 2013, p.34). It claims to offer possibilities of alternative realities, while also highlighting the weaknesses of existing scenarios, a 'critical thought translated into materiality' (Dunne & Raby, 2013, p. 35). Its views are that the speculation of such possible realities can be explored and presented through fictional products, framed within the context of everyday life, while embodying ethical and social issues (ibid., p.51). For Dunne and Raby, design can turn abstract issues into tangible examples through the language of designed consumer products. Tobie Kerridge writes that critical design provides an ambition to infuse technology with narrative, to generate debate rather than provide utility, and to move from an academic environment into public settings (Kerridge, 2015, p.159). For example, for the *Is this your future?* exhibition (2004) at the Science Museum, Dunne and Raby created a range of hypothetical products, exploring the ethical and cultural impact of alternative energy futures (Dunne and Raby, 2007). *Poo Lunch Box* (figure 21) evokes the social behavior and etiquette associated to a scenario in which human waste is saved and returned to be used as fertiliser.

Figure 21: Poo Lunch Box by Dunne and Raby (2004), as part of an exhibition on energy futures at the Science Museum
Image from http://www.dunneandraby.co.uk/

Although often impractical, and best presented in the context of a gallery or in academic design research contexts, critical designs such as the *Poo Lunch Box* are examples of the power of critical design in presenting narratives embedded in artefacts, with the implications they would have if they were to exist.

One particularly aspect of critical design that is relevant for this research lies in its portrayals of users as complex by exposing their subjectivities through contradictory desires, as I discuss next.

Complicated users

One valuable contribution of critical design that is significant for this research lies in its challenge of conventional depictions of users. Dunne and Raby propose that design traditionally ignores dark and complex emotions, viewing users as docile and predictable, a contrast with other cultural areas, which accept people as complex, contradictory and 'even neurotic' (Dunne & Raby, 2007; FAQ 11). Through their practice, they create design proposals that aim to stimulate debates amongst designers and consumers about social, cultural and ethical implications of technologies (Dunne & Raby, 2007). Although a number of descriptions about what critical design is have been offered (Dunne, 1999, Dunne & Raby, 2001; 2007; 2013), together with a great deal of discussions, interpretations and challenges of its discourses (Pierce et al 2015; Bardzell & Bardzell, 2013; Bardzell et al, 2012 and 2014; Prado & Oliveira, 2014), critical design is best understood by example. For instance, *Phone Table* (figure 23), a furniture piece part of a collection of objects from their Placebo project (Dunne & Raby, 2001) allows users to place the phone inside a table, signalling with a glow when someone is ringing. Through a gentler signal than a ringtone, the design addressed the need of users to diminish the intrusion of an incoming call.

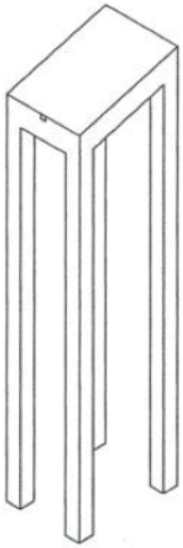


Figure 22: *Phone Table* by Dunne and Raby (2001)

Another example can be seen in the work of Noam Toran, who was a tutor in the course that Dunne led at the RCA. His work often offers designs narratives of complicated users through film. His *Object for Lonely Men* (2001) presents a series of objects specifically designed for a lonely man who is obsessed with Goddard's film *Breathless* (1960). These objects, which include a gun, a pack of Gitannes cigarettes, a rear-view mirror, hat, sunglasses and a mannequin head resembling actress Jean Seberg, allow the character to enact his desires, to 'directly channel the influence of the movie on his fantasies into physical action' (Toran, 2001). These objects are not ergonomic designs. Instead, they address obscure obsessions and offer a picture of a user with slightly pathological behaviours.

Another example is Revital Cohen's critical design *Artificial Biological Clock* (2008), which informs the user when she is physically, mentally and financially ready to conceive by reacting to the information supplied by her doctor, therapist and bank manager (Cohen, 2008). Her proposal questions the relationships between biology, society and technology, while focusing on one very specific topic (the prospect of becoming a parent) for a very particular type of user (one with a therapist and personal bank manager). The proposal is telling us the stories and needs of its potential user through the issues it is trying to address while embodying the designer's response to themes about quantified-self technologies, and the alienation from biological self-knowledge they may cause.

Figure 23: Still image taken from Toran's film *Object for Lonely Men* (2001).
Image source: http://noamtoran.com/

Figure 24: Revital Cohen's *Artificial Biological Clock* (2008)
Image from www.cohenvanbalen.com

Another example is Nelly Ben Hayoun's *Cathy the Hacker*, a critical design that presents us a user that purposely distorts the data measured by her pedometer, heart monitor and server, to alter the information for her health insurance (Ben Hayoun, 2006). This project presents the complexity of our relationship with objects and technology, and the psychological and social meaning they come to have for us, beyond the immediately practical.

Figure 25: Still from Ben Hayoun's *Cathy the Hacker* (2006), in which Cathy asks her daughter to add steps to her pedometer
Source: https://vimeo.com/2173766

Dunne and Raby write about the value of design for acknowledging dark, complicated aspects of users. In Design Noir (2001), they present us with a landscape in which the design of products and environments can acknowledge the existence of complex psychological aspects of the human psyche, such as paranoia, loneliness, lust, etc. Dunne and Raby give a few examples of existing designs that recognise controversial issues, for example special drive-in facilities for prostitutes and drug users in the Netherlands or implants that can produce female orgasms by electrically stimulating the spinal cord (Dunne and Raby, 2001, p. 51). They also mention Anatomically Correct dolls, designed for counsellors who work with children suspected of having suffered sexual abuse, to illustrate the power of

designed objects to give form to difficult issues:

> *their anatomical realism, expressed through a language we associate with child-like abstraction, makes them very disturbing indeed. Again, the mere existence of the object acknowledges that all is not well.*
>
> (Dunne and Raby, 2001, p.51).

Figure 26: Anatomically correct dolls
Image from www.teach-a-bodies.com

Although anatomically correct dolls are indeed object examples that not all is well, they do not fall into the critical design category, as they are not designed as comments on society. They are objects that are used to help children illustrate traumatic experiences and represent the potential of objects to embody aspects that are difficult to communicate verbally.

Despite critical design's claims to provoke against the status quo, it has paid little attention to feminist discourses. I propose that through depictions of the complicated attributes of users, critical design can be useful in challenging gender stereotyping through the exposure of the difficult aspects of motherhood, helping these ideas enter public debate, as I discuss next.

Feminist perspectives in art and design

A questioning perspective into the products for mother and child became personally relevant once I had children. Like many of my peers, I did not feel represented in the idealised icons of benevolent motherhood commonly portrayed, nor did I feel that the real chaos of motherhood, at times wonderful, at times difficult, was being properly addressed. As a designer, I gradually became able to identify the narratives implicit in the designs of such products. Most commercial mother and baby products are the result of design approaches that offer solutions (for getting babies to sleep, for increasing mobility in pushchairs, sterilising feeding products, for example), focusing on ergonomics and problem solving while overlooking the psychologically complex. I soon felt that if challenged, these design discourses could help expose female and maternal subjectivities. Dunne and Raby view traditional approaches as part of an affirmative design tradition, at the opposite end of the design spectrum from critical design (Dunne and Raby, 2013, p. 34). A careful unpacking of the complex relationship of mothers as users, with the objects that populate their realms could open up new research spaces and feminist approaches can help expose overlooked perspectives.

Feminism, as a movement and discipline has been established now for many decades. Today there are Feminist Cultural Studies, Feminist Science Studies, Feminist Cultural Studies of Technoscience, each a hybrid and interdisciplinary field (Smelik & Lykke, 2008). One of feminism's useful contributions has been the feminist standpoint theory, which maintains that knowledge is situated, advocating for the use of women's experiences as standing points for research (Harding, 2003). As Bardzell (2010) suggests, a feminist, critical approach in design could help unravel dominant perspectives in culture. Bardzell proposes opportunities for HCI and design practitioners to draw on feminist approaches in research, advocating that they can bring clarity 'in the way subjectivities and experiences with technologies are gendered' (Bardzell, 2010, p.1304). Bardzell also proposes that feminist standpoint theory's alternative approach to knowledge introduces the domain of the '*marginal*

user', bringing with it new methods and processes in user research (Bardzell, 2010, p.1302).

Design historians have often referred to portrayals of gender as fundamental factors in the design and consumption of products (Cockburn & Ormrod, 1993; Lupton, 1993; Sparke, 1995; Pink, 2004). Product design has a history of developing gender specific designs for fashion, beauty and hygiene, often working around constructed ideals of the female user (which include ideals of mothers). Feminist design criticism analyses the portrayal of women as consumers, proposing strategies to avoid gender assumptions in the use of everyday technologies. For example, Cockburn and Ormrod (1993) looked at the way the microwave is designed, manufactured and presented as a product, highlighting the associations it brings with it of women as consumers and objects. Feminist design historian Cheryl Buckley (1986) writes about the importance of recognizing the influence of women in the history of design beyond their roles as consumers and objects of representation. Bardzell raises the question about how we can design artefacts and experiences that go beyond assumed gender practices (Bardzell and Blevis, 2010, p. 59). Although the number of female product designers is increasing, product design is predominantly male, and Bardzell proposes that employing and listening to female designers can enrich design with a diversity of experiences and viewpoints, diminishing the space between designer and user. I hope that my unique perspective as female designer and researcher, together with the accounts of the participants in this research, can offer a critical look into the relationships with objects and technologies associated with constructed maternal identities. These views could challenge assumptions and provide a fresh angle into often underexplored viewpoints, contributing to wider discourses about gender roles and offering possibilities for design to reshape the effects of technology in family life.

Prado and Oliveira (2014) take issue with the lack of political accountability that they observe in critical design and call for more diversity in its practitioners and the representations it offers. Despite critical design's claims to challenge the status quo, it has paid little attention to feminist debates. Critical designs that address female subjectivities are relatively few in comparison with the

majority of its output. Revital Cohen's *Arti icial Biological Clock* (as seen in figure 24) is one example of critical design that explores the subjectivity of its user through its narrative. Another example is Hiromi Ozaki's *Menstruation Machine* (Sputniko!, 2010), a garment resembling a chastity belt, that replicates the pain and the bleeding of the menstruation. Designed to be worn by anyone who wishes to experience menstruation, the device was presented in a video featuring a boy, wearing the device and walking around town with a girlfriend. The video was shown in social media and influential blogs, prompting viral discussions. *Menstruation Machine* is an example of how design can help expose experiences that are often considered taboo or unrepresented.

Figure 27: Sputniko!'s *Menstruation Machine*
Image from sputniko.com

Feminist perspectives have long found strong outlets in art practices. There is now a significant and well-established body of work exploring situated gendered experiences of the female body, domesticity, motherhood, to name a few. For example, second wave feminist Martha Rosler's 1975 film *Semiotics of the Kitchen* is a slow and monotonous filmic representation of kitchen objects in alphabetic order, symbolizing the female's task to learn the names of the tools she is expected to use (Thill, 2013), and the repetitive monotony of domestic work.

Figure 28: Martha Rosler's *Semiotics of the Kitchen* (1975)
Screengrab from film, source www.metmuseum.org

Influenced by psychoanalysis, Louise Bourgeois' work, deals with the relationship between mother and child, women and the home, the female maternal body, amongst others. Her *Femme Maison* (1994) sculptures work around ideas of the home as a feminine space, forming part of the female body.

A more recent example of feminist art, this time addressing the multiple demands of motherhood can be seen in Kessel's *In Balance With* (2010), a performance showing a mother and daughter sitting at opposite ends of a seesaw, where toys, food, pots, a violin and other objects are gradually added on the daughter's side. The work represents the continual strive for balance in the juggling act of work and

Figure 29: Louise Bourgeois' *Femme Maison* (1994)
Image source: www.artforum.com

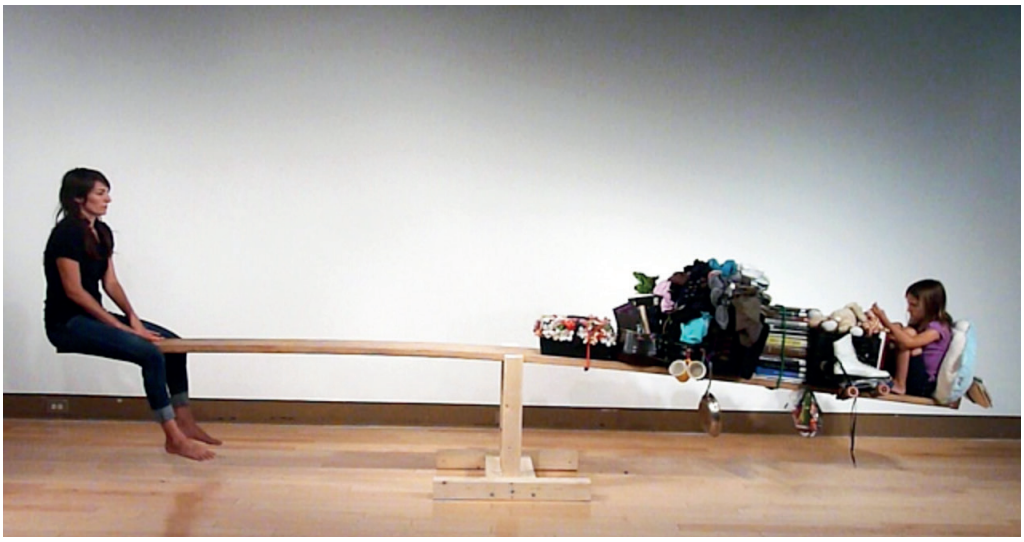


Figure 30: Courtney Kessel's *In Balance With* (2012)
Image source: courtneykessel.com

parenthood.

The specific situation of mothers who are the primary carers of their children presents us with a particular situated perspective. In this research this is looked through the particular role of smartphones, explored with a critical design approach that is informed by feminist and psychoanalytical perspectives. These disciplines share common grounds in their attempts to explore subjectivities and overlooked psychological landscapes. Critical design and psychoanalysis in particular, claim

an ambition to dig and expose that which lies underneath. I now explore these similarities with a little more detail.

Embracing weirdness: common grounds between critical design and psychoanalysis

The Freud Museum's website has an introductory video about Freud, the museum and psychoanalysis. In it, Stefan Marianski, the museum's head of education, relates that many visiting students remark that they find Freud and psychoanalysis *weird*. *'And it is!'* Marianski admits. '*We are not trying to convince them that it is not weird. We are trying to engage them with that weirdness of psychoanalysis, and perhaps generalise that into something that is very weird about human beings'* (Marianski, 2017). In another video from the museum, numerous psychoanalysts also admit that psychoanalysis is weird because *'it addresses what we don't normally reach'; 'it deals with stuff that is outside the normal daylight; dreams, sexuality, mistakes we make, the hidden things you keep hidden from yourself'* (Freud Museum, 2015). Does this not sound a bit like the claims of critical design?

> *Critical design is about not taking things for granted, to question and look beneath the surface.*
>
> (Dunne and Raby, 2009).

Bardzell & Bardzell propose that critical design has unmistakeable affinities with the Frankfurt School of critical theory, to which traditions of psychoanalysis and feminism, amongst Marxism, semiotics and poststructuralist also owe their origins (Bardzell & Barzdell, 2013, p.3300). Bardzell & Bardzell also suggest that critical design could find powerful resources in feminism and psychoanalysis (2009, p.3302). Similarly, Simon Bowen proposes that the theory offered by Dunne and Raby's critical design derives from an ancestry of critical theory ideas originating from the Frankfurt School through its reflective and transformational nature (Bowen, 2009). Prado also finds the influence of critical theory in critical design:

> *Dunne's original formulation seems to be profoundly influenced by the work developed at the Frankfurt School (the birthplace of critical theory), mentioned directly and indirectly.*
>
> (Prado, 2014)

Dunne recognises that some of the issues raised by critical design overlap with those addressed by the Frankfurt School:

> *Many issues touched on here, such as art's relation to everyday life, and the need for art to resist easy assimilation, overlap with those already addressed by the Frankfurt School and others in relation to other disciplines such as music (Adorno), painting (Marcuse), art (Benjamin) and drama (Brecht).*
>
> Dunne, 1999, p.68

Later on, however, in their book *Speculative Everything* (2013), Dunne and Raby state that

> *When people encounter the term critical design for the first time, they often assume it has something to do with critical theory and the Frankfurt School or just plain criticism. But it is neither. We are more interested in critical thinking, that is, not taking things for granted, being sceptical and always questioning what is given.*
>
> Dunne and Raby 2013, p.35

Both critical design and critical theory have been criticised for their elitism (Bowen, 2010; Prado, 2014). Bowen points that the criticisms of being elitist contradict the democratic values invested in participatory design (Bowen, 2010, p.1), while Prado, argues that critical design is theorised within the 'safe confines of developed, European countries, and practised largely by privileged and mostly white, male, middle class crowd' (Prado, 2014, p.4). Psychoanalysis also has strong links with the Frankfurt School. Freud's ideas shattered bourgeois values and made strong contributions to radical concepts associated with the avant-garde culture of critical theory (Whitebook, 2006). Many prominent psychoanalysts gave lectures that were sponsored by the Frankfurt school (ibid, p.75) and many of its members studied psychoanalysis as a tool for the critique of modern society (Kageura, 2009).

Psychoanalysis has also been accused of elitism, although this is an ongoing debate, since self-discovery and self-knowledge is not necessarily exclusive to

middle and upper class alone (Spiegel, 1970; Notio, 2006; Brearley, 2000).

In this research, the common grounds that I have found are shared between critical design and psychoanalysis lie in their ambitions to expose what is usually overlooked and in its value of dialogue, subjectivity and interpretation. Freud had an important affinity with archaeology, not only did he amass a vast collection of ancient figures, he read extensively on archaeology and used archaeological metaphors in his writing (Bowdler, 1996). The ground-breaking point of psychoanalysis lied in its attention to the hidden realms living in the mind of the subject, rather than in physiological functions. Like psychoanalysis, critical design addresses the psychological needs of users, beyond ergonomics, and recognises obscure, dark and neurotic behaviours. In his work, Freud dug into the minds of his patients to uncover past, hidden experiences and memories, reconstructing them through interpretation, a practice that, in principle is followed by most practising psychoanalysts today. In the working dynamic of psychotherapy, there is a process of unearthing, of discovering though conversation. The skill of the therapist is to identify signs for digging, signs such as slips of the tongue, uncomfortable silences, nervous laughter, anger, pain, discomfort. The work requires that both therapist and patient (or client[1]) engage and work with the difficult, through dialogical engagement to get a deeper understanding of the self, and to question how things are and how they could be different. The prism of critical design also aims to engage with problematic situations, to try to reach deeper understandings of people, if not specifically of the self. Psychoanalyst Darian Leader proposes that

> *Contemporary culture likes to see human beings as one dimensional, as if human desire could be reduced to simple objects. Psychoanalysis on the contrary, sees desires as emerging in the gaps in what is being said, in mistakes, in slips of the tongue.*
>
> (Leader, 2015)

Holding on to the difficult to unravel that which lies underneath is an approach that informs the practice of this research. Methodologically, I am interested in exposing maternal subjectivities in the relationship with smartphones in family life,

1. There is an ongoing debate about whether those who seek the help of a psychotherapist should be called patients or clients (Joseph, 2013)

addressed through experimental and critical designs that give form to their multiple discourses and stimulate dialogue and reflection. With this in mind, I now move on to the methods I used in my practice to explore this research space, which I describe in the next chapter.

Chapter conclusions

In this chapter I have discussed critical design as an approach that exposes our complex relationship with everyday objects and technologies. A reaction against solution driven design views that tends to depict users as predictable, critical design explores the dark 'even neurotic' aspects of subjects (Dunne & Raby, 2007; FAQ 11), exploring people as complicated and contradictory. It is this particular aspect of critical design that I find useful for this thesis, as it is compatible with a critical analysis of the complex relationship that mothers (and by implication their children) have with smartphones.

I have argued that there are shared positions between critical design and psychoanalysis, in their value of interpretation and subjectivity, and in their ambition to expose that which lies underneath, thus challenging the status quo. I have also pointed out that despite critical design's claims to be provocative, it has paid little attention to feminist discourses, which at times merge with psychoanalytic perspectives in thier emancipatory ambitions. I have argued that already well established in art practices, but little explored in design practice, feminist outlooks could offer valuable considerations about unexplored female subjectivities and their relationship with design and technology.

In the next chapter I present the design methodologies that I used for exploring the ambivalent relationship with smartphones and their competing discourses, resulting in experimental design proposals that were useful for stimulating interpretation and dialogue.

PART II
METHODOLOGY
AND PRACTICE

Chapter Four

Methodology and Methods

Chapter Four

Methodology and Methods

Introduction

In previous chapters I presented feminist psychoanalysis and critical design as perspectives that share common grounds in their aims to expose unexamined subjectivities, and the potential for design to portray these through proposals that respond to fantasies and desires. In this chapter I present the methods that inform the practice aspect of my research, before I describe in detail the actual design activities (in chapter five) and the social events in which the designs were encountered by people (in chapters six and seven). I have chosen to describe my methods while reflecting on the rationales they share with each other and with the theories that inform this work. This means that they are not presented chronologically, but rather they are unravelled in a manner that makes narrative sense. Many of the existing reviews on the methods designers use stem from third person accounts, design educators or academics who observe designers' work from an outsider's perspective. Nigel Cross points out that designers are often not very good at explaining how they work, with a tendency to describe the products of their work rather than their processes (Cross, 2011, p.6). Similarly, Mäkelä et al. observe that one challenging aspect of studying creative processes is that artists, designers and craftspeople can have complex thoughts and beliefs about their way of working, at times not knowing the explicit origin of their ideas and approaches, often inherited from colleagues, masters and literature (Mäkelä et al., 2014, p.5). I have become aware of my own difficulties when trying to describe the way in which I design. The observations made by scholars who are not designers have helped me articulate and make sense of my own practice, and to find a language to describe my processes, understood both as outsider and as insider-practitioner. I believe that designers often need a certain level of naivety when approaching a subject, studying it as if for the first time, discarding any assumed givens about the situations they address. The process of describing

my work will then involve a recognition of this innocence at the beginning of a project and the necessary acknowledgement of the multiple theories, approaches and insights that inform it.

In the first part of this chapter I discuss research through design, that is to say, research in which designers address the potentials and problems of a situation, resulting in conceptual and practical insights (Gaver, 2012). My work is situated within this methodological framework, which considers artefacts and accounts of how these are interacted with as significant outcomes. The use of artefacts as a form of inquiry is an established methodology in design research and HCI and I give some examples of previous projects that have used this approach, as a form of methodological literature review.

In this research, I have developed a methodology that used suggestive objects and drawings with provocative and critical insinuations about our relationship with smartphones during childcare, inviting participants to interpret them and to tell of their own relationship with the device, and I describe this particular methodological intention. I address the need to represent previously overlooked experiences, and the autobiographical as a resource for research, a stance that stems from feminist perspectives, which I discuss here, together with the role that anecdotes had in affecting me as researcher.

In this chapter I also discuss Cultural Probes, a design led research method developed for early engagement with participants that values ambiguity and subjectivity as important sources for design research. I offer an observation on the common grounds between psychoanalysis and cultural probes in their value of subjective interpretation.

Integral to the practice aspect of this research are the processes of drawing and making, which allowed for the emergence of a close, intimate understanding of the research topic both conceptually and materially and I present these activities as forms of sense making. I end this chapter with annotated portfolios as a method for providing textual accounts of designed artefacts and the theoretical ideas that support them.

Research through design

Notions about design research have attracted much discussion in the design and human-computer interaction (HCI) communities. Zimmerman et al. (2007) make a specific distinction between design research as is commonly understood in the design milieu in general (that is, research done to inspire and inform processes for developing a new product) and design research as understood in the design research community (an inquiry that focuses on the production of knowledge) (ibid., p.494). Christopher Frayling (1993) usefully suggested three categories of art and design research[1] , a classification that has been helpful in understanding the kind of research associated with creative practices:

- Research into art and design, which might encompass research into theoretical perspectives of art or design practices, for example, or historical research of art and design.

- Research through art and design, which comprises an engagement with research through practical work; for example, the research of materials through explorations of their colourisation capacities for jewellery making or the customization of technologies for new purposes, together with the communication of the results emerging from such explorations. Action research in design would also fall into this category.

- Research for art and design, the kind of research Picasso might have embarked on gathering reference materials for the purpose of producing a piece of work. This is research in which an artefact is the end product, embodying the thinking processes of its creator (Frayling, 1993, p.5).

1. Most literature attributes the organization of design research into these three categories to Christopher Frayling, although similar descriptions have been made by Bruce Archer (1995). Frankel and Racine (2010) point out that this understanding maps closely with the three categories of clinical, applied, and basic research.

The second of these categories, research through design, has become increasingly integrated in discourses from design and HCI research communities, despite the ambiguity of the description and the debates it attracts (Stappers and Giaccardi, 2017). Gaver (2012) describes research through design (RTD) as research in which the design practice represents designers' judgments of how to address problems and possibilities in particular situations, allowing for certain understandings to be materially articulated through *conceptually rich artefacts* (Gaver, 2012), an approach that Gaver suggests tends to be generative and suggestive while describing multiple alternative possibilities, and advocates for the design research community to recognise and celebrate its ability to speculate through artefacts.

In contrast to Gaver's perspective about the nature of RTD, there have been alternative views in the HCI community that call for the formalisation and standardisation of this type of research, and for *'evaluating the quality of its contributions'* focusing on what the preferred state of affairs might be as an outcome of the research (Zimmerman et al., 2007 and Zimmerman et al., 2010) and on generating implications for design (Sas et al., 2014).

While I am aware of these competing views, the primary topic of this thesis is more concerned with their commonalities than with their contention, since my research approach is one that fits within the general understanding of RTD, in which the designing and making of artefacts embody the demonstration of the research contribution (Fallman, 2003) as propositions of what could be (Zimmerman and Frolizzi, 2008).

My role in this research involved the creation of drawings, objects and propositions that played between what already takes place in the context of mothers and young children, and what could potentially exist. The decisions I invested in my drawings and artefacts represent my interpretation as a designer of the particular situation and its exploratory potentials, one I was familiar with from lived experiences and observations, from my years as a designer of toys, and from the literature and creative practices that informed it. This close engagement with my subject can be considered a form of knowledge, acquired through the generative process of designing, which Nigel Cross (1982) referred to as designerly ways of knowing:

> *A significant branch of designerly ways of knowing, then, is the knowledge that resides in objects. Designers are immersed in this material culture and draw upon it as the primary source of their thinking. Designers have the ability both to 'read' and 'write' in this culture: they understand what messages objects communicate, and they can create new objects which embody new messages.*
>
> Nigel Cross, 1982, p.225

While designed objects represent the result of a process of material interpretation, embodying the designer's discernment of how to address a particular issue, they can also be understood as research tools for prompting engagement with participants. Bardzell et al. (2015) argue that while the intentions of the object's designer are important, their critical reception can be equally generative of knowledge, both for the designer and for those that encounter them. This became particularly relevant when the designs I created were presented to participants and wider audiences, stimulating significant reactions, dialogue and reflection, responses that gave the proposals performative qualities (Di Salvo, 2012). The artefacts embodied a language that allowed both myself and others to 'speak through' them and to enter a dialogical exploration (Bødker, 2009; Danholt, 2005) that was transformative and generative of knowledge.

In this research, I first engaged with my research topic by creating a collection of designs which I then used as conversational probes, seeking to understand the experiences of mothers using smartphones during childcare. The use of designed artefacts to draw out specific responses from participants is an established practice in design and HCI research, an approach that is integral to my work. I now want to present some previous examples of such a methodology, which might help the reader understand the practice aspect of this design research.

Method:

Using artefacts as a form of inquiry

The Interaction Research Studio at Goldsmiths has produced a number of projects using prototypes that were hosted by participants in order to collect responses prompted by them. For example, in The Prayer Companion project, a

device was designed as a resource for prayer for a group of convent nuns in England who interacted with it for ten months. The project explored the role of computing in spiritual activities and the implications of designing for specific aging communities (Gaver et al., 2010). Another project from the studio is The Energy Babble, in which a talk-radio device gathering information about energy and the environment was designed and given to communities in the UK. It playfully commented on environmental discourses, working as both product and research tool to help understand the communities involved (Gaver et al., 2015). These projects are examples of approaches in which speculation produced results through participants' interactions with what Gaver calls 'conceptually rich artefacts' (Gaver, 2012). In such projects, research is seen as the result of a 'cycle of interaction between participants and researchers, through artefacts and events that are inspired and informed by participants, but created in the studio' (Boehner, 2015, p.110). Other research labs in the UK and internationally have used similar artefact-oriented approaches. This can be seen in projects such as The Local Energy Indicator (Pierce and Paulos, 2012) that focused on local energy and interactive design systems; the Fenestra project (Uriu and Odom, 2016), which explored Japanese domestic practices of memorializing departed loved ones with a home altar; or the Unaware Objects project (Odom and Wakkary, 2015), which looked into how people creatively engage with everyday objects.

A further example of an artefact oriented methodological approach can be seen in the Family Rituals 2.0[2] project, in which I worked as design research associate at the Royal College of Art. This project investigated the value of rituals in families regularly separated due to work travel and the relevant role of digital technologies (Kirk et al., 2016; Chatting et al., 2015). In this project, five bespoke 'ritual machines' were designed and given to families to live with for a period of up to five weeks, each machine interpreting or maintaining a particular family ritual. During this project, a collaboration between HCI scholars and designers, attention was given both to the

2. Family Rituals 2.0 was a multidisciplinary research project comprising Human Computer Interaction researchers (from Newcastle University), interaction and product designers (from Newcastle University and Royal College of Art), geographers (University of the West Of England and Bournemouth University) and social anthropologists (Bournemouth University and Royal College of Art). The project was funded by the UK's Engineering and Physical Sciences Research Council (EPSRC) as part of their Digital Economy Programme.

computational aspects of each machine and to the aesthetic values invested in the forms of the artefacts, since both needed to respond to the particular idiosyncrasies of the families that hosted them. Each ritual machine we designed represented our responses towards our understanding of a family's rituals, roles, patterns of separation and reunion caused by work travels, as well as home decoration tastes and preferences. For example, for a family in Edinburgh who regularly enjoyed a drink together at the end of their day, we designed a wine machine that remained at home, together with a portable bottle opener. When the mobile worker opened a bottle of beer at a hotel room, it sent a signal via mobile phone to the wine machine at home, which then poured a glass of wine. This machine, which we designed as a white kitchen appliance, was conceived to be placed in their kitchen, which they described as the heart of their home life.

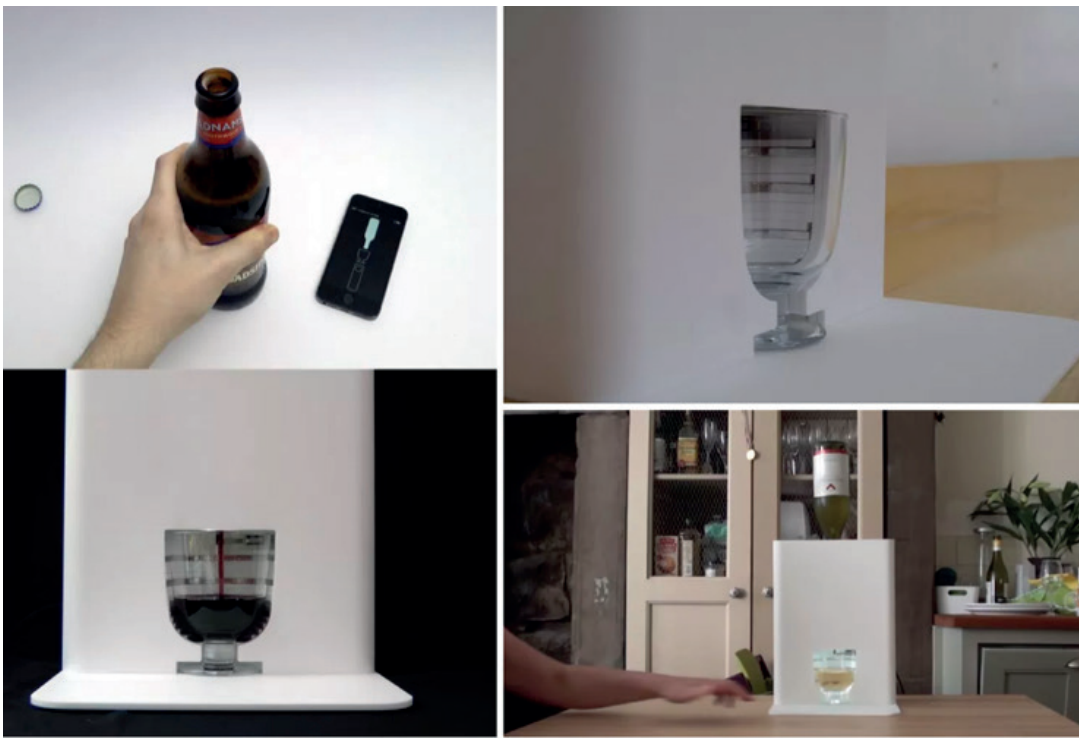


Figure 31: Ritual Machine 1, designed for a couple who enjoy a drink together at the end of their day.
(Photo credit P.Yurman and D.Chatting)

For family two, a couple who were often separated due to work travel, but who regularly planned their holiday trips together, the anticipation of reuniting and going away together became the focus for the design Ritual Machine 2. This machine counts down to a set date on a flip dot display, making reference to departure

boards on airports and train stations, the cascading of mechanical dots echoing the anticipation and excitement of travel. The design, choice of texture, form and colour took into account the carefully curated, minimalist and monochromatic style of their living room.

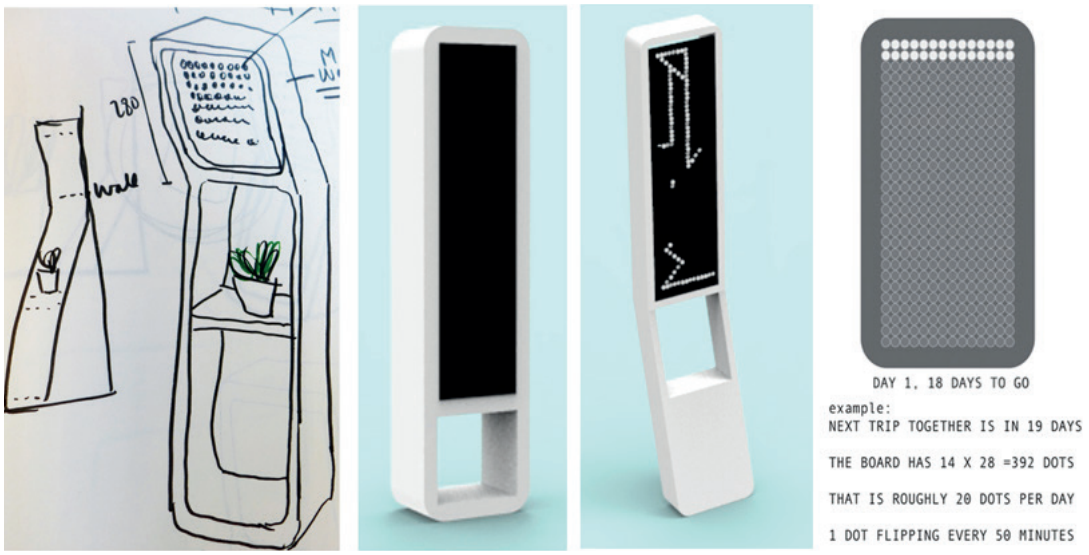


Figure 32: Development of design ideas for Ritual Machine 2

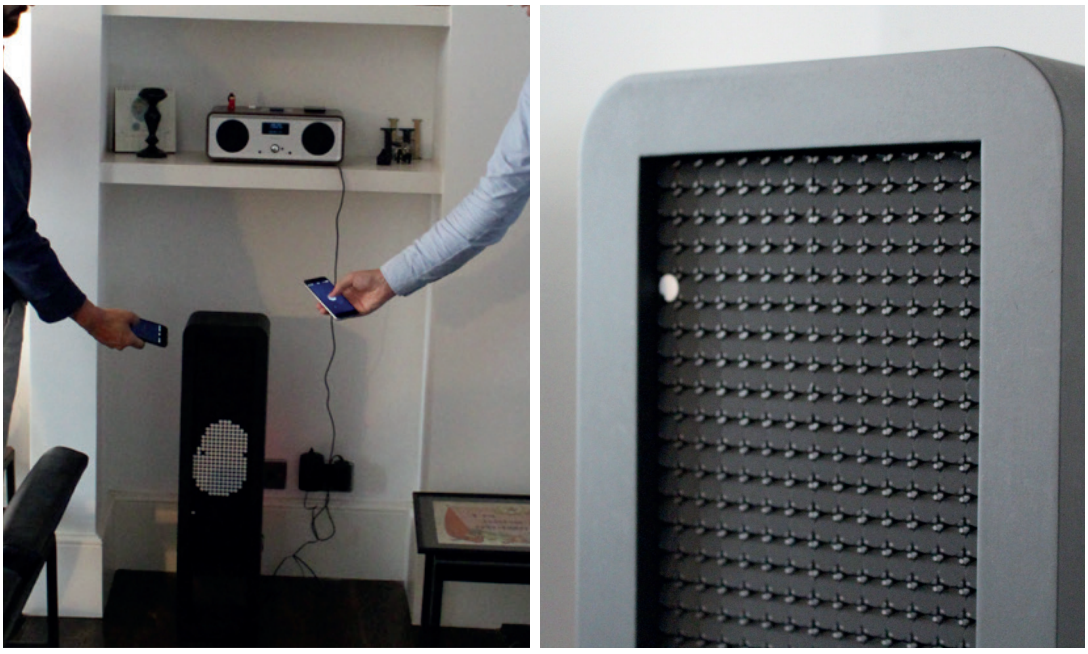


Figure 33: Ritual Machine 2, Anticipation Machine, which participants came to call 'Richard' while they lived with it. (Photo credit P.Yurman and D.Chatting)

Discoveries emerged both in the processes of designing and making of the artefacts and in the insights and information that resulted from the interactions between them and our participants. The processes of drawing, choosing materials and designing the interactions the artefacts afforded, allowed us to have a close

and nuanced engagement with our subject: they were the result of our reflections on the particular situations we were designing for. Once they met our participants, the artefacts prompted those who lived with them to tell us about the dynamics of their family roles, their visions about what home should represent, and crucially, their attitudes towards the possibilities brought by technologies to disturb and change these patterns. The implications in the design choices that we faced during the project were manifold, prompting our careful consideration of what was said through the artefacts. It was through participants' responses towards our designs that we were able to know a little about them, and about what design and technology could and could not do. For example, for the couple in Edinburgh, discussions about drinking rituals and habits were prompted. Additionally, the passive and active roles of the users became part of the debates, also inciting conversations about family roles.

Susanne Bødker (1998) refers to prototypes and design sketches as representations with tangibilities that can be pointed out and discussed, reflecting the experiences and expectation of their creators, and that can change as the designs are handled back and forth between designers and users, prompting different types of discussions (ibid., p119). Bødker points out that representations can afford discussions around what they imply in their propositions of possible users, but also resist as they inevitably prevent discussions around other possible paths (ibid., p. 112). This argument of prototypes as being double edged in their ability to discuss one path of possibilities while closing other potential outcomes can be particularly evident with artefacts that are developed in detail and functionality, as seen in the examples mentioned above. For example, the Ritual Machine 1 prompted discussions about drinking rituals and about the passive and active role of users, while closing debate possibilities about other rituals and other modes of use.

The examples described above represent approaches in which artefacts worked as research products that were made to a high level of resolution (thanks to sufficient financial and human resources available). Such artefacts were functional and robust enough to be hosted and handled by participants for prolonged periods. James Pierce refers to such highly finished artefacts as devices that are operational

and practically capable of being deployed in the field work, and at a difference from designs that are experimental, partially functioning or abstract (Pierce, 2014). This research focuses on an engagement with the unresolved nature of ambivalence (the ambivalence of motherhood and the ambivalence towards the presence of smartphones in the world of mother and infant), particularly apt for using the suggestive and the unfinished to stir it, to puzzle and invite others to engage with it in conversation. This is an essential approach in this research, one that I explore next.

Method:

Using the suggestive and experimental for conversation

Using designs that are conceptual can allow discussions about potentially appealing or repelling ideas. In Counterfunctional Things, for example, Pierce and Paulos (2014) used experimental designs with performances that were intentionally limited by the removal or inhibition of familiar features in digital cameras. Prototypes were conceived as conversational objects and the researchers engaged participants for one-hour interviews to discuss the designs and reflect on their limitations (Pierce and Paulos, 2014, p. 379). The discussions, prompted by the objects, allowed for insights about (for example) the desire to limit the number of photographs a camera could take, thus making each photo more meaningful, and reflections about ideas that may be appealing as thoughts but not necessarily developed into actual items of use (ibid., p. 382). Similarly, Simon Bowen proposes a critical artefact methodology that uses artefacts as embodiments of insights that can be included into the research process, where designer and stakeholder collaboratively read critical artefacts (Bowen, 2009).

This research is situated within a general research through design framework that uses artefacts as a form of inquiry and that considers ambiguity and interpretation in particular as valuable sources for design (the actual development of proposals, their annotated accounts and the responses they raised when they encountered

participants are described in detail in chapters five, six and seven). In this research I focused on an engagement with participants that relied on conversation and on the interpretation of suggestive designs. The proposals I created were conceptual, experimental, suggestive and purposely unfinished. They worked as invitations for reflection and ideas. Some of those ideas could be refined into actual products but many did not necessarily need to be developed into useable objects. The value of the proposals I used as conversational probes was in their potential of what could be, of the narratives they represented, of the uses of smartphones they embodied and the associated feelings of ambivalence they evoked. Suggesting practices that are private, the artefacts prompted participants to see aspects of themselves being represented, encouraging them to tell me of their own experiences.

In this design-led investigation, I explored the phone first and foremost as an object, since it exists within a network of toys, pacifiers, blankets, bottles, with sensorial, formal and textural qualities. Transitional Objects, as explored in chapter one, are objects with both physical and symbolic characteristics and this became particularly important as I engaged with smartphones as *physical things*, as well as interactive objects. The attention to the detailing of textures, forms and materials was important, regardless of how open ended their functionality was: they facilitated their understanding within the context they spoke about, a deeply sensorial one.

The particular method of using objects and images to bring alternative narratives of imaginative presents or futures and to engage publics into debate, is what Carl DiSalvo calls the potential of speculative design, proposing that designs can provoke and engage with groups and communities to collaboratively explore political conditions (DiSalvo, 2012b, p.123). DiSalvo proposes that design can isolate particular aspects of society and culture and reshape these in ways so that their meaning can be transformed, suggesting alternative scenarios (DiSalvo, 2012a, p.111). An example of using designs for engaging with publics to discuss relevant issues is the project Stigmas from Sheffield Hallam University (Chamberlain, 2013). This is a collection of furniture pieces that embody issues relating to the challenges older people face in daily life, by incorporating, for example, a walking stick as part of the semantics of a chair or a saw that can adjust the length of its legs. These

pieces, presented in exhibitions, gave material form to discussions about inclusivity in design and the subjectivities of aging users, bringing them to public debate.

Figure 34: Stigmas project from Sheffield Hallam University. Image source: research.shu.ac.uk

In chapter three I discussed Dunne and Raby's view that critical design can challenge preconceptions about the roles of objects in daily life, a view shared by other critical and speculative designers like James Auger, who argues that design can enable us to think about possible futures and to critique present design practices (Auger, 2013). Tobie Kerridge suggests that speculative design[3] offers an ambition to give narratives to technology, produce debate and move from academic into public milieus (Kerridge, 2015). The designs I created in this research sought precisely that: they explored the narratives of motherhood and technology, reflecting my commentaries on the situation I engaged with while also inciting the insights of others, inviting their subjectivities into the research.

3. Dunne and Raby assert that "critical design uses speculative design proposals to challenge narrow assumptions, preconceptions and givens about the role products play in everyday life" (2007, FAQ 1) although they gradually moved from using the term critical design to using speculative design. Some practitioners use the term speculative critical design to include both, although there does not seem to be a clear definition of their differences. Perhaps this is part of a wider discourse that resists affirmative driven classifications. For this thesis, I prefer to use the term critical design since the ambition to expose dark, contradictory and 'neurotic' traits in users (relevant to my work) emerged from critical design's original claims, rather than from later speculative design views. I think that the exploration of the dark psychology of users seems to have become less relevant in later speculative approaches, which became more preoccupied with presenting alternative societal and technological realities of what could be.

The use of objects and images as aids for engaging in conversation with participants is not a method exclusive to design researchers. Focus groups, small group discussions focusing on a particular topic and facilitated by a researcher (Seale, 2004), were originally designed as academic research methods that became important market research tools in the 1950's (Liamputtong, 2011). Manufacturers have frequently used such group discussions as a way to understand consumers' responses to existing and to new consumer goods (McQuarrie & McIntyre, 1986). Such approaches, though commonly used, only rely on how well users understand a product, and work around a dynamic of interpretation between researcher and researched, which can result in participants' responding with what they believe researchers need to hear, as Gaver et al. suggest:

> *Of course, any user-testing involves a cycle of expression and interpretation. Researchers express their interest through questionnaires, experimental tasks, or the focus of their ethnographic observations; volunteers interpret researchers' motivations and interests and express themselves in response; and researchers interpret the results.*
>
> Gaver et al., 2004

Clearly all interviews, conversations and encounters rely on how well the individuals involved know each other and on a cycle of expression and interpretation. Using an object, drawing or image as a meeting point of interaction can function as a focus to reflect on the similarities and differences of human experiences. Serving as conversational anchors, objects and images can prompt a variety of interpretations from diverse subjects. As Susanne Bødker points out, models, drawings and objects offer a tangibility that escapes the abstract realm of the spoken world (Bødker, 1998). This ability of artefacts to serve as 'tangible anchors' is also valued at research through design conferences, where they are understood as offering opportunities for performativity and storytelling (Wallace et al., 2014, p.785). This characteristic also became significant when I presented this work at the 2019 Research Through Design conference (the paper can be seen in Appendix two), where the artefacts and drawings became the centre of our conversations, serving as embodiments of the issues they addressed.

Other disciplines have also adopted the use of objects for facilitating

conversation. Anatomically correct dolls, discussed in chapter three, are used as props to engage in conversation with children suspected of having suffered abuse. Their function, activated only during the conversational act, can help articulate difficult and traumatic experiences[4]. Other examples are projective tests, such as the ink block Rorschach test or the thematic apperception test, which value subjectivity and interpretation and use enigmatic and suggestive images. They were developed by psychologists as tools to reveal subjects' personalities, attitudes and behaviours (Lilienfeld et al., 2000).

In this research, the process of conversational engagement prompted by suggestive objects relied on a process of interpretation that acknowledged the coexistence of multiple readings of a situation. When objects are open ended or ambiguous, presented as possibilities to invite discussions, they can encourage various viewpoints and experiences to be voiced, valuing the subjectivity of both researcher and participants. Ambiguity can allow designers to suggest perspectives, without necessarily imposing a solution (Gaver et al., 2003, p.240). Sengers et al., propose that the suggestive can support both designers and users, offering a critical reflection about our relationship with technology '*by bringing unconscious aspects of experience to conscious awareness'* (Sengers et al. 2005, p.50), providing interpretive flexibility and metaphors to find new research spaces (ibid, p. 57).

The process of designing involved my own interpretations and representations on the particular relationship between smartphones, mothers and young children. This practice involved visual representations, narratives, fictions and speculations that materially reproduced situations and that placed me as a sort of cultural mediator (Balsamo, 2010, p.4), giving form to themes and discourses in my research. My use of objects and drawings with suggestive and critical insinuations about our relationship with smartphones during childcare invited participants to reflect and tell of their own relationship with technology. This approach has commonalities with psychoanalytical perspectives in their interpretivist values but also relied on

4. Anatomically correct dolls are also controversial. They have been used at testimonials to verify or refute allegations of sexual abuse in children and there are recommendations that professionals should be cautious when basing decisions using them as single instruments (Realmuto et al, 1990), as well as indications that more information is provided by children when they are used, resulting in a higher detection of abuse (Leventhal et al, 1989).

autobiographical and feminist views that provided essential situated standpoints that informed my design and research engagement, a lens that I discuss next.

Feminist and Autobiographical perspectives

In her examination of design processes, Bardzell (2010) suggests that feminism can offer exposure of the manners in which technology can preserve gender divide constructions. Bardzell observes that feminist critical perspectives contrast what seems universal and obvious to a dominant social group with the experiences and views of marginal voices, comparisons that have much to offer for designers and researchers (Bardzell, 2010, p. 58). Feminist research interrogates women's experiences. This research seeks to understand and represent the particular experiences of mothers using smartphones while looking after their children, while also examining the societal expectations they are measured against. The study of motherhood itself has a complicated relationship with feminism: anti-feminists tend to see it at odds with feminism, understanding biology as destiny, where only motherhood could provide women's real fulfilment (Umanski, 1996). Radical feminists like Shulamith Firestone argued that women could only be free of patriarchal oppression once they were free from the burden of reproduction (Firestone, 1970), while feminists like Adrienne Rich suggested that patriarchal views of motherhood form part of a complex space of oppression for women's lives (Rich, 1976), proposing two distinct meanings associated with being a mother: motherhood as a patriarchal institution that is oppressive and controlling of women, and mothering, which refers to experiences of being a mother which can be empowering (O'Reilly, 2017). Andrea O'Reilly points out that feminist theory has incorporated a diversity of theoretical models to represent the particular perspectives of specific groups of women, such as third wave feminism, queer feminism, global feminism, etc., but has not likewise recognised feminism understood from the specific concerns of mothers, what she refers to as 'matricentric feminism' (O'Reilly, 2014). O'Reilly points out that 'the category of mother is distinct from the category of woman' and argues that feminists

should be able to understand the intersectionality of gendered oppression, including factors such as race, class, sexuality, geographical situation and maternity. In its examinations of dominant perspectives, a significant aspect of feminist research lies in its value of the personal experiences of the researcher as an important resource, where the research process is described also as a lived experience (Reinharz, 1992).

In this research, private, domestic and maternal experiences provided an autoethnographic reflexivity (Letherby et al., 2013) of my earlier lived moments as a mother that enabled me to better understand the social and cultural situations of other mothers. This was supported by the work of feminist psychoanalysts such as Parker (1995), Baraitser (2009) and Rose (2018), which acknowledge the complex aspects of motherhood and the unrealistic expectations placed on mothers, enabling me to better understand my and others' maternal experiences and develop a language that gradually became captured in my designs. The psychoanalytical perspective, that has informed much of feminist art, has also provided me with a sensibility to explore the hidden, unconscious meanings of designed objects for mother and infant and their exploratory possibilities, readings that are rooted on my own subjective interpretations, invested in my drawings and artefacts. The designs represent my own interpretation of the situation I address and celebrate both my and the subjectivity of others.

Personal experiences also enabled me to identify with and relate to the experiences of others, to earn their trust and to partially test ideas prior to showing them (Reinharz, 1992, p. 259). Neustaedler & Sengers (2012) consider that an autobiographical design approach can have great value when 'using personal, experiential understandings as a source for nuanced understandings of the design space' (Neustaedler & Sengers, 2012, p. 521) while offering reliable knowledge. In contrast, Jeanne Perreault offers a critique of the autobiographical, pointing out that it is primarily concerned with the process of unfolding of life events narrated from a reflective self. Perreault suggests the notion of autography as a process in which the writer unfolds possibilities of selfhood through the process of writing, allowing for the enactment and reinvention of multiple subjectivities (Perreault, 1995). In this work, both the processes of designing and of writing have contributed to the

surfacing of me as a researcher (also a sort of reinvention), with a particular lens that is affected by these families of ideas. Furthermore, many of the issues I discuss here have affected me personally, and so I must acknowledge that my interest in the topic is intellectual, but also partly personal (Reinharz, 1992, p.260). The accumulated, implicit knowledge that I have collected in my experience as practicing designer in industry, design researcher and mother, shape the repertoire that feeds and informs the processes and decisions made to open the design space I explored in this research. My perspective as both outsider and insider allowed me to recognise aspects of my research field that resonated in participants' experiences when they later encountered my designs. In their studies of feminist hackerspaces, Fox et al. (2015) point out that becoming 'more sensitive' to the design of a particular space comes partly from having experienced feelings of being marginalised from technology cultures. As a user of these technologies and of objects for mother and child during my early years as a mother, I myself have experienced this marginalization, which I have translated into my designs as starting points in my research. This required a recognition of the need to let first-person lived experiences (both mine and my participants') to come out and be brought to play. Autobiographical design brought my subjectivity into the research, but equally anecdotes, cultural probes and conversational responses to my designs enabled the subjectivities of my participants to take centre stage.

One artist that uses the autobiographical as a source for research is Lenka Clayton. Clayton has created an *Artist in Residence in Motherhood*, in which she proposes that the roles of being an artist and being a mother are not necessarily competing but rather could inform each other.

Figure 35. Lenka Clayton's Artist in Residency in Motherhood
Image from www.artistresidencyinmotherhood.com

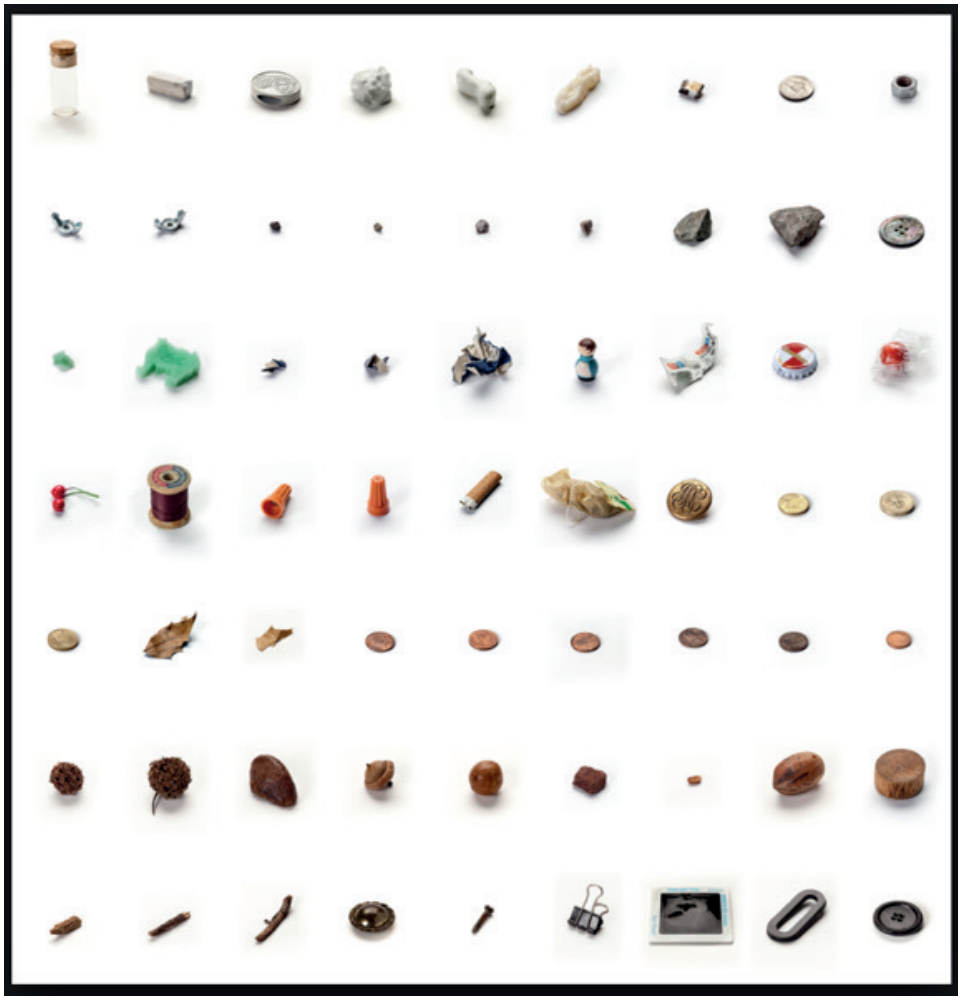


Figure 36: Lenka Clayton's *63 Objects from my Son's Mouth* (2011-2012). A collection of objects she retrieved from her son's mouth, between the ages of 8-15 months. Image from www.lenkaclayton.com

Clayton sees her experience as a mother as one which could shape the direction of her work, rather than to try to work "despite it" (Clayton, 2012). Her practice is an example of how subjective maternal experiences, previously understood as at odds with work demands, can fuel and inform work when taken as spaces to investigate. Furthermore, Clayton's use of her experiences to inform her practice represent an explanation of her standpoint (Reinharz, 1992, p.259).

In this research, the first stage of exploration involved designing objects that emerged from an intimate knowledge of the space, articulated through the narratives they proposed. The period in which I was drawing and making was also informed by other sources: a melting pot of conversations, readings on transitional objects, feminism, toy design and design research, a composition that affected me as researcher. Later on, as the work was presented to others, it invited conversations

where other interpretations and subjectivities entered the research space, helping me reflect on my research subjects and myself, producing new understandings beyond my own. Conversational engagement with others was another feminist research approach: it enabled the existence of multiple voices, rather than my own authoritative voice as an expert doing an interview (Reinharz, 1992, p.231) and provided a diversity of experiences.

Anecdotes

Through anecdotes (presented in the introduction), I describe situations that tell of the role of smartphones in the childrearing of young children, of mothers and of how we view motherhood. These incidents have become field observations that influenced my understanding of the research topic and that add a wider and richer context to the design activities and events I carried out in this research. Les Back argues that developing a sensitivity tuned to the mundane aspects of everyday life can help us remark over what is usually unremarkable (Back, 2015). Back also makes reference to Graham Crow who points to the importance in sociology for developing an eye for detail when approaching studies of everyday life (Back, 2015 p.822; Crow, 2005, p.106). Similarly, Mike Michael writes that anecdotes tell of occasions that have somehow affected the researcher, helping to trace the 'co-emergence of research, researcher and researched' (Michael, 2012, p.26). The focus of my research allowed me to consider certain incidents and observations, previously judged as private, as gradually worth telling, helping give definition to my role as researcher. I have previously related how many of my reflections have sprung from my own parental experiences, conversations and observations of other parents at social events and playgroups, a knowledge that I recognise as positioned from a white, urban, middle class context. Incidents in public spaces as those described through anecdotes, are socially interesting events that provide a collage of social moments that I witnessed outside my encounters with participants and that influenced my understanding of the role of the smartphone both within and beyond my own situated perspective.

Anecdotes informed the processes of interrogation and exploration in this work, contributing to a private conversation between myself, design, smartphones, social interactions and perceptions of motherhood, allowing me to reflect on how I look at situations both as insider and outsider.

Method:

Cultural Probes

Designers often develop strategies and methods as they try to make sense of the fields they are researching. In 1999, Gaver, Dunne and Pacenti developed a design led approach which they called Cultural Probes, a set of tasks and activities given to participants at the early stages of a research project, meant to provide inspirational information for designers and researchers (Gaver, 2004). The probes were developed at the Royal College of Art for the Presence project, aimed to increase older people's presence in communities through the use of new technologies (Gaver et al., 1999; Gaver et al., 2001). Aiming to challenge stereotypes about the elderly, the designers set to invoke participants' playfulness, dreams and curiosities through a set of evocative tasks. Participants were given disposable cameras asking them to take photos of *'something desirable'* or *'what you will wear today'*, together with cards with ambiguous questions such as *'tell us a piece of advice or insight that has been important to you'*, *'where they like to daydream'* or *'where they'd like to go but can't'* (Gaver et al., 1999). Cultural Probes tend to be packs of open ended tasks that aim to stimulate engagement, allowing subjects to interpret freely what is being asked of them, and the researchers in turn to interpret their response. The probes tend to produce fragmented information that give a glimpse into participants' thoughts and desires.

The use of Cultural Probes in research has widely spread into design and academic practices, particularly in the Human Computer Interaction (HCI) community. One of the concerns expressed by the probes' original creators is a tendency to translate results into analysable data for design implications, missing

the point of their main contribution as a method that relies on interpretation and ambiguity, acknowledging the limitations of a researcher to know what life is like for a researched subject (Gaver et al., 2004). Boehner et al. (2007) suggest that the original intent of the probes is often lost in the scientific, engineering mindset of HCI, particularly when subjected to a scientific model. When misunderstood as a recipe for a reproducible method, crucial aspects of its original idea are often overlooked (Boehner et al., 2007). Gaver praises the design research community in its aptitude for creatively challenge the status quo, encouraging it to abandon efforts to adapt to scientific rationales. He proposes that an important characteristic that separates design from science is that it tends to produce generative statements rather than falsifiable ones (Gaver, 2012). In this sense, cultural probes, in their value of subjectivity and interpretation, also share common grounds with psychoanalytic perspectives, as I point out next.

A reflection about Cultural Probes and psychoanalytic practice

The creators of the Cultural Probes' found inspiration in Dada and surrealist games of free association, combined with techniques from situationist movements (Gaver, 1999). Surrealism itself was strongly inspired by psychoanalytic theories[5] (Esman, 2011) in its use of symbolism and representation of dreams and the unconscious. In addition to being inspired by surrealist games, the probes also found inspiration in projective techniques such as the Rorschach ink block test or thematic apperception tests (Bill Gaver, personal communication, 17/1/18). These tests, which have been used and adapted in psychology and psychoanalysis to try to understand subjects' personalities, rely on subjects' free interpretations of what they are presented with.

Like much of research through design, psychoanalysis is often challenged as un-scientific because it does not meet the verification and falsifiability criterion (Popper, 1962; Grünbaum, 1979; Gaver, 2012). I have informally conversed with psychoanalysts[6] about their responses towards Popper's questioning of their

5. One of the founders of the surrealist movement, André Breton was so fascinated by Freud's writings that he famously arranged to visit him in Vienna. The encounter was a disappointment as Freud saw Breton more as a poet rather than a scientist and there were great differences in age, culture and literary affinities (Esman, 2011). Despite their unreciprocity, the avant-garde surrealist movement was clearly influenced by Freud's discoveries.

6. At the Freud Museum, where I showed my work, and to acquaintances who are psychoanalysts. This is an anecdotal insight.

discipline. One insightful response is that in the psychoanalytic practice, the notion of truth is irrelevant. If an interpretation is useful it will help both therapist and patient to work, unravel and address that which is difficult. Interpretations of one same dream or events will vary from analyst to analyst and from analysand to analysand, there is not a right or a wrong way to interpret a dream or memory. What matters in the therapeutical practice is if, in the interpretation, something emerges that is worth elaborating on, something to engage with that will help both therapist and subject to work towards a better understanding of the self or a change in behaviour. Similarly, Cultural Probes do not present a truth view of reality, but rather a starting point from which designers can draw inspiration from or make sense of the situation they are researching. Probes operate within a logic that favours playfulness and exploration while disregarding utilitarian and truth deduction approaches (Boehner et al., 2010). It is through the way subjects interpret what is being asked that they tell a little about themselves, which can in turn be used by designers to work with. The more ambiguous and open to interpretation a probe task is, the more it will reveal about the subject. In this regard, both Cultural Probes and psychoanalysis operate on individuals' own projections onto what they are encountered with, revealing motives, concerns or aspirations and providing cues into their minds. Working on provisional interpretations, these approaches rely on a reasoning that accepts multiple truths. In other words, psychoanalysis and Cultural Probes (as well as critical design) belong to the family of intepretivist ideas and are thus at odds with positivist frames of thinking.

Method:

Drawing as research

> *Drawing is another way of telling; it flows and unfolds with time, both hand and head working together.*
>
> Ingold, 2013, p. 127

Either conceptual, technical or diagrammatic, drawing is at the core of the design process and can work as a means to communicate notions to others, to order thoughts or as a process of exploration. Most designers start generating ideas on paper at the early stages of a design, annotating sketches to help them remember

potential ideas to follow or indicate materials, colours, textures. An idea previously expressed verbally can become more tangible once it is sketched and can be shown to others so that they can reinterpret or add to it. Industrial designer Daniel Weil, a strong advocate of hand drawing in design, refers to his sketchbooks as records of thoughts, of things he sees and thinks of when designing. Drawings from different projects are worked on the same page, together with drawings of places he travels to. He believes that this practice allows for ideas to 'educate each other' (Weil, 2011). For Weil, drawing is a thought process at the core of the design practice.

Figure 37: Daniel Weil's sketchbooks.
Image source: Design Museum

Designer John Rhys Newman is another designer for whom drawing is crucial. He declares *'I draw lines and paths my hand has got used to following'* (Newman, 2008). Newman describes his drawing process as an act in which accidents occur, 'allowing his imagination to take leaps' (Rosenberg, 2008, p. 102). Design lecturer Terry Rosenberg actively encourages design students to sketch, considering 'ideational drawing' a space in which thinking happens with and through drawing, attracting further thinking of new possibilities of what might be (Rosenberg, 2008, p. 109). Rosenberg views drawing as an epistemological tool that works in tension

between the known and the unknown (ibid. p. 98), a space of play and discovery that is at once mental and physical. For him, ideational drawing is not a form of communication, but rather a space where the individual thinks, and which does not have to make sense to anyone but the thinker (ibid. p. 108).

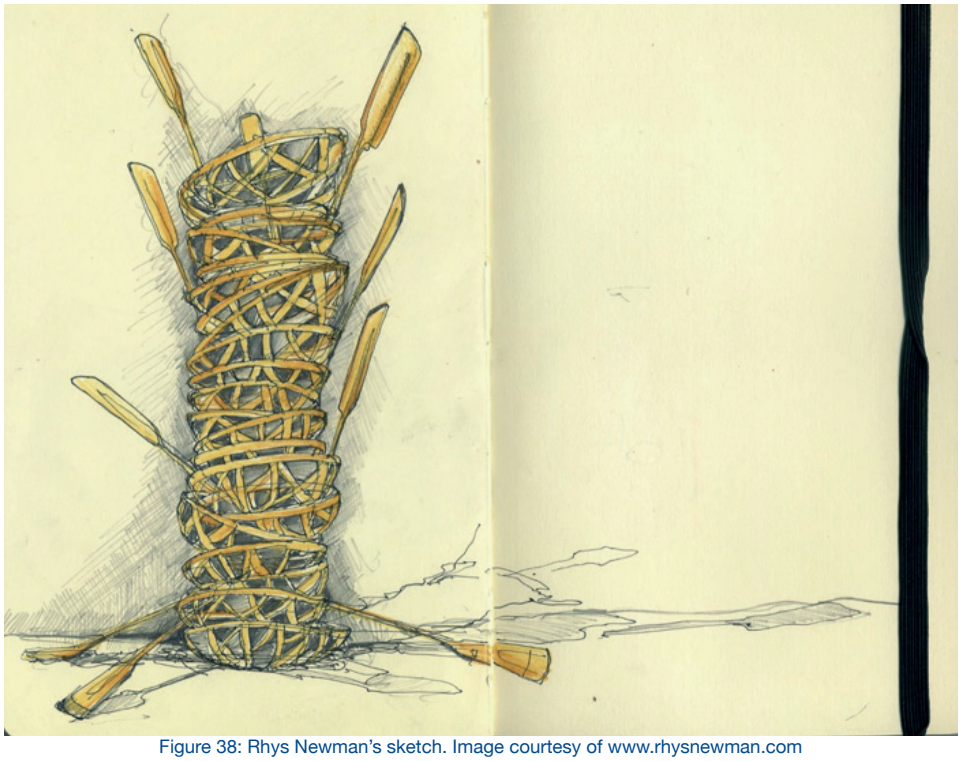


Figure 38: Rhys Newman's sketch. Image courtesy of www.rhysnewman.com

Drawing as a research method has increasingly attracted attention in the art and design academic communities. Mäkelä et al. (2014) propose that drawing, one of the basic skills used by artists and designers throughout history, is a reflective process that plays a crucial role moving the research inquiry forward, a process of understanding ideas that is both rational and creative, while also allowing them to be communicated to others (ibid. p.8). Mäkelä et al. observe that images operate with a more flexible grammar, where possibilities can connect in abstract ways (Mäkelä et al., 2014, p.5).

A flexible grammar became particularly evident as I explored my topic in non-verbal forms. When I started this research, I aimed to write my thoughts on a daily basis, seeking an exploration that should first come through reading and writing,

later to inform my practice. The urge to sketch, however, was very strong. Drawing encouraged my own subjectivity to emerge and allowed me to work on loose ideas, becoming a form of sense making, beyond syntax. I began by using drawing as a way to understand the material stuff surrounding mother and infant, a world that I knew well from my own lived experiences and from my years as a designer of toys. A conversation between myself and the drawings (Schön, 1983; Garner, 1992), sketching allowed me to work ideas around toys, smartphones and comfort objects, enabling them to evolve and mutate on paper, producing new meanings. Through their recurrent ambiguity, drawings drew forth my multiple interpretations which I could tease into new sketches and ideas, resulting in a productive cycle of thinking and drawing.

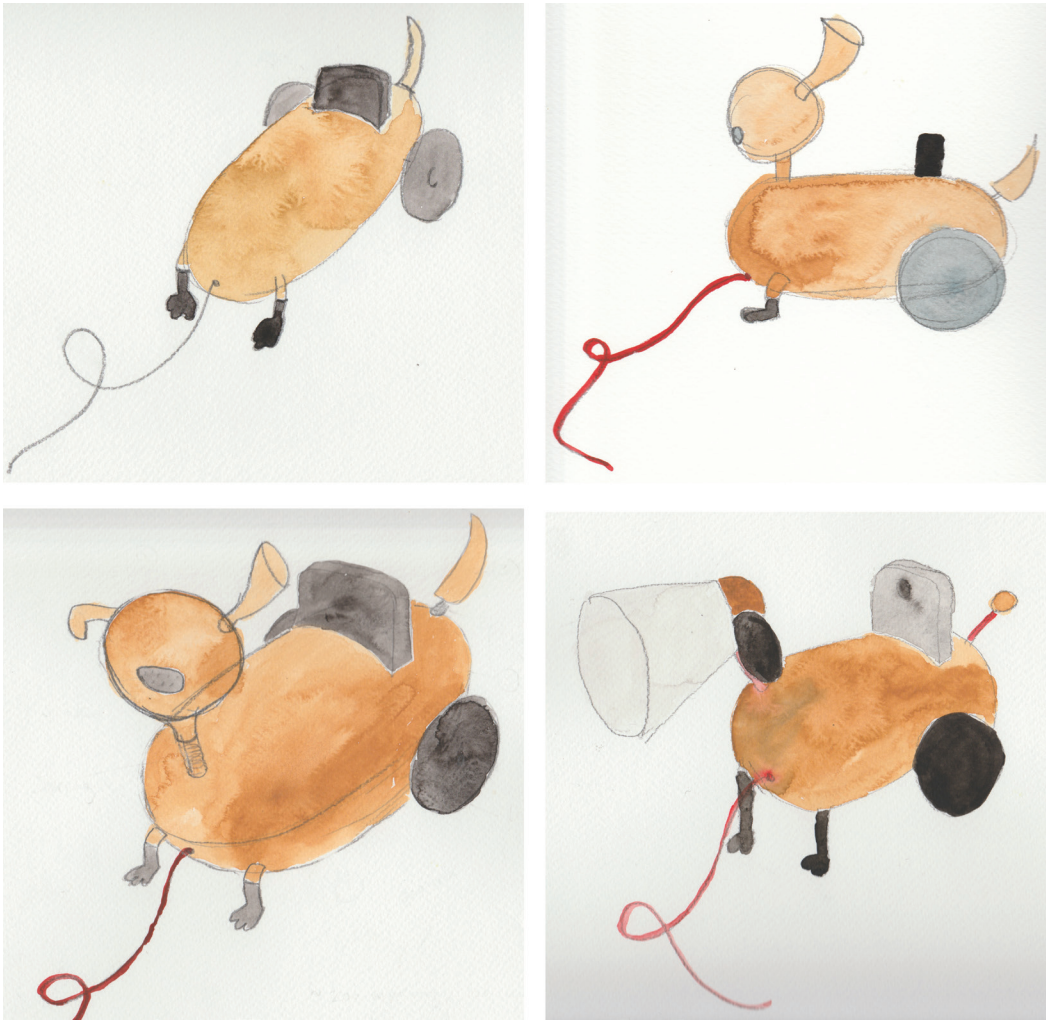


Figure 39: My exploratory sketches

Goel (1995; 2013), Suwa & Tversky (1996) and Tversky (2015) recognise the ambiguity characterising freehand sketches in design as one that allows for the reinterpretation and crystalisation of new ideas. Cognitive scientist Vinod Goel studied how designers work, focusing on the visual representations they use in the design process. Goel contests the philosophical notion that ideas exist independently of how they are represented and proposes that the structure of a representation (a symbol or drawing) affects its content and how it can be expressed and developed. Goel relates the ambiguity associated with free hand sketching with certain parts of the brain that are more tuned to deal with uncertainty and ambiguity (Goel, 2013). The richness of this ambiguity is also expressed in Mäkelä et al.'s description of drawing as an exploratory, sense-making process:

> *Drawing, like dancing, is an exploratory, sense-making process where the observer, and the thing or idea observed, are inextricably bound together in a physical, material space/ time relationship. Drawing is both an active and subjective engagement, valued by artistic researchers, not only for what may finally be encrypted in the drawing, but more significantly for the access provided through drawing to thinking that is close to the unconscious.*
>
> Mäkelä et al., 2014, p.4

In this research, drawing became a process in which ideas flexibly moved between the real world of objects and a suspended imaginary space of shapes that did not look too close to a finished or resolved design but rather worked as suggestions. Sketching allowed me to play with ideas without making them look too close to completion, expanding on their potentials without worrying too much about how they would be made, or indeed if they should be made. They were telling stories about the smartphone in the material world of infants and mothers, its uses and missuses. Evoking a sensorial world of soft textures and rich colours, they were alluding at times to symbolism and at others to actual relationships between objects. The drawing and redrawing of child related objects incorporating smartphones became an iterative process where new shapes were repeatedly variated, bringing both the familiar and the new, allowing new understandings of the objects to emerge.

In his writing about thinking through drawing, Rosenberg offers that 'ideational drawing is only potent in action'; that is to say that it is changed when it is read after

the event of drawing has occurred (Rosenberg, 2012, p. 123). Since the drawing is only a record of an event that occurred during the working out of thoughts, it is inaccurate to see a path that would link a drawing as the origin of an idea that is later seen as a final outcome. Indeed, a great part of the value of the drawings generated in this work lies in their documentation of a visual process of thinking, which I describe in more detail in chapter five. Through sketching, I worked to surface and investigate a series of recurrent ideas that started to emerge and enabled me to anchor the exploration onto pivotal themes that I also developed through making, a process that I describe next.

Method:

Making as research

> *In the art of inquiry, the conduct of thought goes along with, and continually answers to, the fluxes and flows of the materials with which we work. These materials think in us, as we think through them. Here, every work is an experiment: not in the natural scientific sense of testing a preconceived hypothesis, or of engineering a confrontation between ideas 'in the head' and facts 'on the ground', but in the sense of prising an opening and following where it leads. You try things out and see what happens.*
>
> Ingold, 2013, p. 7

In addition to drawing, I worked ideas through the transformation of materials and ready-made objects. Designers often make models as a way to inform their decision-making process and help them, users or stakeholders understand the qualities of a product and its potential uses (Milton & Rodgers, 2013). A sketch model is a term used by industrial designers to refer to a roughly made prototype, a quick 3D version of a sketch, made to test a proposal. A model allows for an idea to become tangibly communicated, helping the designer and others see how it could look and feel. It is often a way to delve into what first emerged two-dimensionally, three-dimensionally, expanding onto more complex manifestations. Akin to Newman's description of drawings as accidents on paper that lead to discoveries, there is a process of thinking that happens through making and playing with materials and objects.

Some of the proposals in this research were explored as quickly made models. Other ideas first took form as hand drawings and were visualised using

computer rendering programs, to be later developed as objects. In some cases, the development of proposals emerged through a process of working together with materials and ready-made objects as a way to build up sculptural experiments. Lim et al. define prototypes as 'the means by which designers organically and evolutionarily learn, discover, generate, and refine designs' and which stimulate reflections and possibilities in a design space (Lim et al., 2008, p.2). Similarly, Margetts describes making as a sequence of repetitious, incrementally shaping acts that motivate a curiosity towards the unknown in a non-verbal language, broadening our abilities to communicate (Margetts, 2011, p. 43).

In this research, drawing and making were activities and processes that informed and complemented each other. For some proposals, there was a clear progression from sketch to object, but with others, ideas were firstly drawn, then made, before being drawn again, incorporating some of the features from the model. Other proposals would be first made, then drawn, then adjusted and changed through computer rendering programs, to be then remade again into an actual object. Though materially palpable, the objects retained some of the ambiguity seen in their hand sketched previous forms. As a collection, they came to represent my readings of the situation I set to investigate, forming a family of material interpretations and associated theoretical ideas. I give a detailed account of this exploration in chapter five, where I describe the actual engagement with materials, textures, ready-made objects as processes where themes gradually become translated into materiality.

The articulation of the approaches and insights that informed the finished artefacts is organised through annotations accompanying the designs, presented as a format to communicate proposals to wider audiences, as I describe next.

Method:

Annotated Portfolios

Gaver and Bowers point out that the design of any artefact comprises a number of aesthetic, practical and motivational decisions, signifying the designers'

assessment of a situation and how best to respond to it (Gaver and Bowers, 2012, p.43). These considerations cannot always be read directly from the artefact; any design can be understood in multiple ways. They propose that for artefacts to make accountable contributions to research, their design needs to be annotated, thus offering textual accounts of the designs and the group of ideas that support them. Through their proposition of Annotated Portfolios, a collection of artefacts with annotations that convey their nature, Gaver and Bowers offer a method for communicating design research. The use of textual accounts accompanying the artefacts allows for an interrelation between image and text, enabling discussion and comparison with other designs and references (Bowers, 2012; Gaver and Bowers, 2012).

Making annotations on designs has long been used by designers during and after their creative process (although widely practiced, the notion of Annotated Portfolios is little known outside design research communities). Notes are often made on sketches to accompany a concept during the initial stages of a design, indicating further developments, materials or references to other designs. Once completed, the design is often presented with a few descriptive lines that work together with the images, representing the designers' general approach to aesthetic and conceptual values. An example of a design portfolio can be seen in the work of industrial design studio MAP in figure 40.

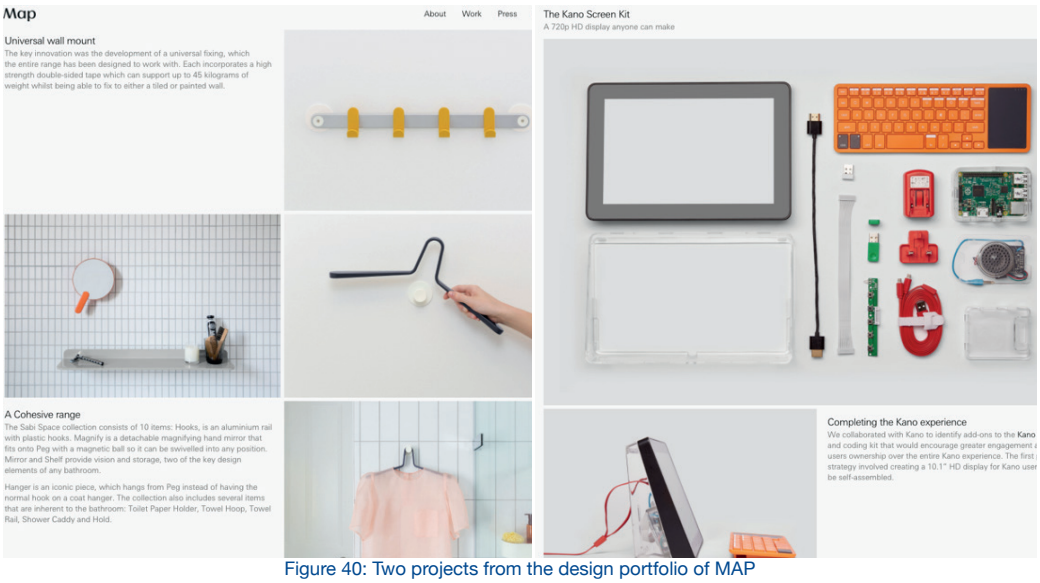


Figure 40: Two projects from the design portfolio of MAP
Courtesy of mapprojetoffice.com

While commercial designers usually emphasize the completed product as the principal outcome, design research tends to value the family of ideas, processes and rationales that support and add relevance to a design. Although an artefact is the embodiment a series of judgments, decisions and theoretical backgrounds, it does not convey the group of ideas alone, as Bowers and Gaver suggest. Vinod Goel questions the idea that thoughts exist independently of how they are represented. Instead, he suggests that the medium in which an idea is represented affects its content and its possibilities for development (Goel, 2013). For Goel, an idea expressed through drawing conveys one type of content; expressed through text, it conveys another. Put together, text and image inform and complement each other, an insight that supports the principle of the Annotated Portfolios.

With these considerations in mind, I have created an annotated collection of my design proposals (I present these in chapter five) that give textual account of the ideas behind them and delineate a particular research space. While annotations can only give partial views on the design (highlighting some aspects while excluding others), they can place them within a particular research context and propose a number of discussions.

Chapter conclusions

In this chapter, I have presented the methodological approach of this research. I have discussed research through design, an approach in which designers' attend to a situation and its possibilities through the development of design proposals, often in the form of artefacts. I have discussed how these can be used as a form of inquiry; their tangibility being useful for both researcher and participant to articulate the issues related to the scenarios they address. The suggestive and ambiguous nature of conceptual design proposals, resulting from the designer's own reading of a situation, can in turn prompt participants to make sense of them, a process that encourages reflection and conversational exchange. I have pointed out how this approach, which values interpretation and subjectivity, has common

grounds with psychoanalytical perspectives. I have also reflected on anecdotes and autobiographical experiences that, together with feminist perspectives, have provided a collection of insights, assimilating various viewpoints into the research.

I have described drawing and making as forms of research that enabled the development and construction of the research space. A process of material thinking, these practices allowed forms and ideas to develop, mutate and merge, making suggestions and insinuations about the situation I researched, its discourses and potentials. I have discussed the ways in which I communicate the resulting designs through an annotated collection of my designed artefacts.

In the following chapters I describe in detail the actual activities and events that form the practice of my research, producing a variety of responses that I reflect upon.

Chapter Five

Designing for Ambivalence

Chapter Five (practice):

Designing for Ambivalence

Introduction

In this chapter I describe the design-led activities that I used in my practice to address my first research question: how design can explore the role of smartphones for mothers and young children.

I begin with Cultural Probes, a form of early engagement with participants that provided me a general grasp of issues and a useful way to initiate participation in my research. I then move on to describe how I explored my topic through drawing and making, integral activities in the design process. Ingold suggests that drawing may be a way of telling by hand (2013, p. 125), and indeed much of the story in this research is told through the drawings and objects I experimented with, as I gradually came to recognize themes to grapple and work with. I conclude this chapter with an annotated collection of the artefacts that I judged best represent the group of ideas I explored in the research space.

Cultural Probes

In the summer of 2016, I created a pack of Cultural Probes for engaging participants in my research. These consisted of a pack of cards with questions that I posted to 13 individuals, those who responded after I circulated a call for participants via social media, college and personal contacts. As with all activities involving participants, consent forms describing the research and detailed descriptions of what participation entailed were sent and returned by post together with the probes. These can be found in Appendix 1.

The probes consisted of five cards, each asking the following:

- If your smartphone could speak, what would it say about your family?

- What are the smartphone rules in your family? How do these rules get broken?
- Please complete:

  I love my phone because…

  I hate my phone because…
- Please complete:

  If the smartphone were my pet it would…

  If the smartphone were my child's pet it would…
- Please complete the dialogue:

  child: I want the phone so that I can...

  mother: no, because...

  child: but...

  mother:..

Figure 41: Set of probes with consent forms and information about the research

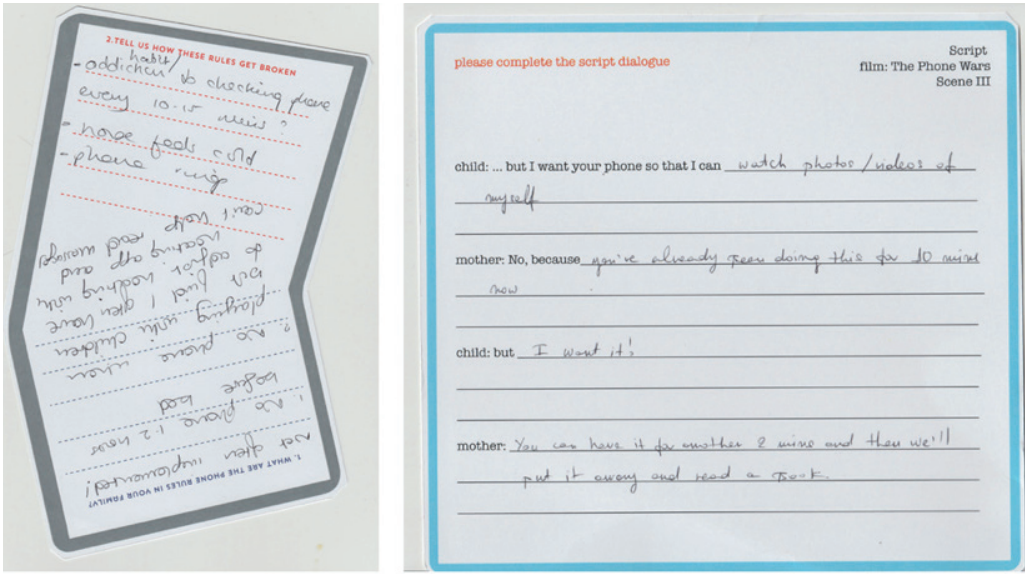


Figure 42: Returned probes

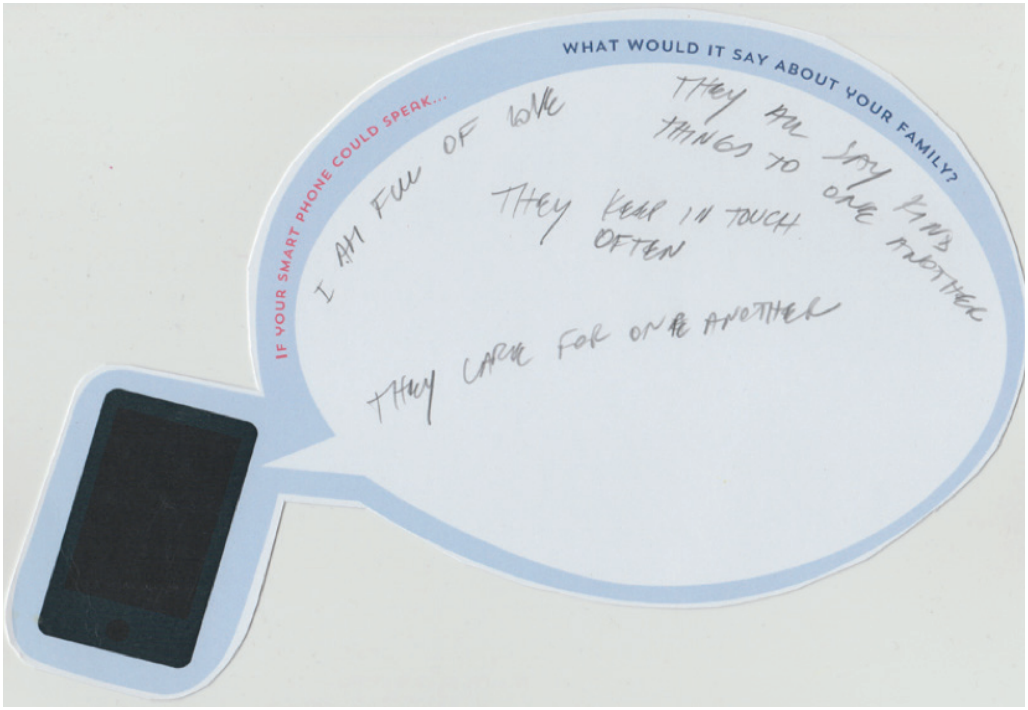


Figure 43: Probe asking what the phone would say if it could speak

Figure 44: Returned probes

The probes worked best when looked at together as a group, forming a richer picture than if read individually. The cards that asked the question *'what would the phone say about your family if it could speak?'* provided participants' reflections of their own behavior, projected onto the device, sometimes with a bit of humour, for example:

> *'I'm really happy to be part of this family. I feel like a full member. So much love and laughter, all those special moments and I am always there, in the middle of it, in mum's hand… she must really love me because she holds me more than the rest of the family'*

The act of projecting the responses towards the device perhaps allowed participants to disclose more than when asked direct questions. This is the beginning of a perspective that I later explored in more detail: giving the phone some sort of

agency, the status of a family member who is also a neutral outsider. The cards asking participants to complete the dialogue allowed me to have a small glimpse of a common everyday situation, when the phone can mean different things to different members. For example:

> Child: but I want the phone so that I can: eat it/suck it (E, 10 months) / stop you looking at it (T, 3 years)
> Mother: No, because: you'll break it / I need to check something

The card asking reasons for loving and hating the phone had a few common responses describing negative feelings towards it: inability to switch off from it, feeling too 'emailable', becoming addicted to it. There was a mention of the phone's radiation being felt near the ear, the phone being too expensive or too slow. Reasons for loving it were: feeling connected (this was the most common response) and being able to organize and document daily events.

What the Cultural Probes produced

What did I learn from using the Cultural Probes? On a first glimpse, the probes confirmed that they can provide engagement and a range of responses at times surprising, at others predictable. They supported my suspicions that viewing the smartphone as a sort of family member, meaning different things to different people in a family, with both good and bad qualities, was something that seemed to touch a nerve in participants and was worth digging into. Generally speaking, the probes became another method that added to the family of fragmented insights gathered in this research. Presented as packs that were sent out, and that were returned completed, they are physical evidence of the responses from participants that I can show to others as 'proof' of their interaction in this research. On the other hand, the probes failed to provide the freely interpreted and more intimate accounts I was hoping to get, and that only emerged during later encounters between subjects and

my designs. I think that doing probes with the right level of play and ambiguity to produce empathy and engagement, as intended when they were originally created, requires dedicated practice, and perhaps a more intuitive understanding of the research subjects than what I had to begin with. Had I had the time, I would have done a second set of probes with more provocative and ambiguous tasks that may have encouraged multiple interpretations, thus producing richer results. But I had to work with what I had, and the probes gave me some confidence that I was on a track of themes worth exploring. Using Cultural Probes became practice for the later use of evocative designs for inciting conversations with participants. The probes formed part of a wider group of activities that included subjects' insights and accounts into the research. Besides these undertakings, the work evolved into a series of explorations through drawing and making, a process that I describe next.

Research through drawing and making

> *Designing is a sensorial and rational experience. Sometimes we know what before why and how. Sometimes we know how before why and what.*
>
> Daniel Weil, 2014

I explored my topic through sketching and making, common activities in design. This navigation, informed by Cultural Probes, personal experiences, observations and conversations with parents over the years, and the literature that educated my perspective, formed part of my interpretation of the situation I set to explore. Both intellectual and sensorial, this process allowed for an intimate engagement with my subject. What I present now is a selected description of the drawings and objects that became significant as they gave me a sense that something was starting to develop. I produced a series of pencil and watercolour sketches that at times look somewhat child-like. They do not necessarily respect perspective or are loyal descriptions of objects. Their gestural lines and the blurry bleeding of the watercolour work together, conveying suggestive meanings and at times strange forms. I would draw a toy with

a face, with wheels, or with animal legs, incorporating into these a bottle, a dummy, a smartphone. Through drawing, I was describing the A, B, C of an infant's world. By repeating this exercise, in several variations and combinations, I was developing an understanding of material relations in a world populated by transitional objects, bottles, milk, feeding breasts, smartphones, toys and teddy bears. Some of these drawings conveyed just impressions, shapes that evolved, merged, mutated and morphed into new ones, producing ideas, provocations, narratives. Gradually, the drawings became a visual language in which I let forms define themes that I started to recognise. Paraphrasing Weil, in some cases I knew what I was creating, before knowing why. I let the process of drawing unravel and deconstruct what I was trying to understand. Through the production of such narrative drawings, certain aspects gradually started to surface: the smartphone as a form of childcare, as an object of rivalry, as a sort of pet, as a mediator between mother and child, as a toy/tool. Some of these themes were further explored through making, creating experimental objects that also gave form to these ideas.

Figure 45: A smartphone in the nursery sketch

The shape of the breast, a symbol of the maternal body, was a recurring element, both in the drawing and later in the making. Smartphone, toy and breast or feeding teat came together in hybrid objects, fusing care, nurturing and play, suggesting a sort of nanny object. I experimented with this integration in various forms: a play console, a pull along toy, a bottle and phone holder. Each design could be read both as a symbol of a concept, but also as a possible designed object. Experimenting with shapes on paper gave me a sense that something was beginning to emerge and I let this process carry on until I felt I had explored each to a point where ideas became palpable as themes.

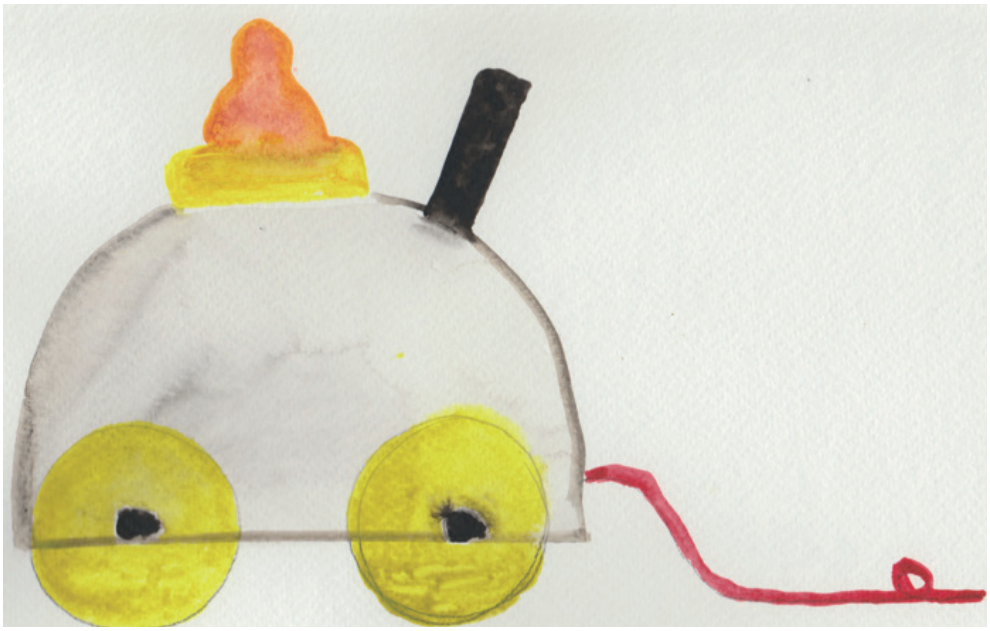


Figure 46: Hybrid object sketch

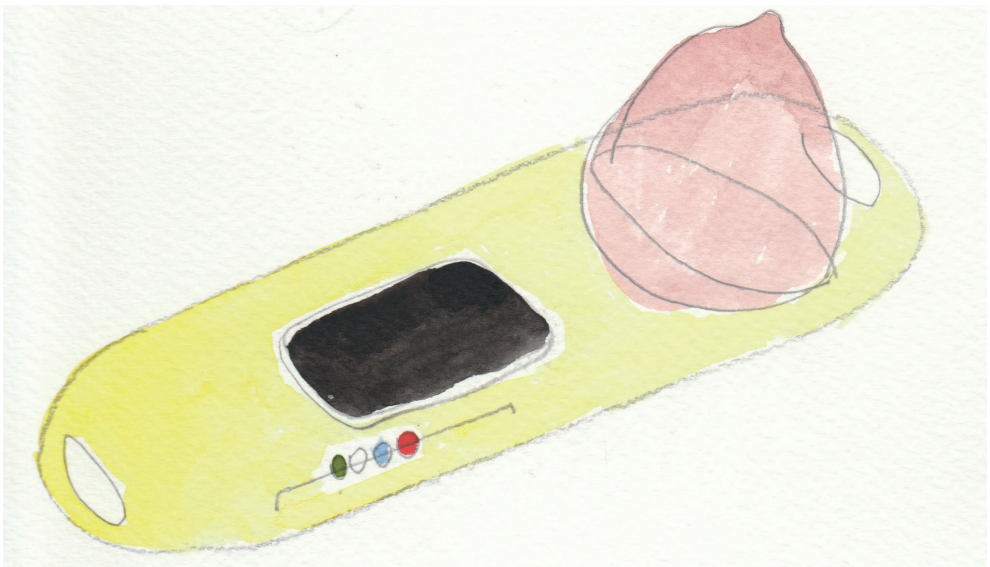


Figure 47: Hybrid console sketch

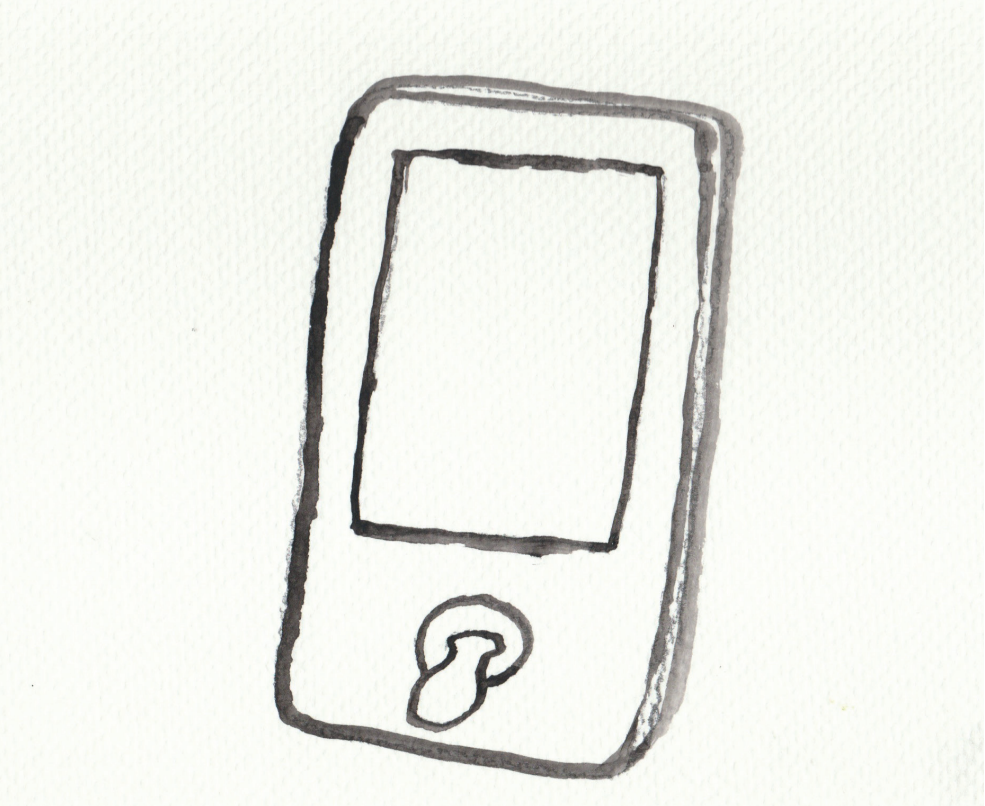


Figure 48: The phone as pacifier

Figure 49: Feeding bottle/phone holder sketch

As I drew, sketches also invoked other pictures. Some drawings started to remind me of images from Harlow's attachment theory experiments on Rhesus monkeys, using designed surrogate dolls (Harlow et al., 1965), a research which I have often found disturbing. I am now going to digress a little because I want to briefly describe these experiments, since they have somehow and indirectly affected my visions about the use of smartphones as a form of childcare.

A short deviation: Harlow's experiments

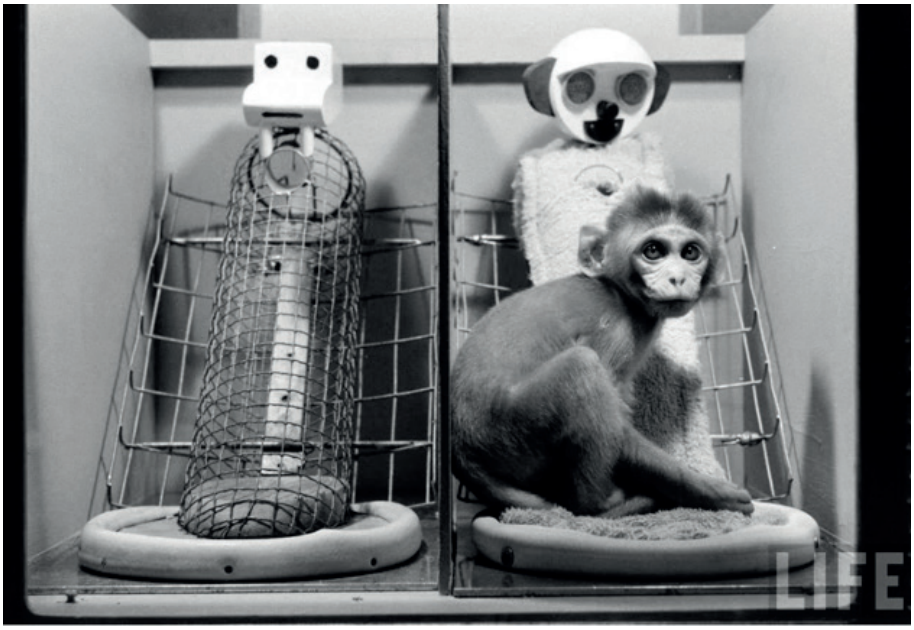


Figure 50: Harlow's experiments on attachment in rhesus monkeys.
Image credit: Life magazine

Harlow separated eight infant monkeys immediately after birth and placed them in cages where they could access two surrogate mothers: one was made of metal wire, and the other made of soft cloth. In four of the cages, the wire dolls had a milk bottle inserted where the monkeys could feed themselves, while the cloth dolls did not provide nourishment. In the remaining four cages, the monkeys could get only milk from the cloth doll. In all cages, monkeys spent more time with the cloth mother, even when it did not provide milk (these four monkeys only went to the

wire mother when they were hungry). The monkeys tended to find refuge in the cloth mother when scared and would explore their surroundings more when they were nearer to it. Harlow concluded that monkeys who grew with surrogate mothers were more timid, did not know how to relate to other monkeys, were bullied, had difficulty mating and, in the case of females, became inadequate mothers. (McLeod, 2009).

Harlow's experiments, unnecessarily cruel and highly criticized, provided some influence on the theoretical work of John Bowlby (1969) on attachment theory (McLeod, 2009), the mother's importance in the development of the child and the impact of physical contact between mother and child. The attachment to an object and the importance of its tactile qualities resonate with aspects of Winnicott's work on transitional objects (Winnicott, 1953).

Figure 51: Harlow's experiments on attachment in rhesus monkeys.
Image credit: Life magazine

The photographs showing Harlow's experiments are powerful. I understand them as representing a purposeful dislocation between the organic need for nourishment and for physical contact, usually integrated in a healthy bond between mother and child. Woefully unethical, the experiments are cruel examples of the failure of a designed object to provide what can only be given by a living organism. Harlow's images have to a certain extent informed my drawings, as I explored the protagonism of the smartphone, sometimes exaggerating its use, to suggest a surrogate mother. Once drawn there was a sense that something new was starting to emerge, and I was ready to move on to explore other areas.

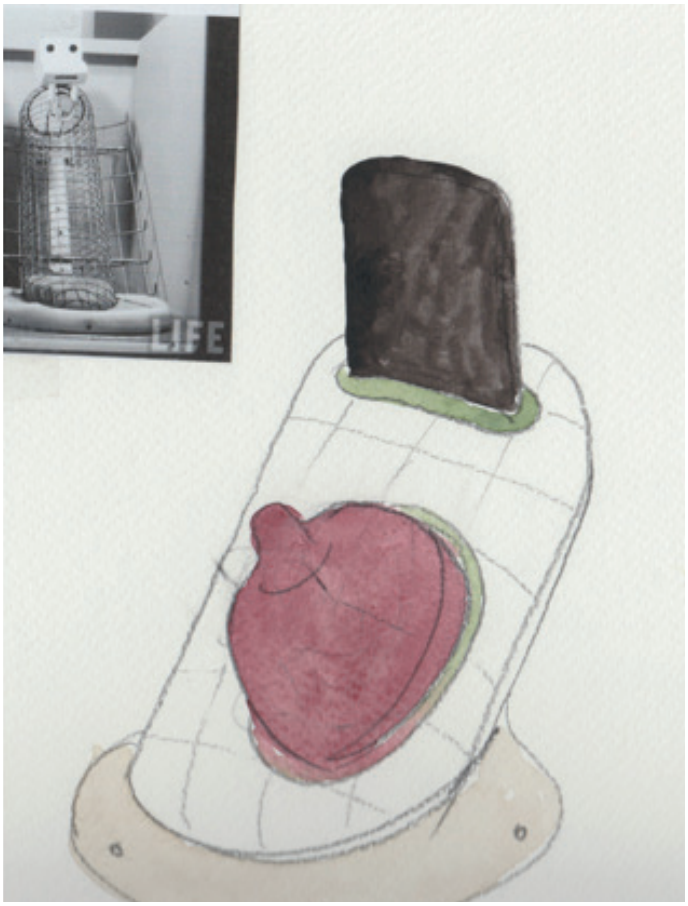


Figure 52: Exploring with ideas of smartphones as surrogate mothers, inspired by Harlow's experiments

I explored the problematic contrast of textures that is evident in Harlow's work, seen in the disparity between the hard wire and machine-like face of the doll, and the soft texture of the cloth. This textural, binary contrast of the organic and the artificial was explored in drawings that combined soft toys, teddy bears and smartphones.

Figure 53: Exploring textures, soft toys and the smartphone as an object of attachment

The drawings gave way to other forms, invoking pets. At some point in my investigation I came across research papers about the role of pets in families[1], which I found had some resonances with the role of smartphones. I started exploring the device as a sort of family member and began drawing objects that amalgamated pet, toy and smartphone.

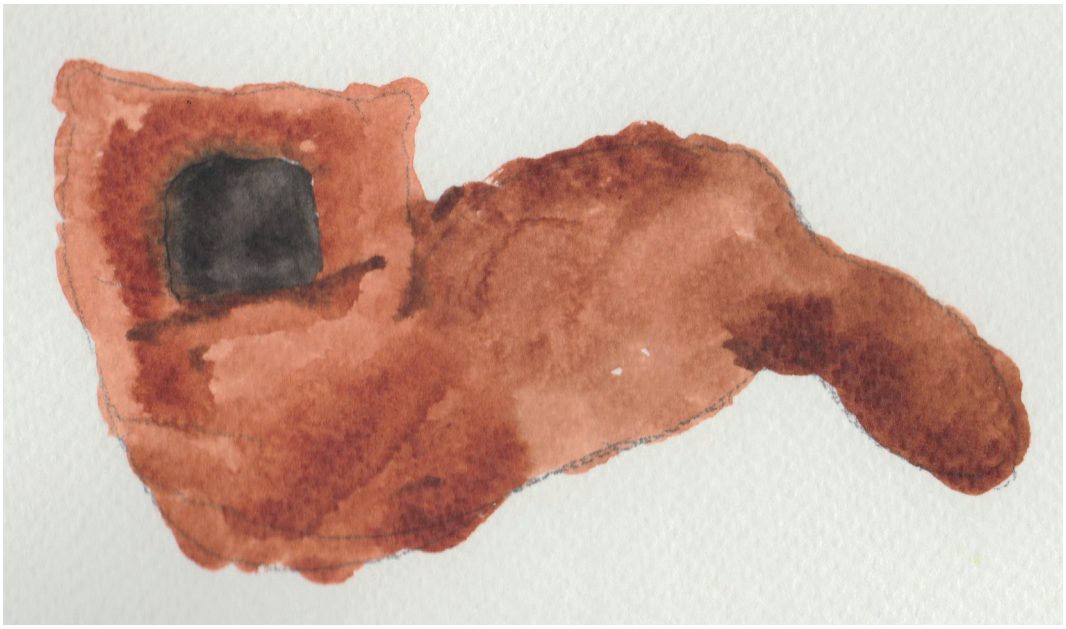


Figure 54: Exploring the smartphone as a pet

1. For example, Triebenbacher (1998) suggests that a pet can be understood as a child's transitional object, while Walsh (2009) proposes that in families with pets, conflicts often arise when rules are broken (for example, rules about allowing pets on the bed, or feeding treats to pets). Here I found similarities with the tensions caused by the braking of rules around technology in family life, and I felt that framing the smartphone as a sort of pet was something that could produce interesting results, both in sketch form and later in prototype.

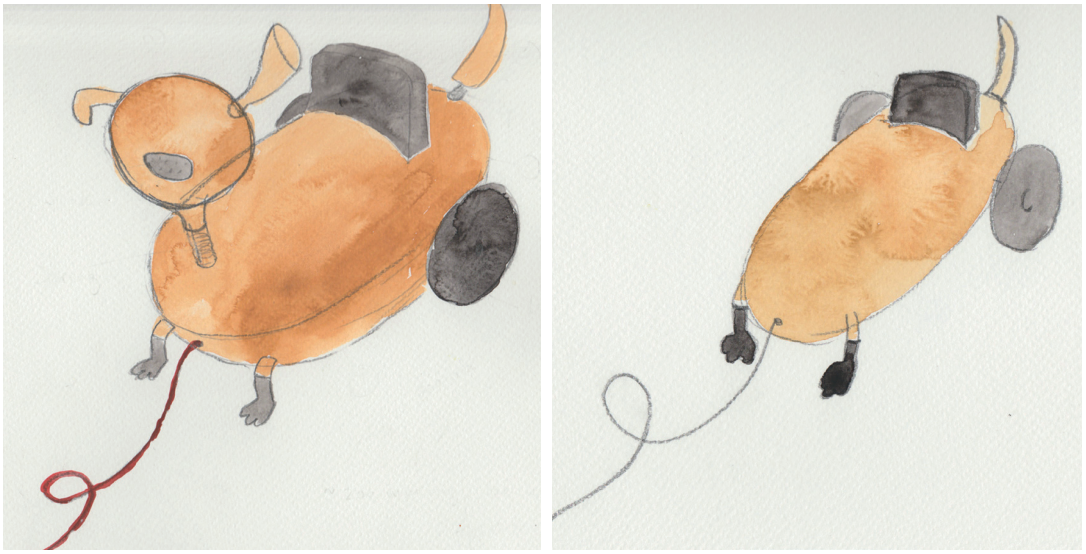


Figure 55: Exploring with shapes of the smartphone as pet/toy

The drawing process helped ideas transform, as I sketched and re-sketched them in multiple combinations and mutations, focusing at times on one singular aspect of a concept and its possible iterations. I drew the smartphone with other objects such as an adult teacup or wine bottle, resulting in the phone as mediator between mother and child's separate needs.

Figure 56: The smartphone as mediator between the needs of mother and child

I would also draw the smartphone looking graphically similar to the face of a baby, with a hat like a phone cover and a pacifier like the home button. The result was a depiction of the smartphone as an object of rivalry for parental attention.

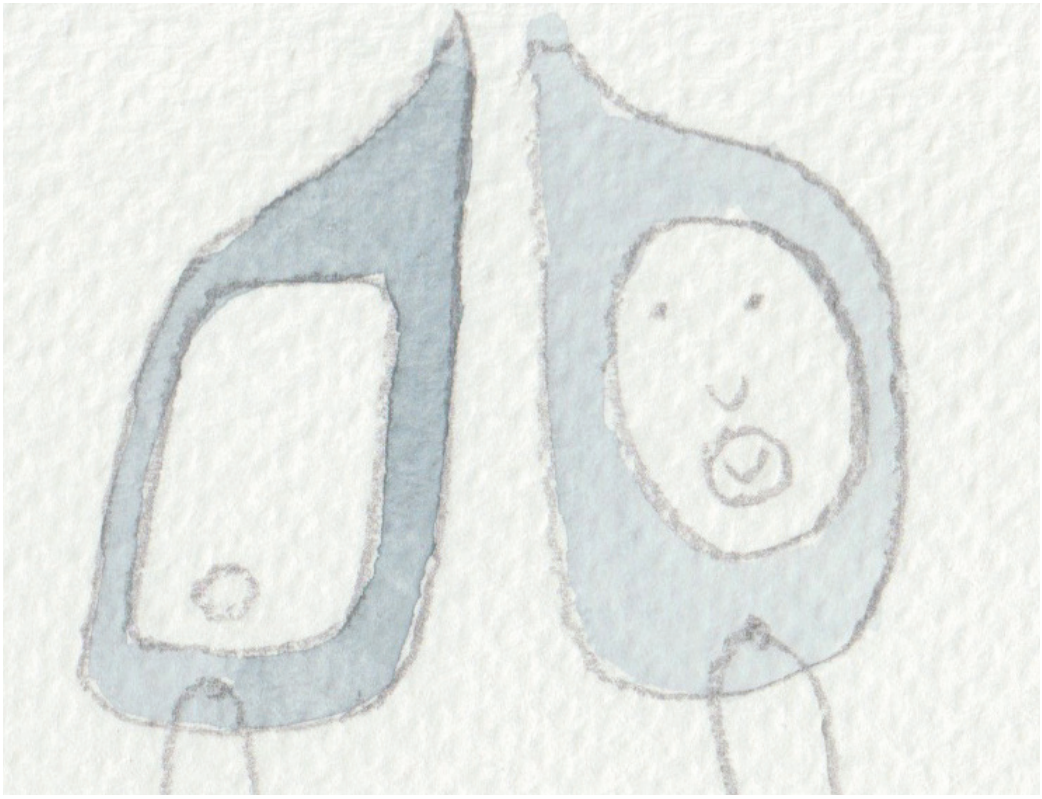


Figure 57: The smartphone as an object of rivalry

Another theme that emerged was the smartphone as both adult tool and child's plaything. I started to draw objects that purposefully existed as both.

Figure 58: Exploring the smartphone as a tool/toy

Ingold writes that sketches are *on their way* towards proposition; they are never finished, committed to carrying on (Ingold, 2013, p. 127) and indeed each time I look at my drawings I can think of further variations they could evolve into, my hand could continue working on a particular theme indefinitely. Some of the drawings are accounts of what I was consciously thinking of at a particular time, although it is also important to see them as the remaining traces of an intuitive process of sense making. I produced an assortment of sketches drawn over some 150 sheets of paper, compiled and put together in a book, which I later showed to participants. As a collection, they reflect the manner in which I worked to develop an understanding of the research space I was unfolding. The exploration of themes also took place through the process of making, as I describe next.

Figure 59: Compilation of sketches into a book

Tinkering with bottles, pacifiers and smartphones

While sketching afforded transformations from thoughts into visible stories on paper, some ideas needed to be developed and translated into other visual vocabularies. Turning a sketch into a computer rendering retold its story, in poorer or better interpretations. A sketch re-drawn in CAD became clinical, more male, less childish, at times reminiscing science-fiction imagery. Turning a drawing into a 3D object helped ideas exist with other objects. In some cases, their three-dimensionality made them more intimidating as their protruding features became real. The result of these hybrid objects told the story of unintended uses of smartphones. I created a range of 3D printed holders for bottle and phone.

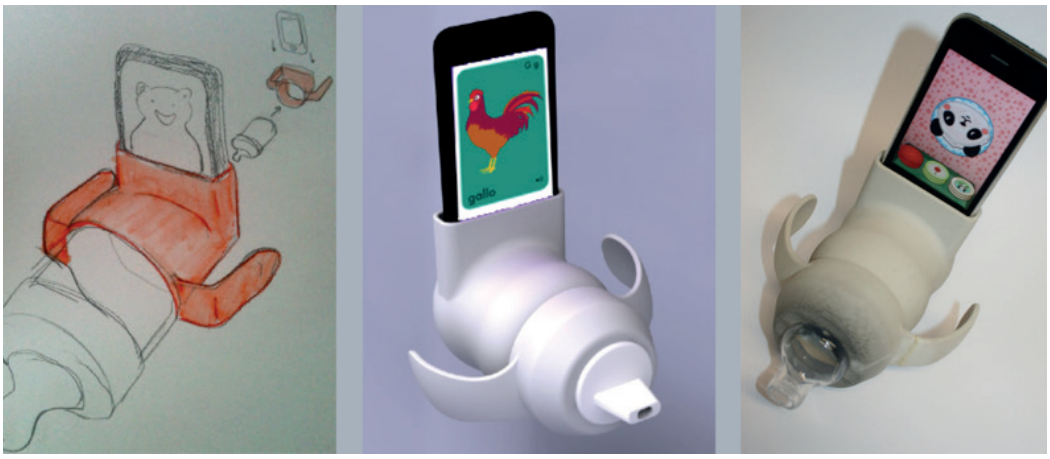


Figure 60: A sketch that is later drawn on the computer and made into a 3D printed object

Figure 61: Bottle, phone and 3D printed object

I tried combinations in which the objects became framed in packaged form, as a mass-produced group of items to cater for various ages.

Figure 62: Adapting a laptop package to house the models

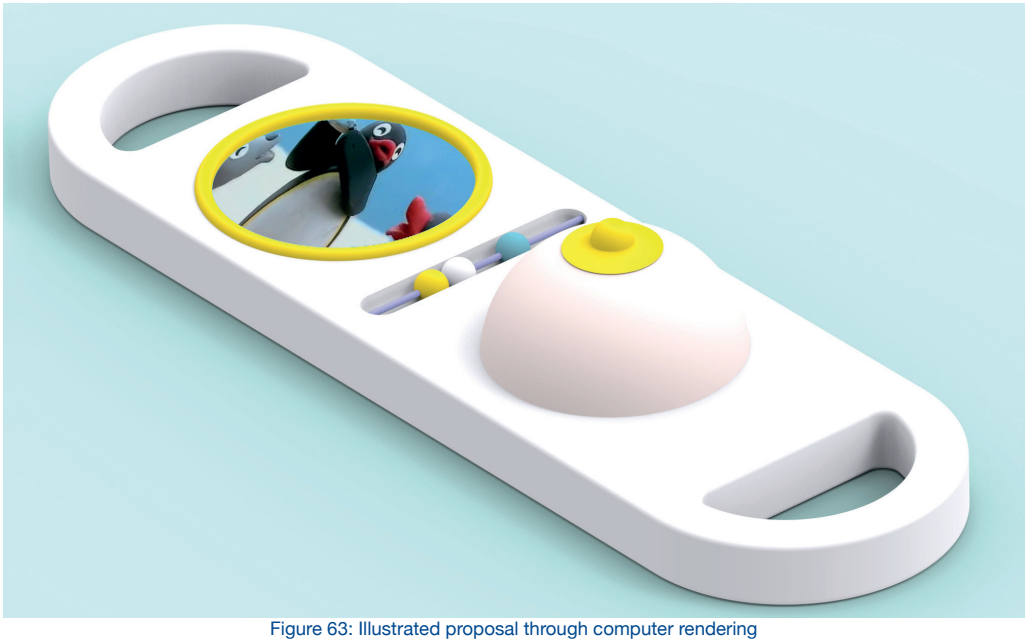


Figure 63: Illustrated proposal through computer rendering

From bottles, I gradually moved on to the breast shape, inviting the maternal body into the design and incorporating it into the world of toys and smartphones. As a symbol of nurture and nourishment, it invoked the organic function of the mother.

I played with this shape in various combinations using feeding tops, wooden wheels and slots for the phone, each iteration offering a slightly different narrative and I developed these hybrid objects to a point where I felt they suggested a child's organisation of the world, which included these items living together in one realm. Once I felt they worked well enough, I moved on to the next subject, smartphones as tool/toys.

Figure 64: Trying out shapes

Tinkering with toys, wheels and smartphones

The exploration with ready made objects included the smartphone as a material that offered technical effects (Chatting et al. 2017). Following other themes emerging from the sketches, I explored the idea of the phone as tool and toy. I made sketch model variations, incorporating a smartphone into a classic Fisher Price™ Chatter Telephone, a toy that strangely fuses a telephone into a car with a face, a hybrid of 3 features that are attractive to young children.

Working from these models, I then created a more detailed object, using a working handset and wooden wheels, resulting in a sort of wheeled base for a smartphone (in this case an iPhone). To this model I attached a cord, so that it could be made to roll when pulling it. The idea was to create an object that could live on a desk and could be used for making real phone calls, but that could also be a pull along toy.

I created an animation, a variation of faces from happy to angry, resembling the face in the Fisher Price toy. I was trying to find ways to poke at the tension between the roles of the phone as toy (for child) and as tool (for parent).

Figure 65: Experimenting with ready made toys

Figure 66: Trying out shapes, incorporating smartphone and toy wooden wheels

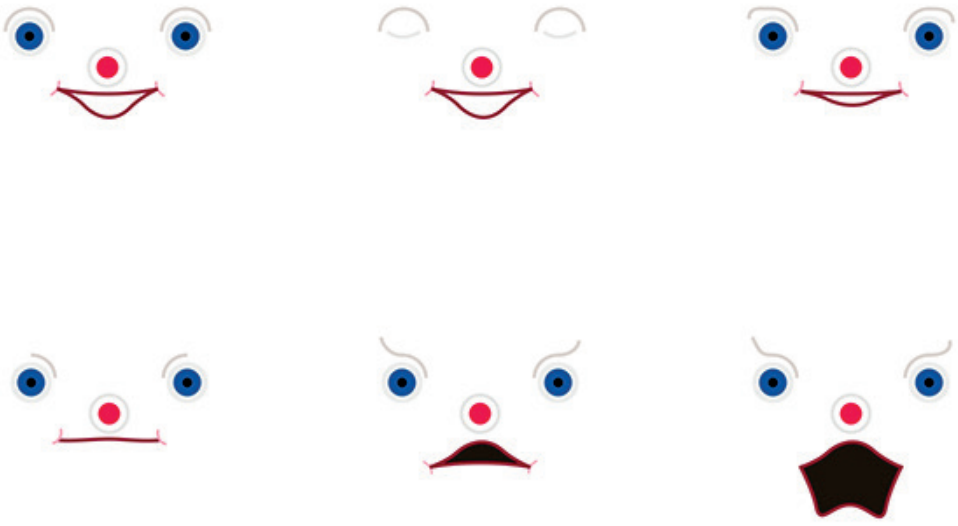


Figure 67: Progression of facial expressions from happy to angry

I wrote sentences expressing what the phone would say if it demanded to stop being used as a toy. I recorded these being read aloud in the iPhone's simulated voice, trying to give some agency to the smartphone.

How about going to sleep now?

I am busy

I am not a toy

I have work to do

Take me to your mum

I am getting dizzy

I don't want to play right now

Slow down

Stop it

Wait a minute

Oh for goodness sake

Figure 68: Experimenting with phrases, which were played out in Siri's voice

I had this animation converted into an app[1] so that the faces changed from happy to angry as the object was being pulled, randomly audio playing the phone's commands, as its speed increases. The speed could be detected by the smartphone's embedded accelerometer.

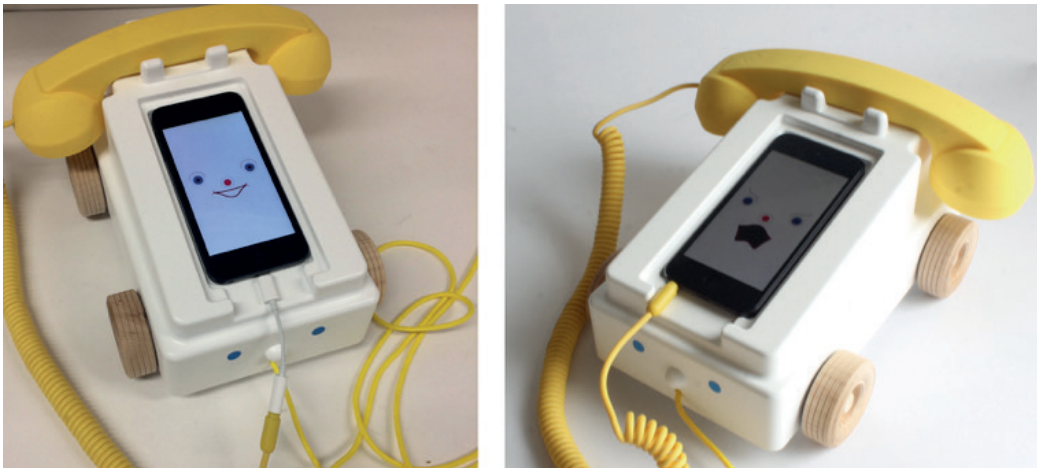


Figure 69: The phone in a happy and grumpy mood

1. Thanks to the help of David Chatting

Once I had this working prototype, I felt I had enough material that explored this part of my research space, the phone as tool toy. I had something that worked well enough to be used and tried with participants, and that left enough room to be developed at a later stage if it proved to offer fertile possibilities. At this point I decided to move on to other themes, such as textures, dolls and pets.

Tinkering with textures, fake fur, dolls and smartphones

Tactile surfaces are important sensorial elements in the early years of childhood, with a plethora of soft toys, books, play stations and mobiles where tactile qualities are their most salient feature. I explored the contrast between the smartphone's hard, cold glass material and the soft padded nature of such toys, sometimes incorporating pacifiers or feeding parts. I consider these objects some sort of accidents in the making that produced some strange results, although I did not fully continue these concepts later on.

Figure 70: Experiments in making

In my exploration with textures, I looked at fur and the ways in which it has been used in art, often producing eerie results. Surrealist artist Meret Oppenheim famously covered a teacup, saucer and spoon with fur, resulting in a sensuous yet subversive object where incompatible materials brought together (Gompertz, 2012). I started to explore the role of the smartphone as sort of pet. Working with a fake fur

material (that incidentally loses some of its hair, leaving a trail), I created an object that evokes a domestic animal. Incorporating a pocket that holds the smartphone where its face would be, and a power cable, the artefact is a charging station for the smartphone. It uses the fur to evoke a pet, a non-human family member. Combining fur and phone, the artefact then suggested the juxtaposition of the biological and the artificial, a theme that played with ideas around the presence of smartphones in the biological world of mother and infant, while also suggesting it as a pet/family member. It became an uncanny combination.

Figure 71: *Object*, by Meret Oppenheim, 1936. Image source www.moma.org

Figure 72: A model, experimenting with fake fur.

By December 2016, I had produced a range of experimental objects, some more finished, resolved and detailed than others, and some which were critical, dysfunctional and narrative.

A spectrum of objects

After showing these objects to some colleagues, it soon became clear that they were better able to provide precise responses with models that looked closer to industrially made products than with rough prototypes. Although narratives were at times suggestive or ambiguous, a detailed visual language invited people to imagine the objects living in their own environments and to make comments about textures, forms and potential functions. In contrast, the roughness in objects made of cardboard, for example, became distractions and obstacles in participants' abilities to engage with the stories that these were meant to convey.

I will now present a description of the most prominent objects I developed. The way I understand them now, is in part based on the way they later worked, when I presented them in workshops and public displays. As I brought them to audiences, I soon found that they worked in a spectrum of narratives, some more provocative than others, ranging from abstract and critical to semi functional and potentially deployable. As a collection they work together to represent the way in which I engaged with my topic, giving form to its discourses through artefacts.

Ambivalent Objects

At one end of this spectrum is what I later called Ambivalent Objects. These are objects that integrate the smartphone with objects that inhabit the world of infants, such as bottles, wooden wheels, or shapes that evoke the breast. Such arrangements produced both attraction and rejection and allowed for conversations about our ambivalent relationship with smartphones, about the isolation many mothers feel during childcare, often relying on smartphones, and about being judged for this. As it turned out, the proposals helped expose and discuss practices that often take place in private and that are sometimes ridden with guilt. They evoke the use of the smartphone as a pacifier. The objects also speak about the complexity of motherhood, challenging conventional portrayals of mothers as permanently benevolent, through the representation of ways in which smartphones are used at times to take a break from children.

Figure 73: Ambivalent Object 1. Photo credit Roger Stillman

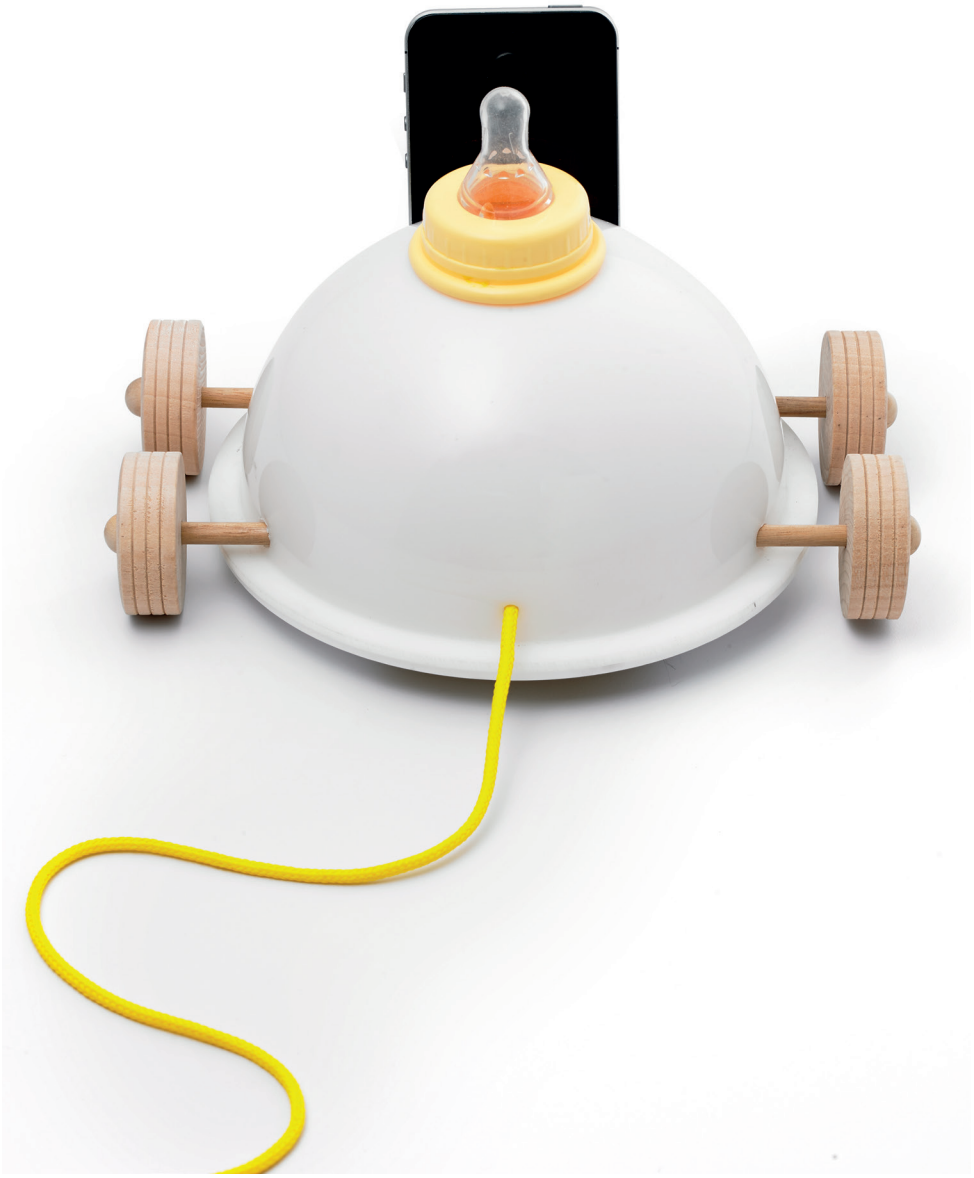


Figure 74: Ambivalent Object 2. Photo credit Roger Stillman

At the opposite end of such a spectrum are artefacts that became somewhat more playful. In their propositions they offer further possibilities for exploring the way in which we manage smartphones in family life. These objects provide some balance, so that not all conversations about the role of smartphone became dark, psychoanalytic and dystopian. They brought some humour to the conversations and offer transformative potentials.

An Uncanny Pet

An Uncanny Pet is a charging station for the smartphone that uses the metaphor of a pet. The idea of this proposal is that when the phone is plugged in, it becomes inactive, simulating to be asleep by playing a snoring sound and showing a black front face with white curved lines resembling closed eyes. Sleep is a significant aspect of young children and mothers' routines and it was used here to create a situation in which the smartphone seems to be temporarily unavailable.

Figure 75: An Uncanny Pet. Photo credit Roger Stillman

I have created a video of Herby which can be seen here: https://vimeo.com/330331412

Somewhere in the middle of the spectrum is Herby.

Herby

Herby is an object that would reside in the mother's desk, it reacts when it is being pulled along like a toy. Through animated faces it seemingly becomes angrier the faster it is being pulled, playing aloud sentences like *'take me to your mum', 'I am not a toy'* or *'I don't want to play right now'* through a simulated voice. This plays on the notion of the smartphone having some agency as a slightly grumpy member in the family, while evoking the mother's plea to leave her phone alone.

Figure 76: Herby. Photo credit Roger Stillman

I have created a video of Herby which can be seen here: https://vimeo.com/330331412

Annotated designs

In chapter four I discussed the use of Annotated Portfolios as a collection of ideas that delineate a research space and communicate design research (Gaver and Bowers, 2012). Following the description of the development process, I now present a group of annotated proposals that represent the family of concepts and interpretations addressed in this research.

Ambivalent Objects 1

Ambivalent Objects 1 are suggestive and provocative. They embody the use of smartphones as a form of childcare. They cause both fascination and rejection, and invite dialogue and reflection.

As critical designs, they challenge conventional product design approaches that portray mothers as uncomplicated and idealised. Instead, they present them as complex users of technology that use all available resources, including smartphones, in their childrearing tasks.

Figure 77: Annotated Ambivalent Objects 1

Ambivalent Object 2

Ambivalent Object 2 is a critical design that embodies the use of the smartphone as a comfort object, a form of childcare. The object's narrative prompts subjects to reflect and tell of behaviours around smartphones. Provoking both fascination and rejection, it invites discussions about our ambivalent attitudes towards smartphones and young children.

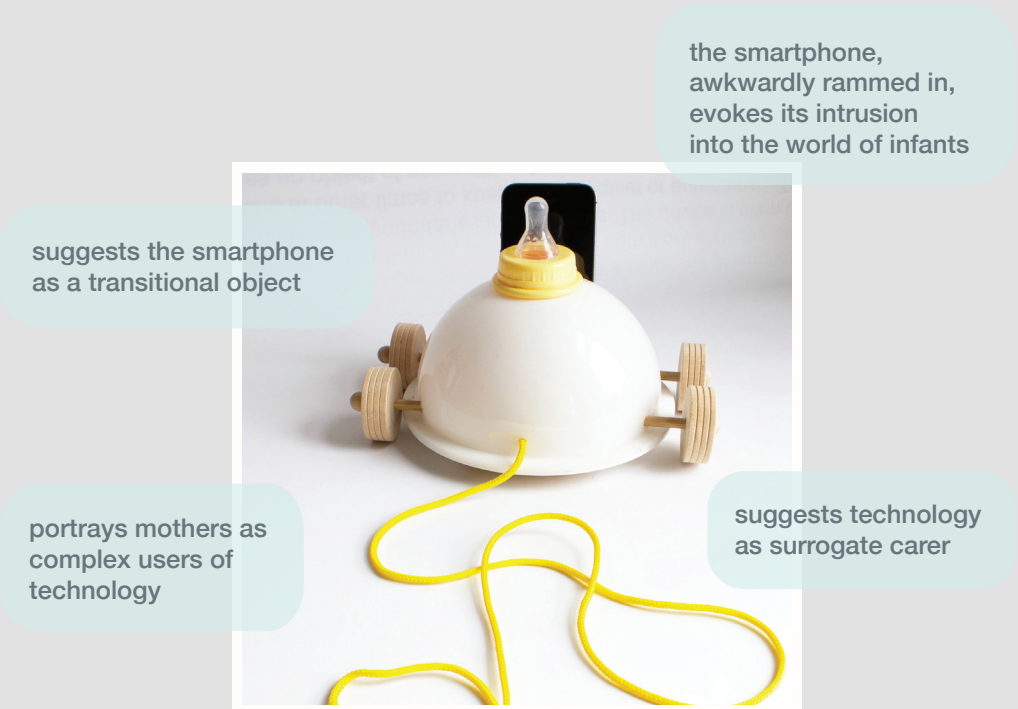


Figure 78: Annotated Ambivalent Object 2

Herby

Herby is an artefact that houses a smartphone and could live on a desk. It reacts when it is being used as a toy and gets angry when pulled along.

The faster it is pulled the angrier it gets.

It argues *"I am not a toy"* or *"take me to your mum"*

using humour to make difficult issues 'safe' to discuss

the angrier it gets the more ridiculous it looks, bringing humour

suggests the phone as a grumpy family member

making the phone angry gives it agency

it evokes the mother's reluctance to share and her plea to leave the smartphone alone

Figure 79: Annotated Herby

An Uncanny Pet

An Uncanny Pet uses the metaphor of a sleeping pet as a charging station. The smartphone is temporarily unavailable, it snores and its eyes are closed.

It loses hairs.

Evoking sleeping routines, easily understood by young children,it invites adult and child to take a break from the phone.

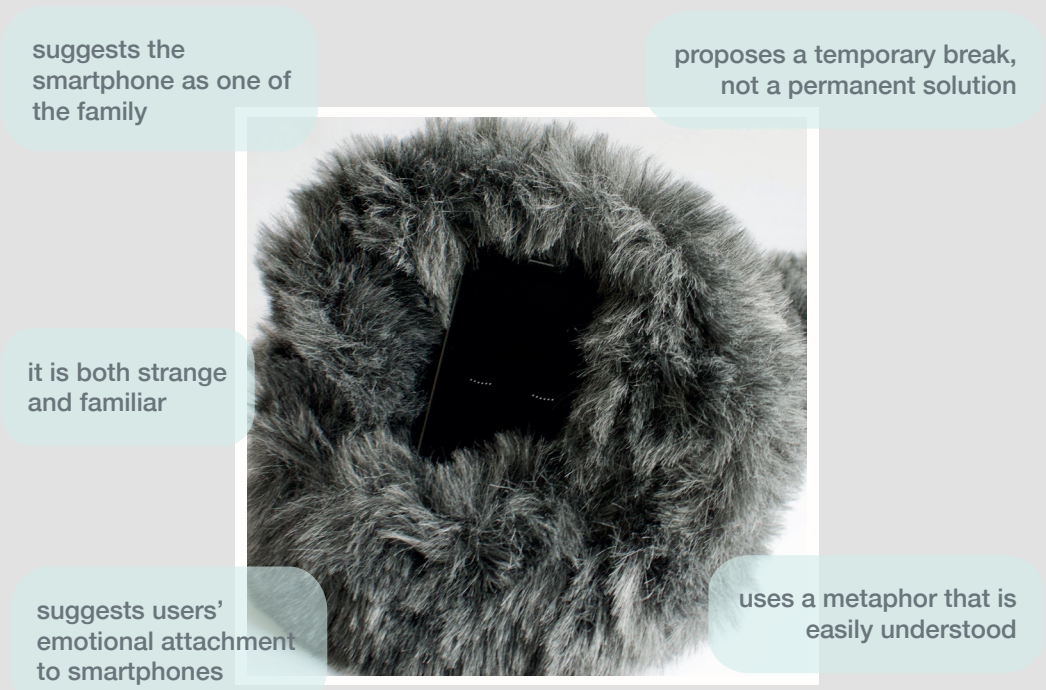


Figure 80: Annotated An Uncanny Pet

Chapter conclusions

In this chapter I have described the process in which I engaged with my subject by developing a design exploration of its multiple themes. I have discussed how the practice of drawing allowed for a thinking space on paper, in which forms and ideas evolved, merged and developed as I addressed the role of smartphones during childcare and its relationship with the objects that populate its material realm. I have presented the development of these ideas three dimensionally, through the creation of a range of experimental object proposals that gave materiality to some of the themes in the research. I have presented selected design as a collection of annotated ideas that outline the research space and its implicated discourses.

In the next chapters I give an account and reflection of the encounters in which the proposals met participants: parents, designers, human computer interaction scholars, psychoanalysts and members of the general public. These encounters took place through a range of activities that formed the second stage of exploration in this research.

Chapter Six

Encounters with Participants

Chapter Six (Practice):

Encounters with Participants

"I feel like I have done the things you are showing here, these are narrative objects aren't they, you are showing potential scenarios, but they actually already exist"

quote by Kate, workshop participant

Introduction

The design proposals that I described in chapter five embody the ways in which I addressed the roles of smartphones for mothers and young children. This first exploration eventually reached a point when I needed to include participants and audiences in the work; engaging others allowed my designs to exist beyond my desk and studio and enter shared discussions and public debate. In this chapter I describe how I addressed my second research question as I used my designs to provoke responses from participants in three workshops, resulting in a number of insights discussed here. I start by describing what took place in each workshop session with a transcription of the dialogue, and I later offer an analysis of the themes that emerged.

Three Workshops called Conversation Pieces

I organised three workshops that I called Conversation Pieces. Two of these took place in December 2016 at a room at Goldsmiths College, and a later one took place in June 2017, at the home of a participant. The dynamic of the workshops was different between the first two and the third one, where young children were present, and participants were younger mothers.

Ethical issues

Information about the research was sent via email prior to the workshops, letting participants know that I would like to record, photograph and film the session, and asking them to sign consent forms if they wanted to participate. I also explained this verbally when we met, making sure to let them know that participation was entirely voluntary and that they could opt out from the research and ask for the information to be retrieved at any time. Consent forms and leaflets can be found in Appendix 1.

The recruitment of participants was done via social media, college networks, and through printed flyers that I distributed around college, at a play centre, some cafés, an NHS child clinic and a nursery in the New Cross area. Seven participants responded but only six were able to take part.

Participants consented to be photographed, although one participant requested to see the photos and to let me know which ones she was happy for me to use and which ones I should delete. Due to the intimate nature of some of the conversations, and to this particular sensitivity about being photographed, I decided to blur all faces of the photographs, despite prior consent to be photographed. I have changed the names of participants to ensure anonymity.

Although my interaction was mainly with adults, I did a DBS check and I informed participants about this. Children were present during the third workshop, playing in a separate room or on the floor near where we conversed. Prior to our meeting, I requested the use of a table where my designs could be placed and kept away from the reach of young children. This was in part due to the fact that the artefacts are fragile and not robust enough to be handled by young children. Furthermore, they have not been through the rigorous safe and healthy examination required for any child related design, so I avoided letting the children near the objects.

Workshops one and two: 12th and 13th December 2016, Goldsmiths

I organised two workshops in mid-December 2016 in which the design proposals met participants. The workshops were funded by a grant from the EPSRC Balance Network.

Structure of the workshops

The workshops took place in a hired teaching room at College. We sat in a circle on the floor. Some participants took their shoes off, and the atmosphere reminded me of that of baby playgroup. Once the consent forms were read and signed, I started filming using a small unobtrusive camera placed on the corner of a nearby table. I also audio recorded the conversations. I took some photos, but I tried to focus mainly on our conversations. I put all the objects inside 2 boxes and a suitcase and brought them out one by one. After taking the objects out I brought out the watercolour sketches, which were compiled in a book. The workshops lasted between one and a half and two hours.

Figure 81: Room for workshops 1 and 2

Workshop 1 (12/12/16)

Participants:

- Kate, an academic in her forties and mother of two children, still at primary school. She is the primary carer and is employed on flexible hours, while her partner works full time. Her children were at school at the time of the workshop, so she did not have to worry about childcare.

- Tina, a mother of two children, a two-year old toddler and an eight months old baby. She is the primary carer of her children while her partner is a full-time student. She is in her late thirties and is an artist, although she was on indefinite maternity work leave at the time of the workshop. Her partner took time off to look after the children so that she could come to the session without them. This required some planning so that she could breastfeed her baby soon after finishing the session.

Figure 82: Workshop 1

Paulina: *ok, my research is about the relationship that mothers and young children have with smartphones, and I have created a series of experimental objects that I am going to bring out and show to you. And hopefully you will tell me what you think of them and we can have some conversations…*

I start by bringing out the Ambivalent Objects: baby bottles with phone, dolls and pull along object.

Kate: *Lot's of pacifiers here…*

Tina: *my initial thought is … disturbed, 'cos I can really see this becoming part of routines or patterns... it's like a form of childcare, it's already quite common to use the TV, women already have this network of objects they use.*

Tina: *I was thinking of the polarization we have in society of mothers who breast feed and bottle feed, even if it's not polarized, this one, with the shape of baby bottle top, it becomes a sort of bottle feeder, whereas if the child is breast fed, then the screen is separate. But then obviously for a toddler, then to me it's a bit like the TV*

Kate: *well I feel like I have done the things you are showing here, these are narrative objects aren't they, you are showing potential scenarios, but they actually already exist*

Kate: *I was just thinking of … who had two babies in 18 months and she is apologetic to strangers about how she's had to rely on technology in able to get through pregnancy and having another child*

Paulina: *why do you think she is apologetic to strangers?*

Kate: *well I think it comes from her guilt from her eldest not being able to walk or talk properly yet… and I think she blames herself for putting him in front of the TV and I was thinking of how she feels and what she has had to rely on to get through the day… and how she feels judged about how much she uses technology, but you can completely understand as well, what she's been through and what she's going through… there is almost that, being careful not to judge people who might need this, right?*

Tina: *yes I think it's quite common for women to feel guilty and to be blamed for a lot of things 'cos, at the moment my son has a speech delay and I start thinking about my putting him in front of the TV, things like that whereas I know plenty of people who don't worry at all about that… and I think part of that guilt or that fear about the interest in technology is fairly old, you know the appearance of TV in people's homes in the 1950's, you know, its quite an old fear, what it would do to your brain, etc. and, I think a lot of it is probably unfounded… but I don't know, you know smartphones just seem to be taking off, in an unbridled kind of way as an object it has inserted itself fairly quickly and easily into family life.*

Kate: *it's that unknown isn't it, its recent so there's no research, there can't be any long term research on its effects…*

Paulina: *when my children were very little, I didn't let them use my smartphone, I was very protective of it, whereas my husband would arrive from work and just let them use it, he didn't feel protective, so for me the phone meant something that wasn't the same for him*
Tina: do you think it was a way of preserving your autonomy as well?

Paulina: *yes*

Kate: *it's kind of on one side it's the pacifier and the phone, but then there is the feeding, which is kind of different, a mean it's a kind of pacification really, filling the baby's tummy, but its also one of those moments when it's really lovely to share that experience. Certainly, in my experience I have used the TV and have used dummies and I've used those two as childcare, but the feeding component feels like taking it a step further, because that would be a moment when I'd like to connect with my child*

Tina: *yeah, we had this whole situation at meal times, when my son, he was having lunch, and I think I was heavily pregnant and I went for a moment to check some emails, and I had to do it hiding it behind my back because if he saw it he'd want it and I didn't want him to have the habit of feeding and having some screen time*

Paulina: *with the phone?*

Tina: *the tablet, and occasionally the phone would have the same effect, but that happened more after my daughter was born because you know,*

being sort of trapped, breastfeeding, on the sofa, trying to distract him with whatever I could 'cos you know, slightly chaotic, then I probably more then I started having a relationship with my phone…'cos my attention is completely tied up.

Figure 83: Workshop session 1, discussing Ambivalent Objects

After looking at the Ambivalent Objects I start setting up out Herby while I am speaking. This is the artefact that has a smartphone simulation that reacts when it is being pulled along. Herby starts, playing aloud expressions such as *'I am not a toy'* or *'take me to your mum'*. Kate and Tina stand up and start having a go at pulling it and making the faces change.

Herby: *I am not a toy* (both Kate and Tina laugh)

Paulina: *so, this is an object that plays on the idea of the smartphone being a tool for adult but at times it is a plaything for child, even though it is intended to be for the mother. It would live at her desk, but if it is grabbed by the child it starts speaking up and getting angry.*

Kate: *it's quite grumpy!*

Kate: *can you change the voice? Is it always a male?*

Herby: *take me to your mum* (both Kate and Tina laugh)

Herby: *slow down*

Herby: *Oh, for goodness sake*

Herby: *I don't want to play right now* (laughs from Kate and Tina again)

Paulina: *at the moment, yes, it is only male, but it is just the way I set it up for now, I am trying out a few things with this*

Kate and Tina seem to take pleasure having a go at getting Herby angry. At this point it feels that the session has become quite playful. To try out all the possible reactions from Herby and make its face go from happy to angry required them to run around the room for a while without stopping, something that they seem to enjoy. After each running for a while we resume our positions on the floor. We continue talking but eventually I have to turn Herby off to carry on with our conversations, because it is becoming quite distracting (a bit like a child interrupting us).

Figure 84: Tina and Kate trying out Herby

Figure 85: Trying out Herby

At this point Ambivalent Objects, Herby and a few other experimental objects are on the floor. This allows for the conversations to focus on various artefacts simultaneously and to compare their narratives.

Tina: *yeah, it's personal and public to them, the phone… to them (the children) the phone is an extension of you…*

Paulina: *how does your son call the phone? Does he have a name for it?*

Tina: *well, because he's got a speech delay he doesn't have many words, but he likes watching train programs, so he'll indicate he'd like to watch them by saying choo choo and pointing.*

Paulina: *a friend of mine told me her son calls her phone 'work', so he would say 'can I use your work?'* (both laugh)

Kate: *we didn't use phones with our kids, they didn't see it, we didn't have films or apps, until we went on holidays with friends and they had kids the same, and they were using their phones so much with their kids, so whenever*

we were at a restaurant, they would have their phones on for the kids, our kids were then six and three, and from that moment onwards, it was like a Pandora's box had been opened, that's when it became something we did as well, based on that peer pressure from another family we spent a week with.

I make room, putting the objects to the side, but still nearby so that we could move on to the next object. I bring out the Uncanny Pet, and I place it at the centre of our circle. I connect its charging cable to a wall plug so that it becomes a charging station. I plug in my smartphone and place it on the cavity on the object's front, so that the front of the phone looks as it is its face. I play the video so that it looks asleep, with its eyes closed, with the sound of a purring cat (later in my research, I changed this sound to that of a snore).

Paulina: *ok so this is the next object that I have, I am going to charge my phone on it and I don't know if you can hear it but it's purring…*

Kate and Tina both laugh…

Tina: *and that's a charging station?*

Paulina: *yes, kind of, and the phone is sleeping*

Kate and Tina laugh again…

Paulina: *yes, kind of comforting. and slightly fetishist* (all 3 laughing)

Kate: *that is actually making me feel quite sleepy* (both laugh) *maybe it's because my partner snores… I can imagine it being at home…*

Tina: *I can imagine it being near the bed with the child. We have an owl lamp that has different colours, and we use at bedtime you could use it to put your child to bed.*

Kate: *it's like white noise purring*

Tina: *yes, in fact we have used the phone for white noise, for my son,*

connected through a speaker, when he was a baby

Paulina: *do you think that having something like this would make the child want the phone even more? Or have a different relationship with it?*

Tina: *yes, I can see that*

Kate: *but it definitely feels like it's sleeping… so I would think that the phone is asleep, and so you wouldn't pick it up and start using it*

Paulina: *so do you think it is making the phone like a pet? because you just said the phone is asleep, sleeping, as if it were a pet or a person…*

Kate: *well, it's manipulating the charging process isn't it? It's sort of performing while charging the device, in a way that exaggerates what is happening…*

Tina: *yeah, 'cos we have cats, and I can definitely see my son stroking it, like the phone is asleep, don't pick it up now*

Tina: *yeah, it's sort of project and anthropomorphizing the object…. But I can definitely see my son, if you say the phone is asleep, I can see him stroking it…*

Kate: *it's sort of almost the way to, not to pick up the phone… because you wouldn't disturb the pet when it's sleeping…*

Tina: *well we've had to teach him not to, because he has the instinctive urge to approach pets like toys.*

Kate: *so, it's like the only down time for the phone…*

Tina: *it made me think of transitional objects, such as a teddy. They are not really a site of rivalry between mother and child are they, they are more a transition for the child to separate more from the mother, whereas the phone is more like the mother is trying to maintain and wrestle back, it's like wrestling most, you know you are trying to keep back a bit of yourself through the phone, and what it represents to you, and the child develops a relationship with it that is not necessarily what you think it is, you know, so it differs slightly from transitional objects like teddies and blankets.*

Tina: *my daughter has a toy tablet, and we think she is really quite attached to it. She has linked it to me and my real tablet*

Paulina: *so that is really interesting... if faced with the choice between the real tablet and toy one what would she choose?*

Tina: *I don't know, but, for example coming in today when I packed the buggy I put the toy tablet, not a teddy*

Paulina: *so, do you think that's her transitional object?*

Tina: *it might be…*

Kate: *but it's fascinating to see you know, how people use technology, I guess at that holiday I was describing I was put upon, how one way one family functioned, was imposed on us, the way the phone is used… how the family changed how they used the phone, there's this exotic thing of how the phone is so much fun, and meals were easier.*

Tina: *yes 'cos they grew up with it, you know your friends, it's to do with peer group… and also I was reading about money, success. You know if the phone has not inhibited, you wouldn't think it's something to limit, but maybe in families from lower socioeconomic groups, they wouldn't have the resources to cope with that technology, so it isn't the same for every group or person*

Kate: *yes, exactly Saturdays in our house we go out to a field, then there's the bath and an hour of relaxing with technology, we don't have to work and can relax, we have a car and can drive them, but some families, you know they are invited too but they don't have the resources*

Tina: *yes, there is a pressure as a parent to join in, to have a TV and a tablet, a pressure, for parent and child*

Kate: *yes, I find it this time of the year it's difficult to resist it, you know you can't go to the park, you have to stay in, you know we can get a board game out but then I go and check my email, so if I get my laptop so, then how can you say no, it really hard, it's almost seasonal in our house.*
Tina: but I guess it's like a healthy diet, you know you have to limit certain things… that's quite a middle-class thing…but then you might get different responses…

Figure 86: We sat around the artefacts as we conversed

Kate: *what are you going to make next?*

Paulina: *I don't know. I am thinking of maybe I'd give some objects to a family to live with for about a week, and interview them after at their house (and their children)*

Tina: *yes, that would be a winner in our house* (pointing to the Uncanny Pet)

At this point I bring out the collection of drawings for them to look at, when the workshop has been going for over an hour and a half. This is the last part of the workshop.

Kate: *is that a bottle of wine?* (laughing)… *yes I remember the days when... 'is it wine o clock yet? Can I have a glass of wine?* (laughing)

Tina: *it can almost be a kind of bath time object…*

Kate: *and you're not focusing that much on what happens on the screen?*

Paulina: *well, I am interested in the phone as an object, as a symbol. I find that this is an important aspect, not just what it does …*

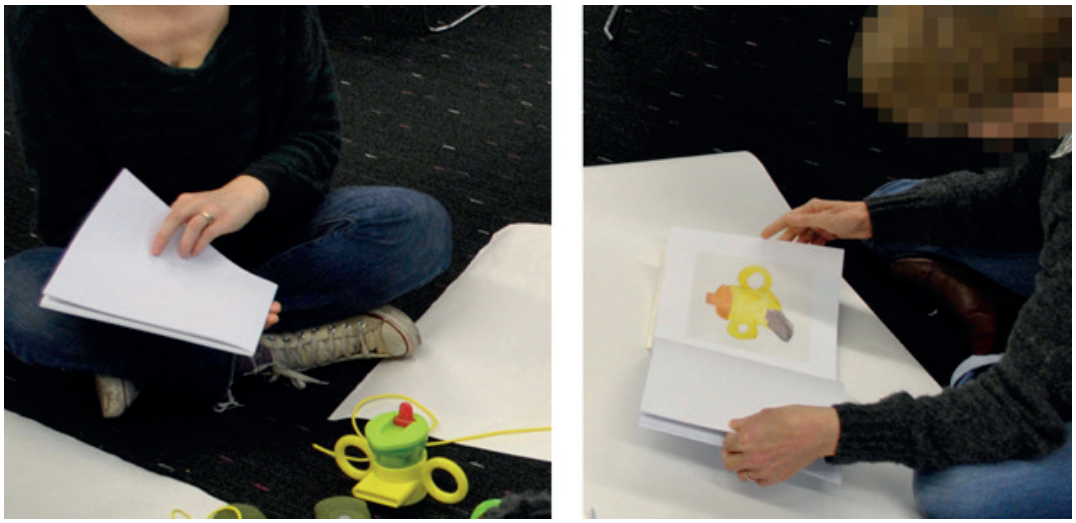


Figure 87: looking at the drawings

Kate: *'cos for me the phone is obviously just a casing for communication… it's not about its form particularly, but what it does*

Paulina: *yes, the form is just a block... but what it means is what I am interested in, the phone as a symbol, what it means for the mother and for the child, obviously I have to also look at the interactions… I remember when my children were very young, the phone and laptop were my connection with the outside world…*

Tina: *yes, that definitely resonates with me, I mean I had this exchange with this mother who'd ask "can you just text…" "can you send an email about this and that" and no, I can't because every time I try to, they grab it, I know that I'll be interrupted within a minute*

Tina: *yes, there is a lot of pressure to be a parent, and to use the technology, the TV, tablet, the screen, it's a habit for parent and child*

Kate: *yes, I also find that this time of year, when it's dark and cold, and it's hard to be outside, it's hard to resist, we may play a board game, but then I get my laptop and check emails and… he knows and it's really hard, it's almost seasonal in our house*

Tina: *I guess it's like a diet, you have to limit certain things… that's quite middle class.*

By now it seems that we have exhausted our conversation (they start asking me questions about the PhD and my next steps). It feels participants are now a bit tired, so I conclude the workshop with the offer of more tea and biscuits over small chats. Tina in particular was interested in the topic of my research and contacted me a few months later asking for some information about discussion groups she could join, that discussed motherhood, work and family management.

Workshop 2 (13/12/16)

Participants:

- Janet, a mother of 2 children who are in primary and secondary school. Janet is an artist in her mid-forties. She does very sporadic work and is the primary carer while her husband works full time. Janet is very particular about how much time her children are allowed screen time. She tells me they are allowed very little.

- Jonah, a father of one, now an adult. An academic in his fifties, he was interested in my methodology and asked if he could take part.

Figure 88: Workshop 2

I bring out Ambivalent Objects.

Janet laughs.

Janet: *my feeling is I wouldn't want the phone anywhere near a small child, that's my view, but…*

Jonah: *it's kind of like TV dinner… I don't know eating and watching TV seems like a habit to get into*

Paulina: *does it feel like an object that is serious? Do you think there is a serious intention there? What is your reaction?*

Janet: *well I can see people using it, that's the thing, but I think that would be sad, I think rather it would be tragic if a parent resorted to that, but I can see that if they're are trying to be on their phone I can see that… I mean the feeding can be endless and boring, you know I can't remember what age these cups are from*

Paulina: *well, they are for various ages, these are for about age two, these ones for younger*

Janet: *well I think that one is worse for me because it is for younger children*

Paulina: *what would it mean for the mother to use this, do you think?*

Janet: *I think it could be dead handy if you are on your own, and you're trying to get something else done, that's the trouble*

Paulina: *so, I showed this before to a mother and she said, this was clearly designed by a man, why do you think she may have said that?*

Janet: *well, I wouldn't necessarily think that*

Jonah: *no, me neither, but I suppose the question is… I guess it would be acceptable, but, ok it is not acceptable, (Janet laughs) but I guess it would be acceptable for short periods of time if you needed your child to be quiet and passive for a while, and whilst you did something, but a kind of habit every time you took a drink… it would be awful*

Paulina: *it's very interesting because I think these are a form of critical objects, but you are seeing them as functional objects, I mean they wouldn't really work because you'd be mixing liquid and phone, and are not necessarily ergonomic, etc. but that is not the point*

Janet: *yes, but you could get past that you could make it work if you wanted to, make it waterproof*

Paulina: *yes, and that would mean taking it very seriously*

Jonah: *I'm sure they'd sell really well in South Korea* (Janet laughs) *I used to work there. I think they'd do quite well*

Janet: *I think I can see them as real objects because you are using the TocaDoctor[1] app, which we use, and it is really good, so I think if you had that, or some really lovely music, then…maybe for a moment in the day*

I bring out the dolls, and insert a phone in one of them

Janet (laughs): *so, they are comforting technologies*

Paulina: *they combine nurturing, feeding, pacifier, entertaining…*

Janet: *would you actually feed from that or is it a dummy?*

Paulina: *I don't know! it's an experiment*

Janet: *well it's funny the idea of another animal giving you milk, one that is not the mother*

Paulina: *it could work two ways, it could have a children's app, or maybe the face of the mother, a doll with the face of the mother in the phone, some kind of comfort toy…*

Janet: *I think you should make that, it would be so comical seeing this in the newspaper, the latest thing, almost ironic to see what happens*
Paulina: would it be monstrous?

1. An educational play app for young children by Tocaboca, which can be seen at www.tocaboca.com/apps. [Accessed 18/9/18]

Janet: *no, but it would be fascinating to see what reaction it would get*

Paulina: but it would depend on the context… if you put this in a gallery, that's one thing, if you put it at Mothercare, it's different.

Janet: *I mean I still find it shocking when I hear people say they are going to give their 3 year-old child an iPad for Christmas. I find that shocking, I cannot comprehend that, am I too old?*

Jonah: *one of the things that struck me with the bottles and these (dolls) it's the ergonomics of the child interacting with the device, I mean, if it was a video and them watching it while sucking away, but it would be more difficult to suck and do things…*

Paulina: *yes, but again, that would mean taking them further, and at the moment I am using them to explore things*

Janet: *yes, but the thing is someone else would take them seriously and develop them*

I bring out Herby.

Herby: *how about going to sleep now…*

Janet: *oh, it has an angry face!*

Herby: *I have work to do…*

Paulina: *yes, when it starts moving it gets more serious*

Herby: *oh, for goodness sake*

Both Janet and Jonah laugh.

Herby: *take me to your mum*

Janet: *I guess it reminds me of those dolls that speak…oh it has a really angry face now*

Jonah: *so, it's the speeds that wind it up?*

Janet: *so, you could have that toy to stop the child playing with it. I think what's nice about that in that playing is a bit more separate from you, whereas these objects (bottle, dolls) are when they are younger, these feel inappropriate. And it feels you should be close to your child, not shoving this in*

Paulina: *but do you think that it happens anyway?*

Janet: *well I try not to do that, but obviously, we've all done it at times, or some people don't have the money or resources*

Jonah: *I really like the phone getting angry, you could play a lot with that, and it says I am not a toy*

Janet: *the other thing is you could customize it, so it could say 'I told you not to bang into your sister'*

After a while I bring out Uncanny Pet.

Janet: *it's purring!!! You could definitely sell these (laughs) I know it's not the point but…*

Janet: *so, could you have a face on it?*

Paulina: *it has a face, but it's very subtle*

Janet: *I suppose you could make it more obvious, like a furry mask, so it looks even more dog like*

Janet: *it's very funny because they are so attractive, smartphones, they are super lovely…*

Paulina: *but are they attractive to children because they see us using it?*

Janet: *no, I think smartphones are just beautifully designed and it's very difficult to not love them. We got an iPad, it's so intuitive that my daughter who was 2 just knew how to use it*

Paulina: *but it's also a symbol isn't it, a block that does things.*

Janet: *yes, but the fact your touch does things, even if they don't know what it means. But I think it's like a fire that attracts us, like moving light, like a fire*

Jonah: like those things that project a fish on the floor, that moves, I mean even for adults you can't look away from it
Janet: *it's like a campfire, there's something that is basic, human that attracts people to it, I think it's the same with smartphones*

Janet: *so are you playing it as an interactive pet*

Paulina: *well, it could move as if breathing, and it loses hair like a pet, but for now these are little experiments that I am making…*

Janet: *but I think that the weirdness comes from the hardness of the phone mixed with the softness of the material, cuddly toy, that loving moment when you are feeding your child, and the machine that is very hard*

Janet: *yes, the soft material and the hardness… yes one of the things that is difficult about smartphones is that it's one object but its endless identities and functions, so as you say it's a work thing, so if you are tyrannized by your email, the thing that entertains you on a boring train, is also the thing that you can use to check emails, or the child may be playing with something with an angry thing which its insisting it's not a toy…*

Janet*: I suppose it is totally dynamic, the phone, you can do everything and go everywhere, the thing is my phones, we were on a Nokia, but now it's all happened in a short space of time, now it's not so much the computer its more the phone*

Jonah: *how does the breast on wheels go?*

Paulina: *It's similar to these ones* (other Ambivalent Objects), *but a different attempt, a sort of comfort object, like feed and go*

Janet: *the thing is the phone is such a masculine thing I think, so slick, well I suppose it's got rounded edges, but it's still very masculine*

Janet: *I think these are the tensions you constantly have with your child, I mean how much shall I spend with my child, how much should I be working, everyone's having those things anyway, you're thinking, shall I read another story or can I go now? watch TV, go to bed, go for a drink…. it's the battle you are having anyway, and this is part of that.*

Jonah: *well I think these are about being ambivalent but also slightly proud of the children's facility with these… it's like all parents think their child is smart and this is just another demonstration*

Janet: *well it's very interesting this pet one…I have these graphic designer friends who make cardboard pets, which are selling quite well… a cat or a dog, my daughter has one and uses it to rest the phone to charge…and then I have this thing on my phone, the alarm is a barking dog, we don't have any pets, but when I hear the barking it reminds me to pay attention that my daughter is on the bus, I use it as an alarm to remind me my daughter has left school*

Paulina: a*nd why do you use the barking?*

Janet: *well I like to use it to make me think I have a pet, and then I also have a small piece of sheepskin that I keep in my bag, and that is my pet…. (laughs), I don't want a pet, I don't to clean poo, but this is my transitional pet, so there's the fur, the barking, and then my friend made this leather brown thing that looks like a poo, and then if I put it together… then…*

Paulina: *like a deconstructed pet*

Jonah: *my friend has a cat and her ringtone is mallard ducks, and she moved near the river, and you get confused with the sounds, it would be great to have ecological sounds….*

Janet: *I guess that's the thing with the smartphone, as they do more sophisticated, particular things, maybe you'd be less worried about it being close to your child, I guess if it helps, then maybe you don't mind… but the parent is also thinking of the phone and what's on the phone, you have to be careful to how they use it…*

Jonah: *These images* (Harlow experiments shown in my book of sketches) *I think that what you are describing is part of those broader fantasy, it applies to work, this remote working, going through the motions of productivity...I worked at… and this pretending that you are fulfilling the role by technology mediated communication is pretending, you are never as productive as when you are surrounded, the presence of other people kind of remind you that you are at work …. and this object the phone, masculine, it's so perfect, glass hard, its rigid, solid, plastic, metal, glass…so fits well together, whereas this*

*thing (*dolls*) it's so soft and cuddly, it's a hybrid, cloth hard mother, similar to this* (Harlow experiment)

Janet: *it's such a contrast fur and hard material...it's really interesting, you really are trying to hold back the floodgates, it is like a drug, you could just be on it all the time, it is like sugar, how much you let them have it…I think sugar is the drug for kids…in our family we say they can have 25 minutes a week of screen time and we don't watch TV, just the odd film. And now my daughter is in secondary school she uses it on the bus, and it's a 20 min journey and uses very simple games.*

Workshop 3 (14/6/17)

The last of the workshop sessions took place at the flat of Alice in South East London.

Participants:

- Alice, a physician, mother of two children: a baby girl of 9 months and a toddler girl of three. Alice is in her early thirties and is on maternity leave. She will return to work after her leave, but she currently stays in touch with work colleagues via email. Her husband works full time. She has invited a friend, Brenda.

- Brenda, a musician, mother of a baby boy of 9 months and a toddler boy of three. She is 32 and is on maternity leave, although she is self-employed and does some flexible, sporadic work. Her husband works full time.

Structure of workshop 3

I met Alice and her children outside their building, they had just been for a walk when I arrived. Upon entering their flat, we all took our shoes off, since 'shoes are not allowed on the carpet', as her daughter told me. Alice carried her sleeping baby on a sling most of the time, while she prepared a drink for her eldest daughter

and talked to me. Once the baby woke up and she breast fed her, she let her play on the floor. I had brought some biscuits and juice, but she asked me to take them back with me, as she is trying to lose weight, and is very particular about letting her children have sweet food.

Figure 89: Workshop 3

Brenda arrived shortly after, with her two children, and seemed quite excited to take part in the research. Shortly after arriving, her eldest started to play with Alice's daughter. During most of the session, both sets of children were present, playing in their bedrooms or on the floor near us. Our conversation took place at the living room's dining table, where I placed my objects, taking one or two at a time from my bag, while we conversed about them. I put them away back in my bag each time I needed to bring out the following object. When the objects were on the table I kept them near me and away from the reach of the hands of the children. I did not want them to be touched by the children, as they were fragile. But judging from Alice's rejection of my sugary food, and the sense that I was entering a home environment

with strong rules of what is allowed in and what should be left out, I started to develop the uneasy feeling that perhaps my critical objects might be judged as inappropriate, especially in front of their young children.

Paulina: *So, I've developed a series of objects that I want to use to talk about the role of the smartphone. Some of them are a little bit strange, but I've used them for parents to tell me what they think about them. They are useful for talking about the relationship with the smartphone.*
Paulina: *Ok,* (I take out the pull along object*), so this is one, it's a pull along object and you can put the phone in there* (I insert it)*. So, this is something that we can talk about… And then this is another one…* (I demonstrate with the bottles). *As I said they are strange objects, they are about provoking people into thinking…*

Alice: *ok…* (I feel her 'ok' is a bit uncertain, doubtful)

Brenda: *oh…*

Paulina: *I'll leave them here on the table, so they are away from little hands*

Alice: *So, we're to talk about how we feel, how we react to them?*

Paulina: yes

Alice: *Oh, I feel a bit, um…um… sort of shivery about seeing baby things integrated with phones um… makes me feel quite uneasy… I suppose it's because I feel that children, babies should not have that much technology around them, but then I think oh actually often they do often we do sit with the phone all of the time…maybe the mix of the phone and the bottle teat feels almost seems quite unpleasant*

Brenda: *there's something quite unpleasant about that, I can't say why but… it's a bit like "bring yourself up, kid" , "bring yourself up, here's the phone, here's the milk, here's your toy"*

Paulina: *as I said these objects are critical, but I have seen commercial proposals similar to this…*

Brenda: *I was going to say they'd be popular, for right or for wrong*

> Brenda: *I really don't like seeing on the tube, babies sat on the buggy, holding their parent's phone, it just doesn't sit right with me…and it's not a criticism of them, 'cos you do what you do and I think it's particularly, from what I can sort of just judgmentally see, that it's particularly younger parents, younger mums… and actually they've probably only ever known smartphones like we're saying we've had them for ten years and I'm 32 so actually, 20 year olds now have had them since they're 10 and that is all they know… and I think if they're young parents you can see that actually the stress of bringing up young kids can be too much and you just go for the peaceful option.*

I bring out Herby and demonstrate it, it starts saying '*take me to your mum, I am not a toy*', etc.

> Brenda: *you see I even feel uncomfortable all of us 3 sitting around these phone objects, it makes me feel uncomfortable, I mean that's not to say don't do it but...*
>
> Paulina: *ok, we can stop*
>
> Brenda: *no, I don't mean to stop…*

Alice laughs (quite nervously, I think)

> Brenda: *I'm just saying that that is the heightened sense that I have about phones… 'cos even…. even they (the children) will notice in a discussion like this they pick up on it, don't they, and it like what's exciting?*

The children are now very interested on the objects at the table and start asking '*mummy what is happening*?'

> Alice: (explaining to the children) *Paulina is just showing us these*
>
> Brenda: *I don't want you to stop it's just that, that's just how I feel about it*

At this point I am acutely aware of an uncomfortable feeling of the mothers not wanting their children to see the objects. So, I put them away back inside my bag. I am also aware that the children have sensed their mothers' discomfort, staying close to them and asking '*what is happening*?'. I somehow feel that I have polluted, contaminated their organic, cotton wool world with my sugary biscuits and juice and

my technological artefacts. I am also a mother, but my children are no longer babies or toddlers, and perhaps I have forgotten about this early bubble of motherhood in which there is a strong sense of what is allowed into the family and the home and what should be left out.

> Alice: *I kind of find that one (Herby) a bit better if it's kind of interacting with the children…'cos I do think that they are going to grow up in a world where obviously they'll see lots of technology, and using it appropriately, like interacting like using it to do things… 'so we were looking at some toys that, maybe when they're a bit older they could teach them coding, like little robots, so something they can learn from… and I think what I'm against is something that saps your attention, sorting through facebook for no reason, but something like that seems ok.*

I bring out the Uncanny Pet. They seem to welcome the idea of the phone/pet sleeping, taking a break.

> Alice: *the phone is in my room and its really affecting my sleep at the moment. I do have it and the reason is that sometimes I can't go to sleep so I take my phone and look at the news, I do use it for useful information sometimes, you know I take it out and look at parenting information on my phone, but the problem is in the evening, once you start looking at it it's so hard to put it down, and for a while I found it quite useful, so if I had lots of thoughts in my head at night, worrying or thinking about something, I'd actually find something on the internet just to read something online like mumsnet or something and it would stop me worrying and then I'd go to sleep but now I think it's tipped over to me just spending hours and I go to bed really late.*
>
> Brenda: *yes, whereas I'm more likely to troll through facebook because it's what my friends are up to… I find that interesting, as a mum, on my own for a lot of hours a day, I find that more interesting than random articles or anything like that… the only thing I don't do is I don't do any email on Saturday or Sunday, I know it sounds very obvious but it's cultural, specially 'cos I work in music, so at the business I run I try to get everyone not to email on a weekend, even late in the evening and people get told off if they email really late at night or early in the morning… and the other thing is I quite like doing twitter and I do it for work, but I won't do that on a Sunday… I may do twitter or facebook on a Saturday, but I don't do that on*

a Sunday. I try to take a day off.

Alice: *I was going to say that the one with the bottle teat and the phone in it made me feel really uncomfortable I think maybe the thing it makes me think of is someone giving it to the child, thinking yeah I'm off for a few hours, you do see, things like that obviously not in a device like that but it makes me feel uncomfortable, because I see feeding as a kind of together thing, but you do see kids given a bottle to be by themselves…. It does make me feel quite uncomfortable because being distracted, it makes me feel uncomfortable rather than disapproving…*

Brenda: *they are kind of like an addictive thing, you know, you can see, it's like an addictive Pringles, the more you see the more… especially yesterday, I had a day, 14 hours on my own with them, and actually you do look at your phone more on a day like that because you're on your own, not talking to anyone, 14 or 15 hours, whereas when they go to school*

Alice: *yeah, it sort of gets you out of the moment*

I now feel that we have exhausted our conversational potential. I am perhaps also feeling the need to leave these mothers and their children alone and take my objects away, to stop my intrusion. As I pack my bags and prepare to leave, Alice once again repeats that she felt that the objects I brought out first (the ambivalent objects and Herby) made her feel 'shivery', 'uncomfortable'. This nervous discomfort was clear from her reaction towards the objects and her protective reaction towards the children seeing it, as well as from the children's anxiety, staying close to their mothers. I felt relieved once I left.

Analysis of the responses

I have so far described the encounters between participants and the designs, arranged through three tailored workshops. Each workshop was distinct in its own right but there were common themes that emerged that I will now discuss.

Ambivalent Objects

Ambivalent Objects, brought at the beginning of all the workshops, were effective in provoking responses from participants. First reactions were negative:

> *my initial thought is … disturbed* (Tina, workshop 1)
>
> *my feeling is I wouldn't want the phone anywhere near a small child* (Janet, workshop 2)
>
> *these feel inappropriate. And it feels you should be close to your child, not shoving this in* (Janet, workshop 2)
>
> *oh, I feel a bit, um…um… sort of shivery* (Alice, workshop 3)
>
> *there's something quite unpleasant about that, I can't say why but…* (Brenda, workshop 3)
>
> *it's a bit like "bring yourself up, kid"* (Brenda, workshop 3)
>
> *it made me feel really uncomfortable I think maybe the thing it makes me think of is someone giving it to the child, thinking yeah, I'm off for a few hours* (Alice, workshop 3)

Later on, more nuanced aspects emerged:

> *women already have this network of objects they use* (Tina, workshop 1)
>
> *you have to be careful not to judge people who might need this, right?* (Kate, workshop 1)
>
> *I suppose the question is…I guess it would be acceptable, but, ok it is not acceptable* (Jonah, workshop 2)
>
> *but I guess it would be acceptable for short periods of time if you needed your child to be quiet and passive for a while, and whilst you did something, but a kind of habit every time you took a drink… it would be awful* (Jonah, workshop 2)

but you could get past that you could make it work if you wanted to, make it waterproof (Janet, workshop 2)

I'm sure they'd sell really well in South Korea (Jonah, workshop 2)

…maybe for a moment in the day (Janet, workshop 2)

Although the reactions were of initial rejection, later responses reflected the contradictory feelings towards the idea of using smartphones with young children. This was evident in the suggestions made later about how to make the objects waterproof and user friendly and where they would sell well, and the assertion that at certain moments they may be desirable. This is a manifestation of the ambivalence the proposals invoked: we don't like it, but could you make it easier to use? There was both rejection and appeal towards the idea of the smartphone or technology in general as being part of the world of children at this age, mixed with a fascination about their learning skills to master it. However, this ambivalence became easier to deal with in sessions one and two than in session three, where there were no clear admissions of accepting the smartphone's role in childcare. Perhaps Brenda and Alice did sometimes let their children use their smartphones to quieten them, but they did not mention this openly to me.

Ambivalent Objects also prompted reflections about wider themes such as motherhood and about our relying on technologies in family life, practices often ridden with guilt. Despite the rejection towards the technological intrusion, smartphones and other digital devices have been used as retreats, giving the mother a break by entertaining her children or offering her some distraction. The objects exposed unseen uses of technology and prompted some participants to recognise that they themselves have relied on screens, which sometimes brought regret. Tina's account on how she blamed herself for having allowed her son too much screen time while she breastfed her younger daughter, and the possibility it may have caused speech delay, and Kate's telling us of her friend being apologetic to strangers about allowing her children too much technology are examples of these feelings of guilt. Interpreting the objects allowed for reflections about how women often feel responsible and

judged about relying on technology to get on with the day during childcare. It was also pointed out that the proposals are not so different from TV dinners. As television sets have been part of society for some decades now, the fear associated to its risks have now been replaced by fears towards digital technologies in family life. As Tina observed, these types of fears are very old, and mothers are often blamed and made to feel guilty for their use and the effects on children's development.

Ambivalent Objects, in their narratives that were both repellent and attractive, allowed for reflections that might have been difficult to elicit with conventional methods such as surveys and interviews. They stirred an ambivalence and discomfort that requires to be unpacked. The reactions were manageable in the first two workshops, but not so in workshop three, where I felt I had to put the objects away. Then, the objects evoked difficult aspects of motherhood that became unbearable for Alice and Brenda and became provocative in a way I had not foreseen. Letting me into their domestic, private sphere, Alice and Brenda were at a stage where motherhood seemed to be their most important identity, being fully engaged in the care of their children. They inhabited a period when they had great control over their environment (regulating their sugar and technology intake), when until recently, their children were contained and protected inside their bodies.

Workshops one and two took place in the impersonal university setting, without children, allowing a greater distance from the home environment. This enabled participants to reflect on family life at a distance, engaging in conversation without being too immersed into the personal and active buzz of home life. This also allowed me to be more in control of the activities, since we were in a more neutral territory than in workshop three, at Alice's home. The presence of children and the protected, personal environment of the home, made the workshop's environment highly sensitive. As participants in the first workshops were older, there was a sense that parenthood had been established in their lives for a while now, which allowed for reflections on their own shortcomings as parents. This felt more difficult in the third workshop, where maternal identities felt brand new, and therefore freshly idealised. This highlighted my feeling of uneasiness, my critical role felt outplaced, infecting of their idealised purity. I felt that a part of me identified with the persuasiveness of

venerated motherhood, while another part of me, that of a researcher and mother of older children, also understood the complex and difficult aspects of motherhood and the cultural resistance to recognise them.

Alice and Brenda's fight against the invasion of sugar and smartphones reminds me of Daniel Miller's essay *How Infants grow Mothers in North London* (1997). Miller studies middle class mothers in NCT groups in North London and refers to a period of idealisation soon after birth, particularly with women who are at home looking after their infants. The complete dependency and helplessness of the infant is seen as idealised, pure goodness, a biological extension of the mother's body. Miller points to a devotion to the natural, a follow up of an ideology that sees medical assistance in childbirth as an intervention, part of an understanding in which the infant should be allowed to grow through natural stages with minimal parental mediation, a continuation of the biological link between mother and child. Miller, like Parker (1995), refers to stages of evolvement in mothers, in which they develop maternal identities and a gradual sense of separation from their children as separate beings. In this development of separation between mother and infant, Miller argues that there begins an increasing fight between what is seen as nature and what is seen as the artificial world of sugar, E numbers, and commodity materialism, a losing battle in which the mother endeavours to protect her child (Miller, 1997, p.76).

Mary Douglas argues that the purity of certain cultural entities is threatened when non-member elements enter it, dirt is matter out of place (Douglas, 1966). Dirt and pollution are accepted outside the home but not inside. I would argue that technological devices in this context would also be considered as part of the artificial world that pollutes the safe, organic, biological world of the infant that Alice and Brenda strived to protect. In the third workshop, the pollution came in the form of the sugary drinks and biscuits I brought and the technological inclusion in my child related designs. Here the intrusion of the external and artificial became highlighted. Perhaps due to their age, and the young age of their children who were present, Alice and Brenda were still immersed in the bubble of early motherhood and in the process of developing their own maternal identities. This process of self-discovery

of what it means to be a mother, may have required an embracing of idealised notions of motherhood, while rejecting the dark side, as Roszika Parker points out:

> *Mothers both reproduce and resist assumptions of what it means to be a mother – but those assumptions cannot be escaped. Moreover, they tend to militate against the very acknowledgement of maternal ambivalence. Yet, in my view, a deeper understanding of the production, purpose and prohibition of maternal ambivalence can enable mothers (and others) to see that most mothers are neither as "bad" as we fear, not as "good" as we desire.*
>
> Parker, 1995

Ambivalent Objects represent part of that dark side, exposing mothers' need of a respite from their children, using objects as surrogate carers. Tina, Kate and Janet, and to an extent Jonah, were older parents who had already developed their own sense of parental identities and were more at ease in acknowledging the complicated aspects of parenthood.

Brenda pointed out that the integration of smartphone and feeding/toy feature is suggesting to the child '*bring yourself up, kid'*. The artefact challenged their newly discovered sense of agency through motherhood and their maternal bodies. Through their material surrogacy, the designs represented a threat to the irreplaceable biological link between mother and child, indirectly proposing that a mother's attention might be replaced by an artefact. Perhaps in their view, the objects inadvertently embodied the tension between the organic and the artificial, heightened and intensified during the early period of motherhood, as Miller notes.

Workshop three also made me reflect on the suitability of showing my critical designs in front of young audiences: in their provocative and subversive ways, the most critical of my artefacts speak more to parents than to children. I felt that their critique could only be read by an adult mind, albeit with discomfort. Perhaps my designs balanced desirability with a critique of the grounds of that very desirability. Perhaps the mothers, and to a certain extent myself, were afraid the kids will just succumb to the desirability without being able to see the critique. As a result, I had to be particularly careful about which objects I showed in this session, which ones felt 'safe' in their narrative, and which ones I had to show with more caution, or not show at all.

In workshop two, Janet expressed concern that if seen by the wider public, someone might actually turn some of my artefacts into commercial objects, potentially turning the critical narratives they present into a reality. In truth, I have already seen commercial proposals that incorporate the use of a screen during childcare, as I discussed in chapter two, with the examples of the *iPotty* and the *Swipe&Feed* designs. Unlike my critical design propositions, these commercial designs represent designers' intents of commercializing the ubiquitous use of technology during childcare. Janet's comment also brings into relief the importance of paying attention to the context in which proposals are framed and presented. This is recognised by Pierce, who acknowledges the diversity of ways in which designs are presented, exhibited or communicated within the research community but also to participants and public in general (Pierce, 2014, p. 736), suggesting that functional and finished prototypes are 'ready' to be encountered by end users, while provisional and conceptual designs work to facilitate debate and considerations in the community of researchers and designers, who may take their potentials into further research spaces in their practice.

Tina's contributions in workshop 1 were particularly useful, with some intimate revelations about her own conflictive feelings towards technology. She was precisely at the period of isolation that many mothers feel when their children are very small, and in which technology has a significant, if conflictive, role during childcare. Although I was mainly interested to hear about their interpretations about my designs, I did at times talk about my relationship with smartphones when my children were little, and I believe that revealing some of my experiences as a mother helped participants feel at ease and tell me a little about theirs. Again, this strikes a chord with Parker's observation that

> *Sometimes mothers use other mothers as mirrors. Each mother scrutinises the other in pursuit of a reflection of their own mothering. They look for differences from their own style of mothering and look for sameness. They look for confirmation that they are getting it right, for fear that are getting it hopelessly wrong.*
>
> Parker, 1995, p. 1

When Tina succinctly points out that 'I started having a relationship with my phone' (workshop 1) she is giving a description of the dynamics around smartphones during childcare, indicating it has a meaning for the child, independent from the meaning it has for the mother, resonating with Baraitser's point on dual affordances of child related objects. This is also explored through Herby in its addressing of the smartphone uses as tool and toy, functioning for both adult and child.

Herby

Herby brought some welcome humour to workshops 1 and 2, as conversations were becoming too serious in our talk about guilt and ambivalence. Making the smartphone get angry by running and pulling it seemed to produce enjoyment in participants. Some participants suggested other possible uses: it could perhaps say, in the mother's voice 'I told you not to bang into your sister' (Janet, workshop 2). While there were limitations around what I was able to achieve with Herby, it worked well as an artefact that has some sort of mood or expresses some of the unspoken thoughts about the conflicts brought by smartphones. What I made Herby say were whimsical thoughts associated with the tensions brought by the device, an adult tool, while being appropriated and used by children. These were expressions that became funny precisely because they were ignored demands, helping depict the smartphone as comical and grumpy, and allowing the discussion of difficult issues to be safely discussed under the umbrella of humour. It seemed to prompt participants into suggesting other things that Herby could be saying, as a rebellious, difficult family member, and that participants could ignore (unlike their children). Its loud commands and complaints, which interrupted our conversations, causing me to eventually turn it off, placed it in the role of a child that demands attention while parents converse. As an experimental proposal, Herby offered the possibility of expressing thoughts or commands through a third, neutral entity, thus projecting desires that may emerge at different times in family dynamics. This sort of projection also has some resonance with the role of pets in families (explored with Uncanny Pet): precisely because they do not speak, they may represent what might be left

unsaid.

Herby allowed for the potential of family thoughts to be said aloud. Again, this was felt more so in workshops 1 and 2. In workshop 3, however there was a very different response from Brenda:

> *you see I even feel uncomfortable all of us 3 sitting around these phone objects, it makes me feel uncomfortable, I mean that's not to say don't do it but...*

But Alice saw Herby in a more positive light:

> *I kind of find it a bit better if it's kind of interacting with the children…'cos I do think that they are going to grow up in a world where obviously they'll see lots of technology, and using it appropriately, like interacting like using it to do things… so we we're looking at some toys that, maybe when they're a bit older they could teach them coding, like little robots, so something they can learn from… and I think what I'm against is something that saps your attention, sorting through facebook for no reason, but something like that seems ok*

It is interesting to see just how far Alice's comments diverge from Herby towards some imagined or idealised vision of technology, since Herby could not really teach children to code. Alice is offering a functionality to the artefact to make it then safe and acceptable, because, despite its technological intrusion, in her view it might help the child enter into the world of technology. Ambivalent Objects mixed the pure with the polluted, but with Herby, Alice is sanctifying the pollutant by making it functional in its educational value, making the intrusion of the impure more bearable. Again, this is an example of the ambivalent relationship we have with the notion of smartphones and young children: it is both harmful and educational, the good mixed with the bad. This is also evident in workshop 2, when despite the initial rejection there were recollections about how quick children learned to use them, seen by Jonah as a confirmation of the cleverness of their own children. This points again to ambivalence: a viewing of children as part of nature (and therefore at the opposite end of technology), but also as native and natural users of the new.

Uncanny Pet

All participants reacted more positively towards Uncanny Pet. The metaphor of the pet as a charging station was easily understood, and I was pleased that Tina keenly offered to host it at home, pointing out that her son would easily understand that the phone was sleeping, leaving it to rest, as it would to a cat or dog. Tina also observed that it would stop her from using the phone while it sleeps. Uncanny Pet allowed for conversations about the intrusive, addictive nature of smartphones in family life:

> *they are kind of like an addictive thing, you know, you can see, it's like an addictive Pringles, the more you see the more… especially yesterday, I had a day, 14 hours on my own with them, and actually you do look at your phone more on a day like that because you're on your own, not talking to anyone, 14 or 15 hours* (Brenda, workshop 3)

> *you really are trying to hold back the floodgates, it is like a drug, you could just be on it all the time, it is like sugar, how much you let them have it…I think sugar is the drug for kids* (Janet, workshop 2)

Janet and Jonah were quick to point out the contrast between the soft fur material, and the hard, masculine form of the smartphone. Janet also spoke of her family's desire to have a pet, but due to lack of space, they resorted to imaginary pets, her daughter often charging her phone by placing it on a cardboard dog. She welcomed the idea of turning the phone into a pet, allowing them to live the fantasy that they had one.

Uncanny Pet presented, more than any of the other artefacts I created, the transformative potential of design in its possible management of the intrusive nature of smartphones. If the result of this research is a spectrum of experimental objects, Ambivalent Objects are at one end of such spectrum and Uncanny Pet at the opposite end. While Ambivalent Objects' criticality highlight potentially undesirable uses and trends of technology, Uncanny Pet offers a potential to reduce smartphones'

availability and intrusion. Provisional, sketchy and experimental, Uncanny Pet enabled the communication of latent ideas, developed enough to commit to possible outcomes, while still leaving enough room for exploration.

A summary of themes

The use of provocative and narrative design proposals in workshops allowed me and participants to engage in conversations that reflected the tensions between parental ideals and the reality of looking after children alone, about perceptions about motherhood and childhood and about the protagonism of the smartphone, a participant in this entanglement of ideals and behaviours, that offers intrusion, pacification and relief. The conversations let me have a glimpse into the love and hate relationship we have with smartphones in family life. I now rearrange the most salient themes that emerged from the workshops, disentangled from the complex mix of reactions.

Guilt

Feelings of guilt towards the use of technology during childcare was made evident through admitted statements, such as Tina worrying that her son's speech impediment and through Kate's anecdote of a friend who is 'apologetic to strangers for relying on technology to get through the day'. As Tina sensibly put it, guilt and fear for using technology is not new, similar feelings were raised by the idea of letting children watch too much TV decades ago. Like the TV, smartphones are in this case seen as intruders that have been let into the biological world of childhood. Regardless of the fascination and relief smartphones also bring, their uses are felt as possible indicators of the mother not doing her job 'properly', by letting this device, which at times feels external and artificial, into the family unit. Guilt, projected in this case towards the use of the smartphone, is an intrinsic part of motherhood. Most mothers will at times feel inadequate, particularly when faced with the ideal image of

motherhood. Under this umbrella of ideals is that of the mother who should provide everything to their children, from food to entertainment. Allowing smartphones to give the mother a respite from the childrearing task, is here seen as a failure, because it represents the mother's inability to be everything to her child, an impossible ideal.

Smartphones and feeding

The feeding of small children is an act full of emotional weight, even from early stages. Infant feeding with formula milk can affect some women's identity as 'good mothers', as Lee's (2008) research suggests. Tina's remark on the polarisation in society between breast and bottle feeding, and her observation that the bottle/phone holder is a natural progression that starts with bottle feeding and would work less well for breast feeding, indicate that from an early stage, objects, even bottles, are seen as unnatural intrusions in their biological dyad. Tina's revelation that once she had her second baby, she started relying on screens to distract her soon while she breastfed 'being sort of trapped, breastfeeding, on the sofa, trying to distract him with whatever I could' are indicators of the small concessions that are daily made during childcare, and the use of all available resources when there is no childcare help.

Kate's observation that feeding, filling the baby's tummy, is a sort of pacification, although it is a moment that is 'lovely to share', and later Janet's remark that she can imagine parents resorting to using the bottle/phone holder because feeding can be 'endless and boring', are suggestions that feeding also entails idealisations and expectations, but can be felt as repetitive and mundane. Tina's revelation that she tried using her phone to check emails when her son was eating (secretly, so he would not ask for it) suggests that mealtimes are also seen as moments of distraction where mothers can attend to other tasks. Although feeding is understood as an act of love, nourishment and maternal care, there are moments in which feeding is also felt as enslaving and tiresome. The ideal is that mothers always feed their children with love and devotion. The reality is that at times mothers cannot meet this ideal,

and instead sometimes feel meals as wearisome (despite their efforts sometimes their food is rejected, spilled, spat). The smartphone in the Ambivalent Objects 1 bottle holders, and in the pull along breast shape Ambivalent Object 2, represent difficult conflicting feelings from mothers that, at times they can provide the food but not necessarily the attention, and therefore use the smartphone as a surrogate.

Parallels with sugar

In session two, Janet observes that controlling the pervasiveness of technology has parallels with sugar addiction. Comparisons of addiction to tech with over-indulgence on sugar, junk food or even drug abuse has been a recurring theme in popular culture (Savage, 2017; Alter, 2017, Anderson, 2018; Nagesh, 2017). Alice's rejection of my biscuits and juice (offering her daughter only water) brings to mind the battle against sugar as succinctly put by Miller:

> *The first battle relates to the substances which the infant is allowed to ingest (…) However, inevitably the battle ends in defeat as sooner or later the infant acquires considerable access to a wide range of biscuits, sweets, chocolates and similar substances. The problem is generalized where the baby is viewed as losing its 'organic' status through the ingestion of artificial substances. (…) Parents do not give up without a struggle, within which their concept of biology plays a major role. It is very common for such parents to insist that their infants have an allergy to anything artificial. It is as though the infants' bodies have antennae attuned to the mother's ideology of nature.*
>
> Daniel Miller, 1997, p.76

Alice and Brenda's feelings of discomfort towards Ambivalent Objects, reflect a struggle between what is perceived as the natural and organic world of infants, and the pollution brought by the external, artificial and materialistic world that the mother strives to protect her child from. While I was taken aback by Alice's rejection of my sweet food, it did bring to mind the long-forgotten days in which I was also militant against artificial foods entering my young children's diet, while being caught in the dubious social status of sugar, seen at times as the enemy of a healthy diet, and at others as a connotation of reward and childhood pleasure (Smyth, 2012), another manifestation of ambivalence. Sugar, like technology, is seen both as a polluting

agent with addictive powers that can affect children's behaviour, while also bringing pleasure for both children and parents alike.

Wrestling

When Tina observes that to her children, the phone is 'personal and public, an extension of you' she is acknowledging smartphones' complex role in mothers' identities. When she remarks that 'the mother is trying to maintain and wrestle back, it's like wrestling most, … you are trying to keep back a bit of yourself through the phone, and what it represents to you, and the child develops a relationship with it that is not necessarily what you think it is', she is evoking maternal ambivalence. 'Torn' (the title of Roszika Parker's book on maternal ambivalence) and 'wrestling'are words that describe a state in which the mother has to negotiate between her evolving identities, between what she is to her child and society and what she is to herself, between what she gives and what she keeps for her own preservation. Smartphones can embody this constant conflict, as they are at times kept and at others given, sometimes private and sometimes public, sometimes toy and sometimes tool. Tina is also recognising that the smartphone has a relationship with the child that is distinct to the one the mother has with it, offering multiple, competing affordances, as analysed in chapter one.

The masculinity of the phone

The masculinity of the smartphone was observed a few times during the workshops, and as we shall see later, in the meeting with a psychoanalysis scholar, who described it as phallic. The hard glass and metal rigidity of the phone was felt as a disparity in a world perceived as populated by warm cuddly textures of teddy bears and dolls, of soft and rounded forms. The dolls and pet like artefacts that incorporated the smartphone were felt as hybrid surrogate objects, uncanny contrasts of the soft and hard. These observations may point to popular binary understandings of the world, with the female, organic and emotional on one side,

and the male, technological, and rational on the other. The intrusion of smartphones and their association with the masculine may also point towards perceptions of the world of care as essentially feminine.

The good mother

The intrusion of smartphones in the world of infants, embodied through Ambivalent Objects, was more acutely felt with Alice and Brenda. Participants in workshops 1 and 2 had experienced parenthood for a while, and so were more accepting of their shortcomings and moments in which they had to accommodate to real demands at the expense of their ideals of parenthood. They were also able to recognise and tell me about some of the negative feelings of motherhood ('feeding can be endless and boring', 'being trapped'). Their parental identities were strong and well established by the time we met. In contrast, I sensed that Brenda and Alice, who were much younger, newer mothers, were still discovering their maternal identities, working, as most new mothers do, around the ideal of what good mothers should do. Brenda's remark, that the Ambivalent Objects represented 'bring yourself up kid, here's your milk, your toy and your phone' suggest that an artefact used to entertain, feed and pacify a child, can threaten a mother's adequacy and her assumed ability to be able to respond to all of her child's needs. The notion that a mother may need a respite from her children seemed at odds with the ideal. The difficult feelings of motherhood were not easily discussed in this workshop, they felt unbearable at this stage.

Chapter conclusions

What have I learnt from the workshops? I have learnt that using artefacts that are suggestive, provocative and experimental can prompt people to interpret them, and in doing so, to tell me a little about themselves. This resonates with how Sengers and Gaver (2006) advocate for researchers to allow the openness of multiple

interpretations to be part of the design process, offering a space for discussion. Participants' interpretations of the designs, often at odds with the original intentions embedded in them, allowed for the emergence of multiple subjectivities. As research artefacts, the designs produced knowledge both for me and for those that encountered them. As participants reacted to the designs, they allowed me to witness how or where they touched a nerve.

Ambivalent Objects raised ambivalent responses as participants rejected them while also suggesting ways and moments in which they could be useful. Emerging from my own interpretation of the ambivalence towards smartphones during childcare, the objects allowed some parents to reflect it back, validating both my experience and my designs. While this validation of my own suspicions towards ambivalence, as seen in the first two workshops was useful, the experience of workshop three produced a difficult discomfort that I had not foreseen and was thus surprising and taught me something new. On the other hand, Uncanny Pet offered the possibility to transform the difficulties brought by the smartphone's dubious and conflictive role during childcare, into a potential for reflection and change. I have also learnt the value of humour as a source for exploring difficult topics, making them safe to be discussed, and challenging clinical, solutionist approaches to technology. Both Herby and Uncanny Pet were explorations of smartphones as quasi family members that opened fertile and playful conversations and could lead to other possibilities for design research.

James Pierce (2014) offers a classification in the spectrum of research artefacts resulting from research through design investigations. At one end of such continuum are working, functional prototypes that are autonomous and ready to be deployed and used by a user (ibid., p.737) while conceptual design proposals are at the opposite end, facilitating the communication of ideas and allowing for discussion and debate (ibid., p.739). While Pierce's organisation of artefacts is useful and insightful, it offers that the functional prototype artefacts are considered to 'be ready' for end users (ibid., p.737), while conceptual and sketchy ideas are more easily read by colleague researchers and designers (ibid., p.739), thus proposing that difficult debate and discussion can mainly take place within the safe confinements of

academic communities. While I agree that there are important ethical elements to be considered in the exposure of participants to unfinished, provisional and potentially unsafe conceptual artefacts, there can be a binary and asymmetrical dynamic that places the researcher at one end and the research subject at the other, inhibiting mutual discovery and reflection. The designed artefacts of this research were presented to both researchers, designers and potential users, who often interpreted them as if they were finished prototypes. This offered a richness of responses that would have been difficult to harness through the community of colleagues alone. Moreover, bringing them into the sensitive domestic environment of Alice's home prompted them to touch a nerve through their critical and experimental discourses. This enabled me to experience situations in which difficult aspects of motherhood and the role of technology are difficult to articulate. It also prompted me to observe younger mothers who were still living with embracing intensity the new experience of motherhood and the biological maternal bond, that diminishes as children grow and separate, as I have myself experienced. For Alice and Brenda, ambivalence became polluting and difficult when brought into their home, and I must acknowledge that while this is a topic that felt safe to discuss with colleagues and other academics, it became much more difficult in the third workshop but also revealed newer, if uncomfortable, insights.

Chapter Seven

Other encounters

Chapter Seven (Practice):

Other encounters

Introduction

It is one thing to share one's work privately with a few colleagues and individuals, in the safety of a university room or someone's home. It is quite another, to let it be seen and interpreted in wider environments, open to practitioners from other fields, and to the public. It requires the work to enter a new life that is at risk of being perceived in the wrong context, misunderstood, ignored or exalted. But a work that speaks of others, of how society understands mothers, technology and childhood, and that borrows from other disciplines such as psychoanalysis, needs to be seen beyond the safe confinement of a college department. Besides the workshops, I presented my work to a number of scholars and audiences from psychoanalytic, design and HCI disciplines and at public displays. These encounters also offered peer review as a form of validation and critique of ideas and methods.

Meeting feminist psychoanalyst Lisa Baraitser.

Birkbeck College, London (11/1/17)

In January 2017 I arranged a meeting with psychoanalyst Dr. Lisa Baraitser. Lisa is Professor in Psychosocial Studies at Birkbeck, University of London. Her book Maternal Encounters (2009), cited in my literature review, presents the construction of maternal subjectivities, mixing personal accounts with psychoanalytical, feminist and philosophical theories. I approached Lisa by email, sending a summary of my work, and the particular aspects of her book that are relevant to my research: maternal ambivalence and the relationship with transitional objects from the mother's perspective. My main objective was to show her my experimental objects and hear her responses towards them.

Lisa signed a consent form before we started, but she asked to read my description of our meeting before I published anything, wanting to ensure her views were accurately represented, to which I complied.

Lisa received me in her office at Birkbeck. This is also a consulting room, and I placed some of the objects on the couch. Our encounter became a sort of psychoanalytic session of my objects and, incidentally, it lasted for 50 minutes, the traditional length of a therapy slot. Her responses towards my objects filled me with great curiosity.

We looked at the bottles and dolls hybrid objects, which she eventually came to refer to as *maternal ambivalence objects*. She liked the fact that the phone is in a way rammed, awkwardly fixed into dolls or feeding bottles, as if saying *'I give you the breast, but it also comes with this phone'*, somehow symbolising a view that feeding (by breast or bottle) is not only about filling the baby's tummy. Feeding and nurturing entails a number of emotional complexities, carrying the good with the bad, the essence of maternal ambivalence.

We looked at Ambivalent Object 2, the pull along object that looks a bit like a breast. She was appreciative of the fact that even though it is for a slightly older child who would be able to walk, it made reference to the breast as a symbol of nurture, important while the infant gradually gains relative independence and is still in need of contact with the maternal body.

Lisa mentioned the use of the phone by some breastfeeding mothers to monitor performance, time schedule and duration, requiring the intervention and technical assistance of technology during this activity, offering reassurance.

I asked Lisa about maternal ambivalence. What is the best way to talk about it? I mentioned that I have found that not only is it a topic that very few people know or discuss; it is also uncomfortable. I pointed out that I have particularly perceived a sense of discomfort when I present the experimental objects that combine the phone with the feeding, pacifying, caring functions. To this she responded that over the years she has found that the best way to introduce maternal ambivalence is right at the beginning of a talk, while explaining that this is an uncomfortable and disturbing notion for most, even now, many years after it was initially proposed. Its

uncomfortable nature is its intrinsic characteristic. She suggested that I could do something similar when presenting my proposals: I could introduce them as uncomfortable objects, right from the beginning. She also suggested I could try reversing the order in which I present my themes: I could start with the Herby and pet objects, and later move on to the more provocative ones. This might produce different reactions.

Lisa's response to Herby was surprising and insightful: The phone's varied audible expressions as *stop it* or *I am not a toy* made her think of the phone as another sibling, with the mother in the middle of the conflict between two demanding children (she suggested I look at the work of Juliet Mitchell). This was interesting because although she recognised the imaginary agency I gave to the phone, rather than associating it to a more neutral family member like a pet, she linked it to a younger child, something that I had not really thought about. She associated the conflicts created by the phone as another family member, with the dynamics and tensions between the first born, the mother and a younger child, who may change or disturb a previous relationship between the other two.

As for Uncanny Pet, I think her response was more like that of a user than as a psychoanalyst: she acknowledged its value as a potentially patentable idea that could be turned into a commercial design but made little comment of its references to the roles of pets in family life. Nevertheless, she remarked about the contrast between the soft textures and the hard, male, almost phallic nature of the phone.

Towards the end of our meeting, Lisa suggested I show my objects to other motherhood scholars, and that I could contribute to the Birkbeck *MaMSIE* journal on maternal subjectivities, which I did later in the year[1].

1. This article can be seen at: http://mamsie.org/mamsieblog/2017/07/exploring-through-design-the-complex-role-of-smartphones-for-mothers-and-young-children/

Freud Museum exhibition on Play and Psychoanalysis

Summer 2017

The Freud Museum in Hampstead, London is the residence to which Sigmund Freud, his daughter Anna and other family members moved into, having escaped from Nazi Vienna in 1938, a year before his death. The house contains Freud's famous couch, which he was able to bring from his previous residence at 19 Berggase in Vienna. This is the couch in which he famously would listen to his patients' free associations and thoughts that came to mind, a fundamental method in psychoanalysis[1]. The house is filled with some of the family's antique furniture and Freud's vast collection of ancient figures. Freud often used archeology as a metaphor for psychoanalysis, digging into the mind to uncover hidden aspects of the past and it and the vast collection of archeological figures is a testament to his affinity to this discipline.

The objects in the museum are preserved with a sense of the sacred and the symbolic. The aesthetic sensibility in the collection of rugs, antiques and cabinets with collections, is that of Vienna at the turn of the 20th century, vividly depicted by De Waal's book *The Hare with Amber Eyes* (2011), also described in Janik and Toulmin's *Wittgenstein's Vienna* (1996).

Following my meeting with Lisa Baraitser, I wanted to further explore the exposure of my work to psychoanalytic audiences. I contacted the curators of the Freud museum, expressing an interest to show my work there, and as luck would have it, they were then preparing an exhibition on play and psychoanalysis, which included Winnicott's work on transitional objects. They were happy to have some of my work included.

Ambivalent Objects and Uncanny Pet were displayed in a 'Cabinet of Transitional Toys', sharing the space with a marble statue of the Egyptian God Toth in the form of a baboon, an object that lived on Sigmund Freud's desk[2]. The exhibition presented

1. from https://freud.org.uk/about/
2. According to the exhibition display, a house keeper of Freud's recalled that he would stroke it as he would his dogs. It has nicotine stains from his fingers.

Figure 90: Freud's famous couch and desk, with his collection of ancient objects

a psychoanalytic view on play and the work of Sigmund Freud, Anna Freud and Winnicott, together with various creative practitioners' interpretations of play and psychoanalysis. My artefacts were presented as contemporary versions of transitional objects and I made a short video that was played on a tablet, next to them[1].

The Museum is as much a testimony of the work and life of Sigmund Freud as of that particular, Viennese turn of the century aesthetic culture, where cabinets represent small theatres of memory, told through the ancient items they display. Edmund de Waal (2011) vividly describes this collector culture in his book *The Hare with Amber Eyes*, which tells of history and the fate of a family through a collection of netsuke (Japanese carved objects). Displayed as items behind a vitrine, the designed artefacts of this research also began to tell stories as they were displayed and met people in public, inviting audiences to make sense of them.

1. This can be seen at https://vimeo.com/229112530.

Figure 91: Public display at the Freud Museum, London

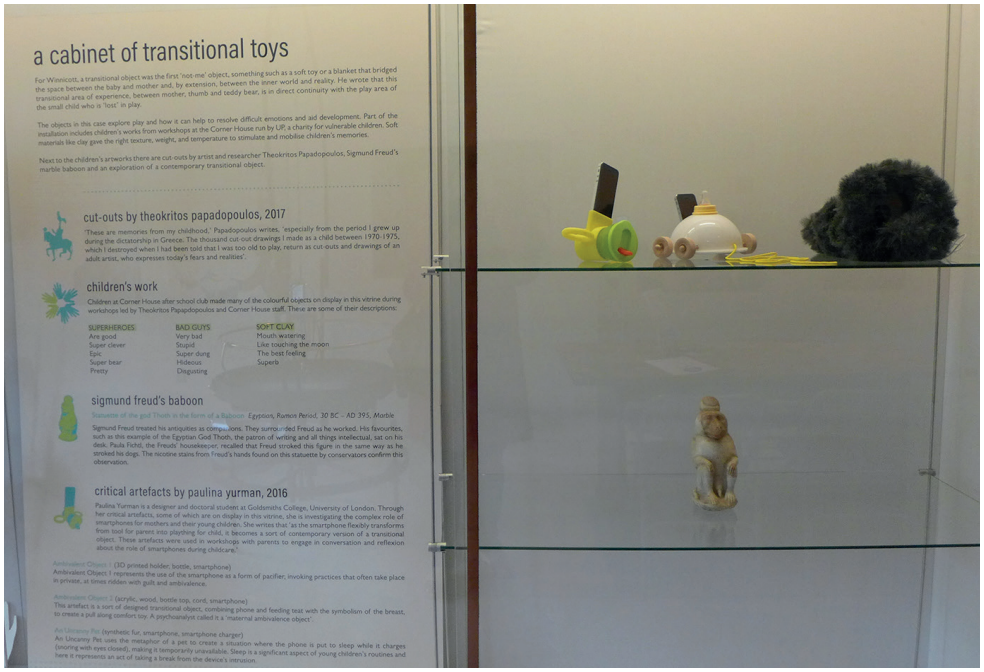


Figure 92: Cabinet of Transitional Toys at the Freud Museum, London

Freud Museum talk (9/8/17)

At the museum, I presented the research to a small audience, most of whom where psychoanalysis scholars. This allowed for a demonstration of the objects and the opportunity to discuss the work.

A visitor asked if the objects were designed for the 'good enough mother' a Winnicottian concept[1]. Another asked if they represented the mother's id as opposed to her ego[2], two Freudian terms. These were challenging questions, and I replied that once the objects entered the public sphere, they were less about my ideas, and more about what others made of them. That is to say, once seen by others, the interpretations about what they meant were many, independent of my intentions when I created them. Perhaps this response was my way of admitting that I had not thought about them with those psychoanalytic ideas in mind (I am not after all a psychoanalyst), but I found some value in their readings of the objects. I produced work that at times spoke the language of psychoanalysis and this seemed to invite scholars in this field to intellectualise and analyse them from their own discipline perspectives.

Presenting critical design at the Freud museum helped me reflect on the common grounds between critical design and psychoanalysis, which I discuss in chapter three. The audience's receptive attitude towards critical design is of course natural: the museum has often presented surrealist art, acknowledging its psychoanalytical roots in its exploration of the subconscious, akin with the subversive nature of critical design's depiction of the complex desires of subjects, beyond ergonomics.

One of my fears about presenting Ambivalent Objects to the public came from their provocative nature and the discomfort they may produce. But the objects and the work, at times perceived as 'weird' by others became compatible to this environment. The museum has a clear commitment to educate the public about

1. Winnicott presented the notion of 'good-enough maternal care', in which the mother allows for small amounts of frustration, as opposed to immediately responding to a child's demand, which should only take place when the baby is a newborn. By gradually allowing frustration to enter the child's world, responding to its need with some delay, the mother allows for its gradual development (Winnicott, 1960).
2. In Freud's structural model of the psyche, the id represents the unconscious drives, while the super-ego represents the critical and moralizing role. The ego is a mediator between the id and the super-ego. (Freud, 1923)

what psychoanalysis represents, both as a group of ideas about the human psyche, and as a method of helping people going through difficulties in their lives. Some visitors to the museum experience psychoanalysis as weird and the curators admit that rather than trying to convince members of the public that psychoanalysis is not weird, they try to get them to engage with the 'weirdness' of psychoanalysis and of human beings[1]. By engaging with the weirdness of my research, I produced work that at times spoke the language of psychoanalysis and this seemed to invite scholars in this field to intellectualise and analyse them from their own discipline, at times beyond the original design intentions.

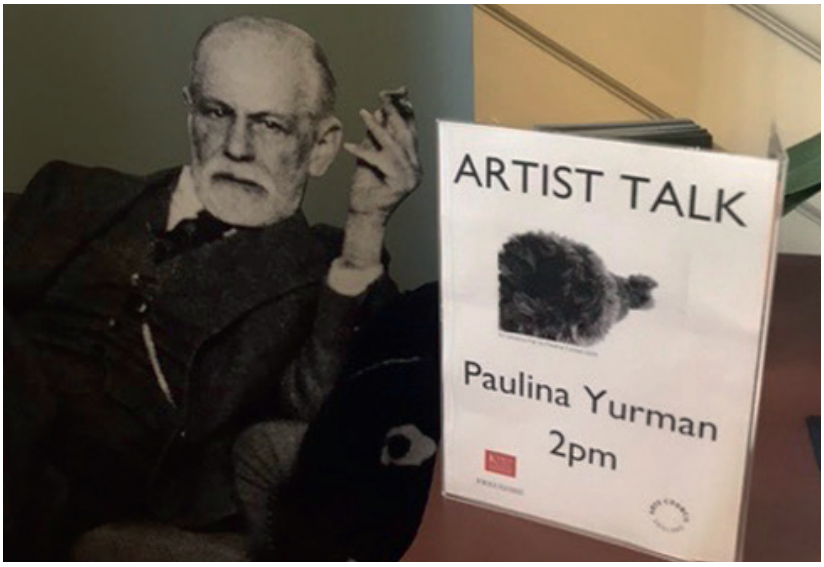


Figure 93: Sign at the museum

Figure 94: Presenting the work to a small audience at the Freud Museum

1. From the Freud Musuem website https://freud.org.uk/about/ accessed 14/12/17

Anna Freud and Play conference, King's College London

September and October 2017

Following the exhibition at the Freud Museum, I was invited to display and present the research at King's College at a conference about Anna Freud and Play.

Figure 95: Display at King's College

Figure 96: Anna Freud and Play conference

At the conference, attendees included scholars of psychoanalysis and play therapy practitioners. Many of the participants had worked directly with Anna Freud and with Donald W. Winnicott. My work was presented after a succession of papers on the value of play in therapy and the work of Anna Freud at the Hampstead War Nurseries[1]. In general, there was an interest in my design interpretation of psychoanalytical concepts applied to a look into the integration of technologies in family life.

One participant objected to the use of psychoanalytical terms without much precision, particularly by those from other disciplines, suggesting for example that the television or phones are transitional objects (Hackett, 2017; Macrury and Yates, 2016; Ribak, 2009). This made me reflect on the language I use to describe some of the theories that inform my work. Up until then I had been suggesting that perhaps smartphones are contemporary versions of transitional objects for mother and child. But this was beginning to feel a bit affected, stretching the term outside its context, perhaps appropriating it to give the work some psychoanalytic credibility. I think I was using it as a form of flag to refer to its connections with the theories that informed it. As a result of this critique, I started referring to my objects as living in the material realm of transitional objects, instead of equating them.

The events at the Freud Museum and King's College contributed to the exposure of design research to scholars outside its community, creating bridges across disciplines. I believe that the interest that the work raised in psychoanalytic audiences lies in its visual representation of perspectives that are usually presented in oral and textual form, and directly relates them to contemporary life, presenting them with renewed relevance.

1. Anna Freud founded the Hampstead War Nurseries, for children during the Second World War. Her observations at the nursery contributed to much of her psychoanalytic work both in theory and in practice. (Midgley, 2007).

CHI Conference

Denver, Colorado May 2017

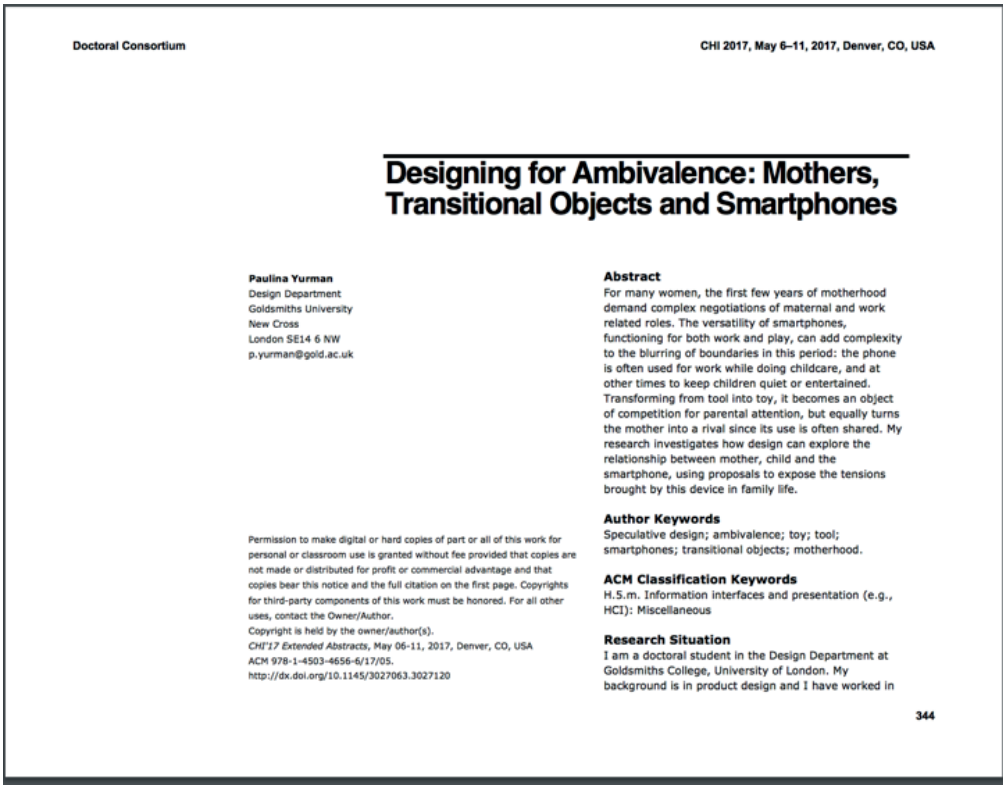
In May 2017 I presented the research at the Human Computer Interaction conference CHI in Colorado. I took part in the doctoral consortium, a platform where PhD students discuss each other's work with each other and with established researchers. It was a valuable opportunity to contribute to and receive feedback from the community of HCI scholars and designers.

There was some curiosity over the critical design approach and exploration on smartphones as products, rather than on their interactive characteristics and some researchers were perplexed to hear that some of the designs were intended as commentary or conversational probes, rather than as potential proposals. In an engineering and science driven community such as CHI, with strong solutionist cultures, critical design is often misunderstood or seen as whimsical, artistic, unscientific and lacking rigour (Bardzell et al, 2014; Bardzell and Bardzell, 2013; Ferri et al., 2014). The CHI community also tends to focus on the computational aspects of devices, viewing the physical detailing of products as separate and secondary and I was asked why I had spent so much attention to the detailing of the objects, rather than having them made as rough prototypes if they were only intended to be critical and not commercial. This question overlooked the value I saw in the cultural and aesthetic language of the artefacts and the importance I paid to their textural and sensorial qualities.

A researcher asked about my moral position towards the use of smartphones during childcare. This prompted me to reflect on my judgment as both parent and researcher. As a mother, I dislike the idea of exposing a young child to the smartphone, or to use it while one is supposed to be devoting it attention. But at moments of stress, tiredness or isolation, in contradiction with my own ideals, I have resorted to the smartphone. Similar behaviours have emerged from accounts in my anecdotes and workshops and I have also witnessed this behavior in others. Notions of how children should be raised are full of emotional ideals, often in sharp

contrast with the realities of childcare. This research has helped me reflect before passing judgment on other mothers using the device.

In the context of the HCI community, my work belongs to a small group of scholars who focus on critical and speculative design, the *research through design* community. With this in mind I was not surprised to find commonalities only with a small group of design research practitioners, with whom I have engaged and networked with thereafter.



Designing for Ambivalence: Mothers, Transitional Objects and Smartphones

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Abstract
For many women, the first few years of motherhood demand complex negotiations of maternal and work related roles. The versatility of smartphones, functioning for both work and play, can add complexity to the blurring of boundaries in this period: the phone is often used for work while doing childcare, and at other times to keep children quiet or entertained. Transforming from tool into toy, it becomes an object of competition for parental attention, but equally turns the mother into a rival since its use is often shared. My research investigates how design can explore the relationship between mother, child and the smartphone, using proposals to expose the tensions brought by this device in family life.

Author Keywords
Speculative design; ambivalence; toy; tool; smartphones; transitional objects; motherhood.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

Research Situation
I am a doctoral student in the Design Department at Goldsmiths College, University of London. My background is in product design and I have worked in

Figure 97: Paper for CHI's doctoral consortium in Denver, May 2017
The full paper can be found in Appendix 2

Victoria and Albert Museum

Digital Design Drop-in, 11/11/17

The last public engagement activity in my doctoral work took place at the V&A, in one of their digital design drop-in sessions. This is a platform in which emerging designers, artists and researchers who explore with technology can informally present their work to the public in a show-and tell manner. I have previously done one such session, presenting two artefacts from the Family Rituals 2.0 project with my then research partner, so I was already familiar with the format. After the exhibitions and talks at the Freud Museum and King's College to audiences more versed in psychoanalysis than in design, I felt that I wanted to display my work in a design context, and to wider public audiences. It was important for me to affirm my perspective as designer and felt that such an event would offer me just that.

A table was set up at the sculpture gallery, a long corridor of ancient statues through which visitors regularly walk past. I placed my objects on a table, with a poster describing the event. Twenty-six people, from mixed ethnic and cultural backgrounds came to ask me about the objects and the project. The title 'A smartphone in the Nursery' and the Ambivalent Objects in particular seemed to attract parents of young children, who would approach my table, looking both puzzled and curious. Many asked me what the objects were about. A father with a young child looked at the objects and seemed repelled, grabbing his toddler's hand and moving away.

Figure 98: Table at the digital design drop-in at the V&A

Two people were interested in the critical aspect of my work. They were attracted to the notion that design can be about provoking and creating conversations, not only about proposing solutions to problems. Two mothers asked me for advice on how to manage children's attraction to smartphones. A father asked me if I had found out what the negative effects of children and smartphones were. As at CHI, the question again placed me in the role of *expert* about children and technology. I responded that being aware of its pervasive presence is important, but I tried to make clear that my work looked into the role of smartphones in childrearing practices, rather than proposing a solution to its problematic presence.

Two mothers, who were with their children, seemed both shocked and attracted by what the Ambivalent Objects proposed. *'Oh, my gosh, this is terrible!'* they exclaimed, although they were smiling. They told me about the stress and intrusion smartphones bring. They took photos and details of my website. A man told me of his sister, who gives the smartphone to her children so that she can attend to other activities. He shook my hand and suggested I patent the Uncanny Pet.

Figure 99: Discussing the work with visitors

A mother approached my table with her young child, inciting him to look at the objects while exclaiming *'oh look! What is this? Is this something for you?'* Perhaps it was not fully understood what the objects proposed or this may be an indication of the fascination towards the idea of children and technology. Older children who owned their own phones tried inserting them into the artefacts. Most children who approached the table stroked and petted Uncanny Pet.

A woman from a psychoanalysis journal specializing in Bowlby's attachment theory (1969) asked if I would be interested to contribute to her publication. I think it was the word *ambivalence* that attracted her to the research. This perhaps illustrates the fact that the work and its psychoanalytic references stand, even when presented in a design context.

Showing the work at the V&A enabled the research to exist in a context where wider audiences could see and relate to it. Presenting myself as a designer that worked with ideas informed by psychoanalysis, but still within the realm of design, allowed me to reflect about the ways in which different aspects of the work can appeal to various audiences and allow for multiple interpretations.

DiSalvo et al. (2014) point out that design can work to express matters of concern of a particular situation (through systems, artefacts, designs, prototypes, visuals, for example) and its associated lived experiences, thus supporting an articulation and form giving towards the construction of publics. Publics, for DiSalvo (2009) are constructed as they are brought together through and around issues. Through the actions of others communicating such issues and their consequences, publics are prompted to come into being (DiSalvo, 2009, page 51).

The exposure of my designs in a setting such as the V&A, provided a space to publicly express the ubiquity of smartphones in the lived experiences of mothers and young children, allowing for the emergence of a constructed public in relation to this particular problematic situation. Through my intimate knowledge of the research, both emerging from autobiographical experiences and dialogical exchanges with participants who used my designs to describe experiences, I was able to identify and articulate issues related to a particular public. The event at the V&A allowed for an exposure of such constructions, helping them become noticeable and accessible.

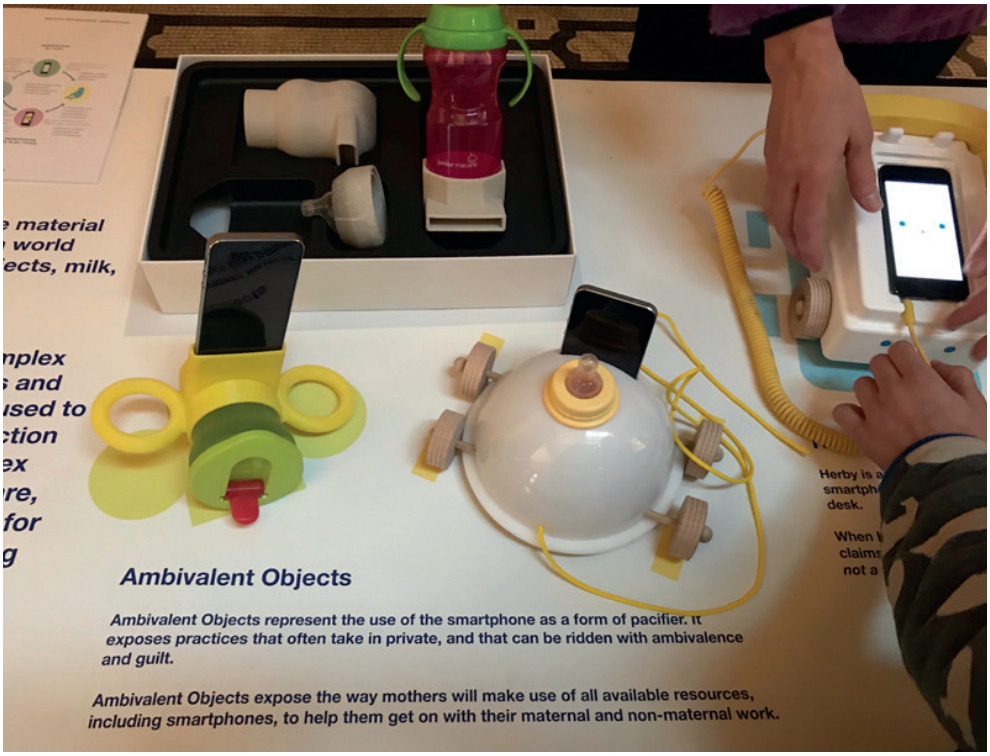

Figure 100: Table at the digital design drop-in at the V&A

Figure 101: Discussing the work with visitors

Chapter conclusions

In this chapter, I have described the ways in which my design research met feminist and psychoanalytic, HCI and design spheres, allowing it to be discussed within those contexts. This contributed to its dissemination to academic communities beyond my own. I have also presented the ways in which my designs were perceived when displayed publicly, allowing for a diversity of responses from wider audiences.

Through these events, the designs I created have entered broader debates beyond design, prompting others to tell me what they believed were the stories that my proposals told. In doing so, participants and audiences have contributed in my understanding about society's attitudes towards smartphones and childcare, about ideas of motherhood, and about perceptions on how children relate to technologies.

In the next chapter I present the conclusions of this thesis. This is my attempt to offer a sensible synthesis and reflection about the many and complex aspects that this research explored, through my practice and sensibility as a designer. Here I also discuss what essentially is the contribution of my research and I reflect on what I did and achieved; and the reconsiderations about its scope that might emerge with time.

Chapter Eight

Thesis Conclusions

Chapter eight:

Thesis Conclusions

Introduction

What have I learnt throughout my PhD experience and why does this matter? Fuelled by questions that emerged from my perspective as designer and personal experiences around the role of smartphones during childcare, I asked how critical experiments in design can explore the ambivalent relationship with smartphones in family life, as it offers competing uses for mother and child. I also asked if these proposals could be used to engage with others and provoke responses while exploring the possibilities for design to develop potentials for change to reshape the tensions brought by smartphones in family life. In this conclusions chapter, I reflect on the main contributions of this thesis, which are as follows:

- A design methodology that used suggestive designs to expose practices and prompt discussions about our relationship with smartphones in family life, merging critical design with psychoanalytic and feminist perspectives. In this fusion of disciplinary perspectives, the work identified their common ambition to question the status quo through a critical examination of the ambivalent, contradictory and complex inner world of users. In their value of interpretation and subjectivity, these approaches encouraged open discussions around difficult aspects of motherhood and the use of smartphones to manage these. An important contribution of this work lies in its challenge of how we idealise and judge motherhood, and the importance of traditionally male disciplines to allow for female experiences to be voiced and heard.

  This work harnesses the power of suggestive, critical and uncanny designs, here used for hinting at experiences previously overlooked and for inviting multiple interpretations. By presenting designs that are intentionally unfinished and open-ended, that provoke and challenge the impact of

technologies and their use, I have released reactions, at times unsettling, finding them useful for engaging in conversation. The experimental and ambiguous nature of the designs invited subjects to interpret them and through their interpretations, they gave voice to their subjectivity. The designs poked and disturbed conceptions about motherhood, the uses of technology for dealing with its complexity, suggesting smartphones as nanny objects or family members.

Translating ideas and experiences into materiality, the designs gave form to existing uses of technology that are associated with shame, guilt and ambivalence and expose a set of existing problematic scenarios. Through their narratives, the proposals also portrayed, at times with humour, ordinary moments during the care of young children and the protagonism of smartphones and child related objects.

Industrial design has long identified the opportunities offered by the representation of the parental experience as one of worry, through devices that track a child's movement, sleep or temperature, for example. Essentially child-centric, these portrayals render the experience of motherhood and childhood as one that is idealised, full of benevolence and fear, failing to acknowledge mothers as separate users with complex psychological inner worlds. This was challenged through the experimental drawings and artefacts of this research, evoking the various strategies that mothers develop as they deal with complex and multiple demands in their juggling of maternal and non-maternal identities, personal desires and the pressures brought by ideals of motherhood. Through a critical questioning of conventional portrayals, this work has engaged with the unresolved nature of ambivalence: one that is inherent in the experience of motherhood but also with the ambivalence felt towards the presence of smartphones in the world of mother and infant, a presence that is simultaneously perceived as intrusive, educational and empowering. Through the use of suggestive and experimental proposals, this design led methodology exposed and engaged with the complexity of motherhood and technology.

The development of these proposals recognised my own personal experiences as important sources that informed the research and that enabled me to identify similar experiences in others, as well as to earn their trust and try out ideas before exposing them. This recognition of the personal standpoint as a starting point for enabling the emergence of diverse voices is a contribution towards feminist research.

Besides this critical and experimental design perspective, the work has also explored possibilities for managing the conflicting presence of smartphones in family life, through artefacts that are semi-functional and potentially deployable. Developed up to a point where they worked as research probes, these designs invite further design and research opportunities and other forms of inquiry.

- A reflective design practice in which drawing and making created a space of conversation with the research topic, exploring the role of smartphones and objects in the realm of mother and infant. Drawing began as a way to understand and describe, visually, the research space I set to investigate, a world populated by pacifiers, milk, breasts, toys, blankets and smartphones. Drawing actively invited my subjective interpretation to surface, creating a visual vocabulary in which forms merged and mutated, suggesting newer, at times uncanny meanings. As sketched forms also became explored three dimensionally, protruding features became real and at times more intimidating than on paper, releasing newer meanings and suggestions that I then reworked in a cyclical process of interpretation. In this dialogue of sketch and object experimentation, certain themes gradually started to emerge: the smartphone as a thing that signifies comfort, intrusion, rivalry, distraction, play, work and childcare support. One important aspect of this exploration consisted in the recognition that smartphones, despite their interactive functionality, are physical objects. As I tried to understand their position in the material world I set to investigate, their physical qualities became important: the world of mother and infant is a deeply sensorial one.

Although purposely unfinished and with open-ended functionalities that were intentionally unresolved, the artefacts embody the importance of the designer's attention to detailing, textures, forms and materials: it is not accidental that the designs were developed to resemble commercial products and not rough prototypes. They acknowledge that for a speculative design to become understood *as if it were to exist*, it needs to speak the language of the objects it interact with.

Drawing and making enabled me to create a series of suggestive narratives where I translated the questions, ideas and potentials of my research space into visual and material propositions. The result of this exploration was a series of design experiments that at times provoked ambivalence and portrayed a complex image of motherhood, challenging gender stereotypes and conventional user depictions. The unfinished nature of the drawings and objects invites possibilities and is part of an ongoing process of inquiry in which meanings, symbolism and forms could further evolve and mutate. Inviting newer readings and interpretations, this unresolved tension allowed salient themes to become pivots in the research.

This research acknowledges the practices of drawing and making as epistemological processes that work in balance between the known and unknown. The description of these activities, forms of thinking that were translated onto paper and materials, represent my contribution towards a recognition and celebration of the value of creative practices in design research for addressing complex situations.

• An account of encounters between my designs and audiences that allowed for a series of responses in which ambivalence was manifested. It was manifested in the workshops, where participants were initially repelled by some of the provocative artefacts, but also admitted that they reflect existing behaviours. This also became palpable when participants both rejected the designs and made suggestions of moments in which they may be desirable or useful. As such, the proposals released responses that pointed to an

understanding of smartphones in the world of mother and infant as both intrusive and empowering.

Ambivalence also became tangible when some of the designs, despite stirring unsettling and disturbing reactions, were also seen as educational. In this case, the seemingly didactic value of the proposal became a form of sanctification of its intrusive presence. Here, Mary Douglas' understanding of the way in which non-member elements become impure and threatening to certain cultures (Douglas, 1966) became particularly useful for understanding how technology was felt as a pollutant (together with sugar) in the world of motherhood and childhood, perceived as belonging to the realm of the biological (and at opposite ends of technology).

Other encounters, with members of the public and with scholars also produced insightful responses. The recognition of existing behaviours made visible through the proposals when they were publicly displayed, invited members of the public to approach me and tell me of their own ambivalent relationship with smartphones. Here, the exposure of artefacts became a platform for visitors to recognise behaviours that are private and that are ridden with complexity and guilt, and to engage with me in discussion. Those who approached me were mostly mothers or carers, and thus the work spoke directly to them. The exposure of my research to psychoanalysis scholars enabled newer interpretations, at times beyond my original intentions, that were enriching to the research: they were able to speak to the audiences from the disciplines that informed the work but they also allowed the objects to stand alone, independently from the design frame in which they were conceived. In contrast, some of the responses at the CHI conference, whose community is largely science and engineering driven, reflected a tendency to understand design as essentially solutionist, resulting in misreadings of the critique that my designs sought to address.

The encounters also provided an insightful reflection of the extent to which critical design can reach audiences. My artefacts reflected insights drawn from the theoretical realms of psychoanalysis and feminism and

worked in tension between desirability and critique in subversive, provocative ways that were at times unbearable, highlighting the importance for critical designers to develop a deeply reflective sensitivity when engaging with participants. One important contribution of this work lies in the development of an intimate awareness of the emotional and deeply complex, visceral nuances of motherhood.

As I expand on these reflections in more detail, I reflect on the overall contribution of the thesis, with some considerations that are pertinent for designers. I also contemplate on what could follow as further explorations stemming from this research.

An overall review of the thesis' contributions

This thesis has been informed by a combination of multiple perspectives that I interpreted from the discipline of design research. Material culture studies have offered a useful focus for exploring the experience of being a mother through the relationship with objects that signify the establishment of maternal identities. Introducing Winnicott's psychoanalytic theory on transitional objects, I have examined the relationship that the child establishes with preferred objects, that allow for his/her gradual development as a separate being. I looked into feminist psychoanalytic views that challenge such traditional child centric approaches (in which the mother is seen as an entity solely existing for the child's wellbeing) and explored maternal subjectivities. By introducing maternal ambivalence, a concept that challenges iconic constructions of mothers as all-loving and all-giving while exposing the difficult aspects of motherhood, I have discussed how societal representations tend to resist its complexity. I have argued that this resistance is also present in the design of mother and child related consumer goods. Stemming from conventional design approaches that depict mothers as idealised and uncomplicated, such representations preserve gender stereotypes and fail to address the negotiations between maternal and non-

maternal identities and the often-contradictory traits of motherhood. By looking at the distinct set of affordances that transitional objects offer mother and child, I used this analysis for examining the competing and distinct functions of smartphones. I have argued that the manners in which mothers make use of smartphones reflect the complexities of motherhood and maternal ambivalence, entailing a constant negotiation between how much to give and be present, and how much to retreat. I have also pointed out that for children, the smartphone has a complicated role as it is both an object of rivalry for parental attention and a desired object that places the mother as a rival.

The combinations of academic stances created a useful platform as starting point. As I borrowed from these perspectives, interpreting them and translating aspects of them into my design practice, I began to develop an appreciation of the research space emerging. Through the generation of drawings and experiments in making, I developed a reflective conversation with my topic, a material form of sense making where these theories became an informative background, supported by a growing sensibility to mundane and daily events as described though anecdotes.

As the drawings and artefacts developed into forms of critique of the situation I was exploring, the work's affinities with critical design became recognisable. Critical design's exploration into our complex relationship with everyday objects, viewing subjects as complicated and contradictory was one that became a central aspect of the work as it progressed. As I reflected on these considerations, I was gradually able to recognise common grounds between psychoanalysis and critical design in their embracing of the strangeness of the human condition, exposing that which is often overlooked, a challenge of the status quo. Furthermore, as I valued the unfinished and suggestive qualities of the designs, recognising their potentials for inciting multiple readings, I encountered commonalities with psychoanalysis' value of subjective interpretation. This recognition also became evident as I reflected upon approaches that value ambiguity as a source for design, acknowledging the coexistence of multiple readings in a situation, methods such as Cultural Probes. The use of the designs as triggers for conversation and reflection, incorporating the experiences and perspectives of subjects was another recognition of subjective and

interpretative traditions.

Through the practices of drawing and making, I gave form to this family of ideas and then allowed for further explorations on related issues: that smartphones bring into family life something akin to pacification, that they are a little like pets or family members, and that they are mediators between mother and child, the public and the private, work and play. By giving materiality to these concepts, I was able to engage with others in a more tangible, exposed way. The suggestive aspects of the proposals, at times perceived as 'weird' acknowledged unexplored feelings raised by smartphones, as well as uncommonly accepted aspects of motherhood. Exposing these through proposals encouraged others to tell me about their own experiences.

Encountering ambivalence

Through the designs' insinuations, I exposed the scenarios explored and their possibilities, making these experiences accessible to others. As participants and audiences encountered them, they were able to recognise practices that are ridden with complexity. Ambivalent Objects, acknowledging that mothers use smartphones in ways they are not supposed to, both illustrated and produced ambivalence towards the notion of young children using smartphones, and towards their use by mothers as a form of pacification during childcare (both for themselves or for their children). They reflect the protagonism of smartphones and its complicated role, evoking both an exaggeration of existing practices and a questioning on the desirability of child-related objects integrating smartphones. The responses, which were of rejection to begin with, also prompted suggestions about how to make them more ergonomic and about the scenarios in which they may be desirable. These responses reflect the ambivalence I set to seek in my research, which reaches out to it in two distinguishable though interrelated forms. The first kind is the ambivalence felt towards the notion of infants using technology, seen as a form of contaminant into their realm, often understood as innocent and organic. The second form is

related to maternal ambivalence, which recognizes the coexistence of both positive and negative feelings in motherhood. Parker (1995) suggests that there is a cultural ambivalence towards the notion of ambivalence and this became particularly evident in the workshop with younger mothers, where their young children were present. Here, both the depiction of the difficult aspects of motherhood (through designs that illustrate how mothers may want to take a break from their children) and the idea of young children using them became deeply uncomfortable. These concepts became almost polluting when brought into their sensitive and private domestic environment, where ideals of children seen as biological extensions of their mothers and at one with nature prevailed. The notion of the smartphone as becoming integrated into the childrearing task was seen as threatening and intrusive. There were however moments in which some designs were seen in a more forgiving light, with the suggestion that they might help young children get familiar with coding. This represented a form of sanctification of technology, seen as intrusive but also educational, a reflection of ambivalence.

Ambivalence is also deeply associated with guilt, a response that arises from the difficulties of recognising the dark aspects of motherhood. Feelings of guilt towards the use of technology during childcare was made evident through admitted statements by participants, who in some cases felt it may have affected their children's development. The regret for having relied on technology as a pacifier or respite from children is a possible indicator of feelings of inadequacy as good mothers, responses to social expectations of motherhood.

Maternal ambivalence understands the experience of motherhood as one of both of giving and retrieving. In workshop 1, Tina's comment that the mother is '*trying to keep back a bit of yourself through the phone and what it represents to you… the child develops a relationship with it that is not necessarily what you think it is',* recognising the smartphone's dual role as *'personal and public, an extension of you'*, she is acknowledging the phone's significance in the mother's identity, in constant negotiation between what she is to her child, to society and to herself. Smartphones can embody this conflict: at times kept and at others given, both private and public, sometimes tool and sometimes toy, they resonate with the competing demands

the mother herself experiences as she negotiates the need to keep her sense of independent self.

Other more distant forms of ambivalence emerged when participants alluded to the similarities between the pervasiveness of technology and sugar addiction. In an understanding that places the infant as a biological extension of the mother's body, the battle to protect the child from the artificial often sees sugar as the enemy of the child's healthy, natural diet. Sugar also has a dubious social status, seen both as an enemy of good health and as an association to childhood pleasure (Smyth, 2012). Like technology, sugar is understood as both polluting, addictive and affecting children's behaviour, but also bringing pleasure to both children and parents.

Considerations for designers

In the disciplines of design, there have been examples of leaps of imagination in which designers attempt to recreate the experiences of an 'other'. Thomas Thwaites (2016) created *GoatMan (a holiday from being human)* in which he attempted to live like a goat through prosthetic designs. Sputniko! (2010) created the *Menstruation Machine* to let subjects experience something akin to having a period. Although interesting, these experiments in design leave few insights that may inform the design of everyday objects and technologies. I suggest that design, which despite constantly changing is still a male dominated practice, would benefit from designers' developing wider leaps of imagination that might involve including and listening to overlooked gendered and maternal experiences that may result in richer viewpoints and designs that break away from gender stereotypes.

For designers, one contribution of this work is first and foremost an acknowledgment that users will make use of designed objects in all manners, and that these unintended uses represent the complexity of the human psyche. Just as slips on the tongue are useful mistakes that in psychoanalysis are cues for complex psychological landscapes, misuses of designed objects and technologies, understood perhaps as *material Freudian slips*, might help us understand our

psychologically complex relation with them. Designers need to address and engage with this complexity (or, using the language of the Freud museum's curators, *the weirdness of human existence*), and embrace its richness, as it reveals how full of contradictions human beings are. The act of acknowledging in the design process the multiple uses of smartphones and objects by mothers during the intense early years of childhood is already chipping away at constructed gender stereotypes and idealised, impossible portrayals of the perfect mother. The power of the critical artefacts in this research lies in the fact that they allowed subjects to recognise behaviours that they had perhaps not thought of, and share these with others, an empowering act.

Some of the artefacts, open-ended and intentionally unfinished, are sufficient indicators of potential directions for design and research, which partially answer my third research question about potentials for change. Herby suggests it could voice family members' commands or desires in indirect or humorous ways, while playfully acknowledging the increasing role of technology artefacts as participators in family life, rather than as mere serving objects. A feature in a smartphone that played with the idea of the smartphone as becoming grumpy when taken out of a mother's bag to play with, could not only acknowledge how phones are reluctantly shared with young children, but also offer deterrent.

A design approach that recognises the intrusive nature of smartphones in family life, and the impact it has for children and mothers could further develop some of the ideas I played with. The concept of putting the smartphone to sleep for a nap or turning it into a pet that needs to be left alone could potentially acknowledge the ways in which young children understand these technologies, an approach that may lead to strategies for managing boundaries. I hope to develop some of these ideas in post-doctoral work.

Designers of emerging technologies and AI devices could challenge assumptions about technology as purely enhancing and facilitating in our lives. Instead, they could acknowledge and embrace the love and hate relationship we have with them. Such an approach could lead to designs that honestly admit their own limitations rather than present utopic narratives. By doing so, they could also

challenge idealised visions of family life and present more realistic and candid representations.

A spectrum of objects from critical to pragmatic

Design and design research have multiple discourses. Critical and speculative design aspires to give form to problematic situations, speculating on the possible implications of changes in societies and technologies. Traditional positivist design approaches, closely linked with industry, tend to view design as a practice that ought to produce pragmatic and viable solutions that would benefit users. The spectrum of objects and experiments I created in this research live in the continuum between these two narratives, which are sometimes presented at opposite ends (Forlizzi et al., 2018). Ambivalent Objects are not commercial designs and do not offer a solution. Rather they are critical and exposing of a set of existing problematic scenarios. On the other hand, Uncanny Pet offers a more optimistic and practical perspective in its possible respite from the intrusiveness of smartphones and a potential for viable designs. Herby, somewhere in the middle of the spectrum both uses humour to deal with the difficulties of the scenarios it addresses and opens the possibility for exploring deterrents towards children grabbing adults' smartphones. Design and research are practices that do not need to strictly adhere to dogmatic views of criticality or pragmatic solutionism. Design research can simultaneously be critical of present scenarios, speculative of possible situations associated to that present and fictional of possible futures. In this ongoing dialogue, fluidly moving between these discourses there is much to learn and explore.

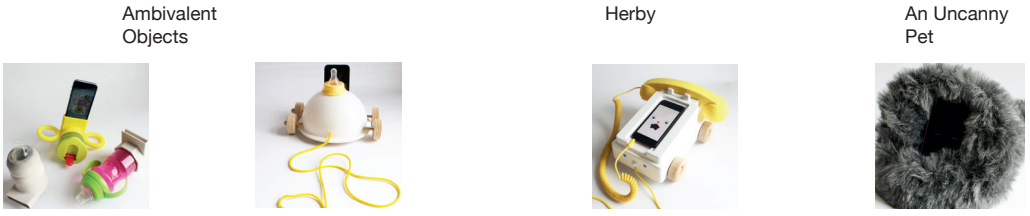

Figure 102: A spectrum of objects exploring the research space

Motherhood and smartphones

The way we view the uses of the smartphones by mothers is implicated in the social and cultural constructions of motherhood. Anecdote six, which tells of the viral condemnation of a mother who is seemingly absorbed into her phone while her baby sleeps on an airport floor, illustrates how the smartphone is a vehicle for bringing into relief all the expectations we project onto mothers. Mothers are expected to devote all their attention to their children and cope with all adversities and are judged when they fail to do so (even when no help is offered to (for example) a mother stranded for hours at an airport with a young baby). The image of a mother using a smartphone in the presence of her children is often judged as neglect, an act of giving priority to the non-maternal over the maternal. In recent months I have found a number of publications highlighting the effects of parents using smartphones in the presence of their children (Matthews, 2017; Hymas, 2018; Myurski et al., 2016; Sandoiu, 2017), pointing to negative consequences in children's development and social functioning. Although these articles tend to be about *the distracted parent* in general, there is emphasis on the lack of interaction between mother an infant, caused by the presence of smartphones. One article claims that researchers have found that "poor behaviour in children was more closely linked to their mothers' phone usage than the fathers" (Hymas, 2018), although the article does not state how many of the participants in the research, who presumably had the primary role of childcare, were women. What are we to do with this information? Like most psychology narratives, the emphasis is often on the mother-infant dyad, placing the mother as an entity solely existing for the child, mainly responsible for its development and whose subjectivity is often excluded. But are mothers the only ones addicted to smartphones? Are we to blame them entirely for the way in which smartphones have pervasively affected all of us in all aspects of our lives? Jacqueline Rose observes that mothers are required to perform an impossible clean-up job and preserve the fiction that the world is a safe place, there is either hostility towards them or the expectation that they will make the world perfect (Clark, 2018). If smartphones

represent the intrusion of the technological, the artificial, into the otherwise natural world of parenthood and childhood, is it the mother's responsibility to safeguard family life against its damaging effects? Is this another of her clean-up duties? Is there a double standard where fathers are more allowed to play with technology because it is often perceived as an activity for boys? (in chapter six I point out that participants commented on the smartphone's masculinity, a disparity in the infant's world of rounded forms and soft textures, the world of care, often perceived as feminine). These are unanswered questions that need to be considered in the discourses around the presence of technology in family life. They form part of this thesis' contribution, pointing to existing constructions around gender, technology and family roles that need challenging.

An unfinished conversation

This research has opened multiple unfinished conversations that I hope will continue after I finish my doctorate. An exploration of the complicated and contradictory behaviours in users as a form of inquiry can add to debates about our complex relationship with technology in society, which is often ambivalent. The voicing of mothers' experiences in their use of technologies can make valuable contributions not only to feminist design research but also to the design and HCI communities in general, which could benefit from including the underexamined experiences from a wide range of users. More generally, the work can contribute to dialogues about the way in which we idealise and judge motherhood in our culture and on the importance of traditionally male disciplines to allow for female experiences to be voiced and heard.

The use of open-ended designs can contribute to discussions about the use of narrative, suggestive and critical artefacts as a form or inquiry in research through design, and about the value of viewing interpretative disciplines as useful perspectives that can inform the design practice. Furthermore, the possibilities for further exploration about potentials for change, as suggested by some of

the proposals, are also forms of unfinished conversations that can lead to other possibilities not explored here. One difficulty I encountered in this work lies in the impossibility to capture all of what surfaced through conversation, however diligently I tried to document it. But the essence of what emerged is still here, in the suggested potentials, however unfinished, that the work invites.

Using the autobiographical

When I first enrolled as a PhD student, my son was five and my daughter was just under three. She commenced her academic year at a school's nursery just as I started mine at Goldsmiths. Many of the insights that informed my initial sketches stemmed from the freshly lived experiences of the first years of motherhood, of the hubbub of looking after two young children with little help, managing the constant juggling of activities and trying to keep a sense of an identity apart from that of motherhood. Looking back, I can now see how these experiences have powerfully marked me, with an intensity that gradually decreased and that at moments I now view with nostalgia. The intense early years produced fertile and powerful resources that fuelled many of my ideas, developed in intimate proximity with the research space. I am grateful that I was able to use and transform these experiences through my creative practice. Not only was I able to sublimate them into this work, but I was also able to create a platform for others to share and express similar lived moments. I used domestic and difficult to articulate maternal experiences, often dismissed as beyond the realm of what is seen as worthy to be researched, and took them seriously enough as sources of interest. And I used smartphones as a material pivot to explore these. As the work became exposed, it became part of a wider, more public debate, involving the subjectivities of many.

Taking the decision to acknowledge my personal experiences as valuable took courage. Not only did it feel slightly exposing, but it was also at odds with design research narratives that envision researchers as disinterested and therefore objective (Neustaedler & Sengers, 2012). Using the subjective is often seen as

compromising objectivity, which historically has been male. However, as Perreault points out, the process of writing can allow for re-inventions of the self and more fluid subjectivities to emerge (Perreault, 1995). In the processes of writing, drawing and making, and in the exposure of the work to others, I have witnessed the emergence of maternal (and to a certain extent also paternal and filial) subjectivities. It is in this recognition that a form of objectivity also emerged.

Figure 103: The collected sketchbooks used during my PhD

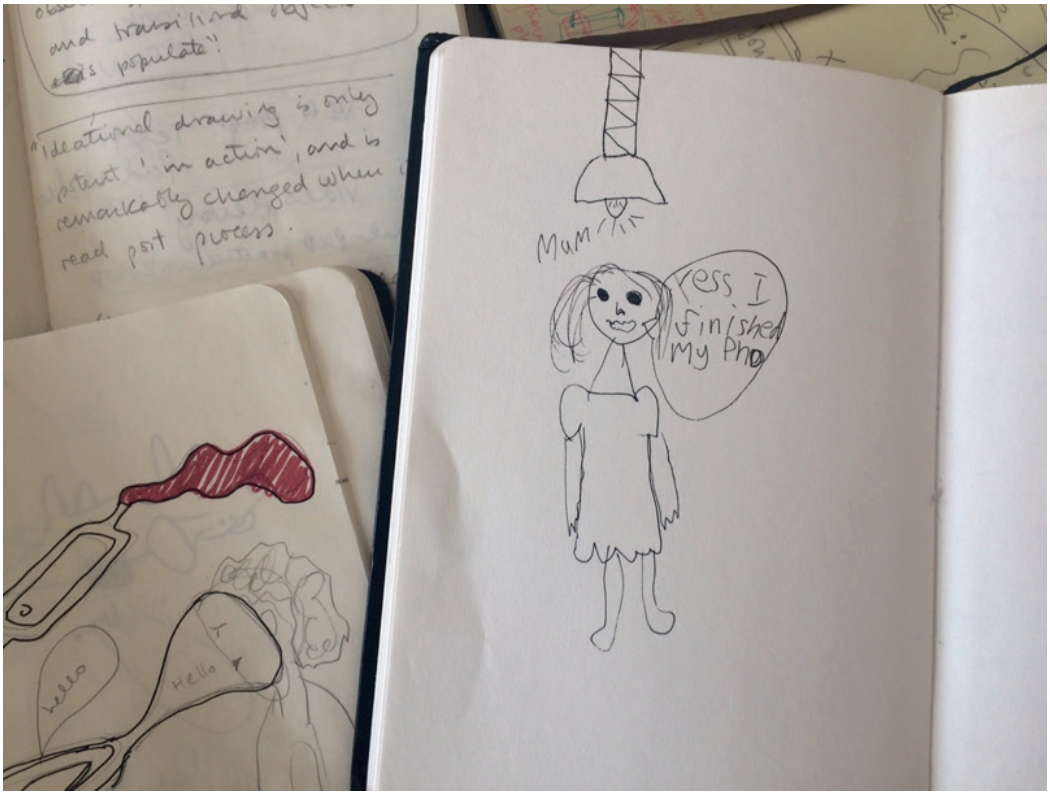

Figure 104: A drawing by my then five years old daughter, who sometimes got hold of my sketchbooks

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https://mybuddytag.com/

https://www.summerinfant.com/infant-health/pacifier-thermometer

Freud Museum (2015) https://www.youtube.com/watch?v=pxaFeP9Ls5c. accessed 18/12/17

Appendix 1
Consent forms, information sheets and flyers

Figure 105: Recruitment flyer

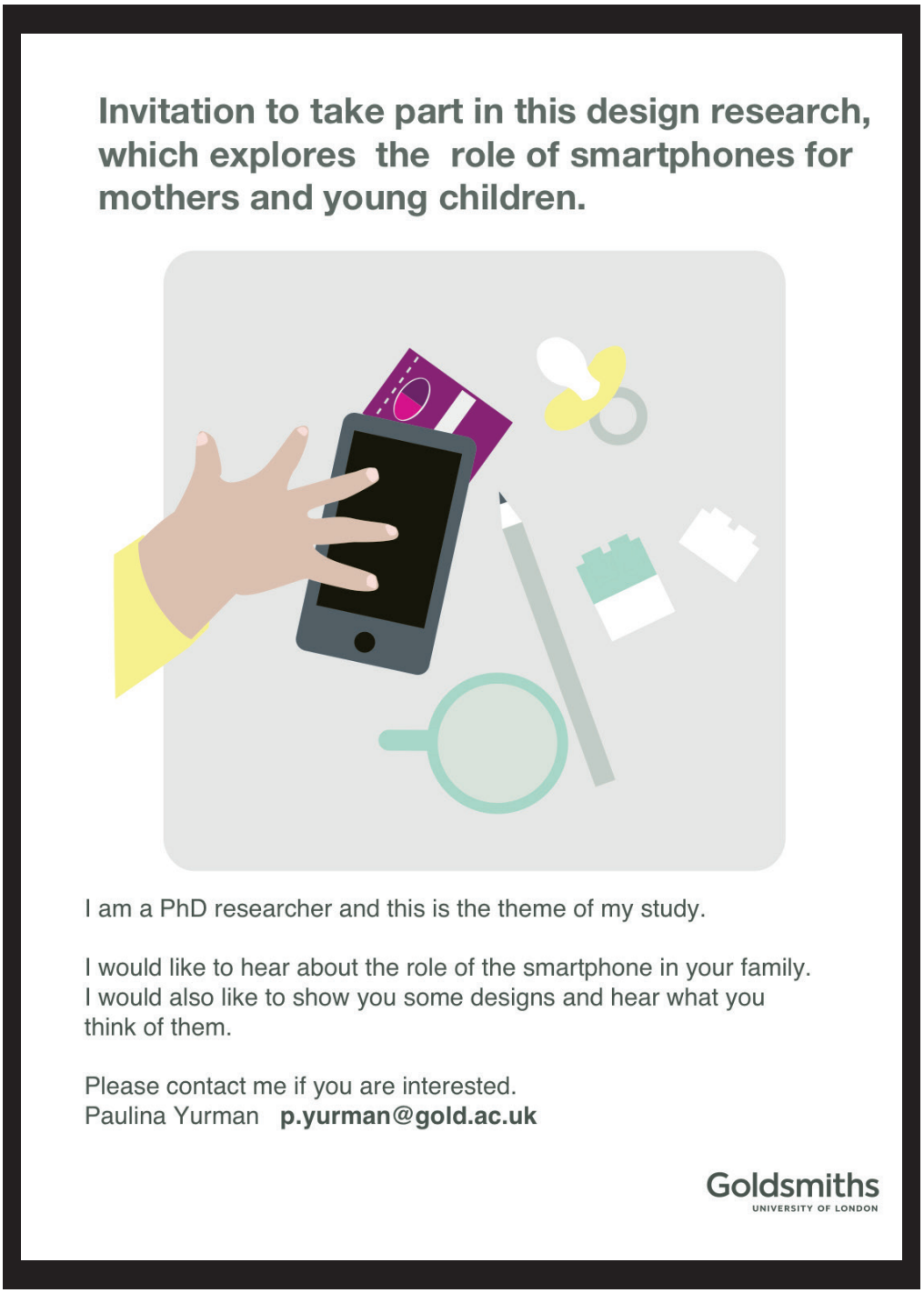


Figure 106: Recruitment flyer

Goldsmiths
UNIVERSITY OF LONDON

Information Sheet for PhD Research at the Design Department, Goldsmiths College

Designing for Ambivalence

Exploring the role of smartphones for mothers and their young children

What is this PhD research?

My PhD research **Designing for Ambivalence** explores, from a design perspective, the many uses of smartphones by mothers who are the primary carers of their young children.

Research Questions

In my research, I want to investigate the following questions:

- How can experiments in designs explore the relationship with smartphones experienced by mother and child?
- How can design proposals be used to find out about our relationship with smartphones in family life?
- What are the possibilities for design to reshape our relationship with technologies in family life?

What kind of participants is the research involving?

I am looking for mothers who are the main carers of their young children.

What do participants need to do?

1. I would like to hear about the role of the phone in your life
2. I would like to show you some designs and hear what you think of them.

How the information will be used and kept

- After recording our conversations, I will transcribe them into text.
- I will ensure your anonymity when I use quotes from our conversations, using a pseudonym instead of your real name.
- The transcription will be part of the evidence for my thesis and any academic presentations.
- Once transcribed, I will delete the digital recording of the conversation.
- I will assign any photos I take to the same pseudonym.
- Your anonymity will be preserved at all times. All the information that you provide me will be kept securely.

Can I change my mind?

Participation in this study is entirely voluntary.

You may withdraw from the study at any time. To do so please contact me via email. You can request that any information you have provided to be destroyed.

Thank you for your help.

Paulina Yurman

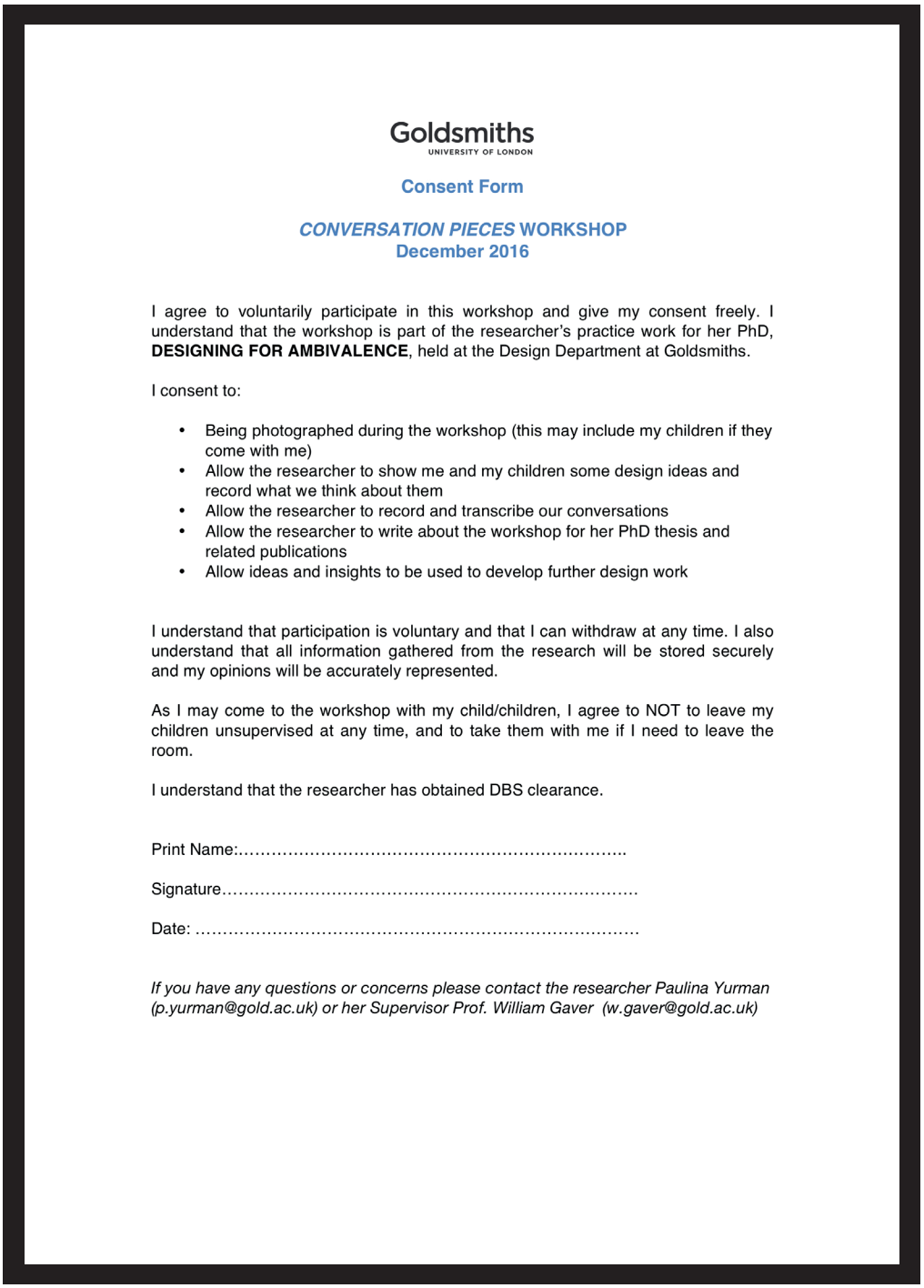
PhD Candidate, Design Department

Goldsmiths, University of London. SE14 6NW
contact: p.yurman@gold.ac.uk

PhD Supervisors*:
Prof. William Gaver w.gaver@gold.ac.uk
Prof. Janis Jefferies J.Jefferies@gold.ac.uk

*any queries or concerns can also be directed to the PhD supervisors (if necessary)

Figure 107: Information sheet



Goldsmiths
UNIVERSITY OF LONDON

Consent Form

***CONVERSATION PIECES* WORKSHOP**
December 2016

I agree to voluntarily participate in this workshop and give my consent freely. I understand that the workshop is part of the researcher's practice work for her PhD, **DESIGNING FOR AMBIVALENCE**, held at the Design Department at Goldsmiths.

I consent to:

- Being photographed during the workshop (this may include my children if they come with me)
- Allow the researcher to show me and my children some design ideas and record what we think about them
- Allow the researcher to record and transcribe our conversations
- Allow the researcher to write about the workshop for her PhD thesis and related publications
- Allow ideas and insights to be used to develop further design work

I understand that participation is voluntary and that I can withdraw at any time. I also understand that all information gathered from the research will be stored securely and my opinions will be accurately represented.

As I may come to the workshop with my child/children, I agree to NOT to leave my children unsupervised at any time, and to take them with me if I need to leave the room.

I understand that the researcher has obtained DBS clearance.

Print Name:……..

Signature……

Date: ……

If you have any questions or concerns please contact the researcher Paulina Yurman (p.yurman@gold.ac.uk) or her Supervisor Prof. William Gaver (w.gaver@gold.ac.uk)

Figure 108: Consent form

Goldsmiths
UNIVERSITY OF LONDON

Consent Form

Interview with a Psychoanalyst, showing my experimental objects
January 2017

I agree to voluntarily participate in this interview and give my consent freely. I understand that the interview is part of the researcher's practice work for her PhD, **DESIGNING FOR AMBIVALENCE**, held at the Design Department at Goldsmiths.

I consent to:

- Allow the researcher to show me some design ideas and record what I think about them
- Allow the researcher to write about the interview for her PhD thesis and related publications
- Allow ideas and insights to be used to develop further design work

I understand that participation is voluntary and that I can withdraw at any time. I also understand that all information gathered from the research will be stored securely and my opinions will be accurately represented.

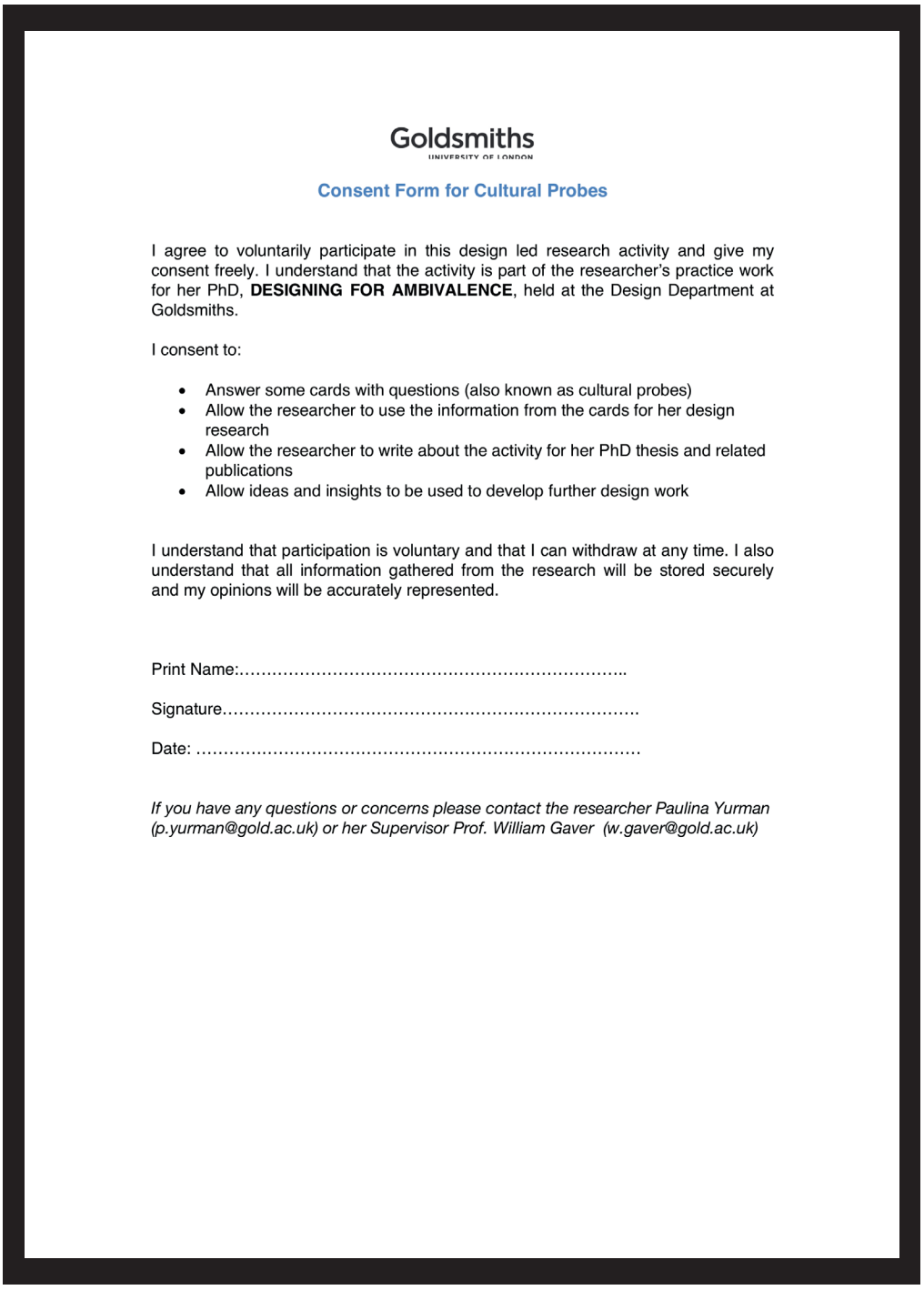
Print Name:……..

Signature…….

Date: ……

If you have any questions or concerns please contact the researcher Paulina Yurman (p.yurman@gold.ac.uk) or her Supervisor Prof. William Gaver (w.gaver@gold.ac.uk)

Figure 109: Consent form



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Consent Form for Cultural Probes

I agree to voluntarily participate in this design led research activity and give my consent freely. I understand that the activity is part of the researcher's practice work for her PhD, **DESIGNING FOR AMBIVALENCE**, held at the Design Department at Goldsmiths.

I consent to:

- Answer some cards with questions (also known as cultural probes)
- Allow the researcher to use the information from the cards for her design research
- Allow the researcher to write about the activity for her PhD thesis and related publications
- Allow ideas and insights to be used to develop further design work

I understand that participation is voluntary and that I can withdraw at any time. I also understand that all information gathered from the research will be stored securely and my opinions will be accurately represented.

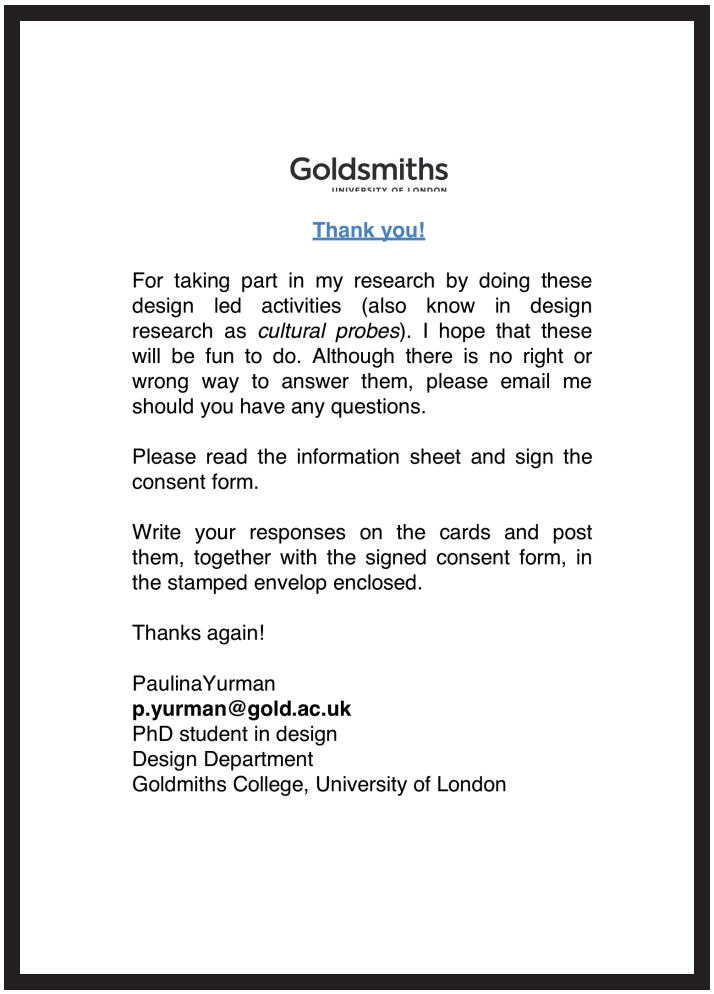
Print Name:……..

Signature…….

Date: ……

If you have any questions or concerns please contact the researcher Paulina Yurman (p.yurman@gold.ac.uk) or her Supervisor Prof. William Gaver (w.gaver@gold.ac.uk)

Figure 110: Consent form



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Thank you!

For taking part in my research by doing these design led activities (also know in design research as *cultural probes*). I hope that these will be fun to do. Although there is no right or wrong way to answer them, please email me should you have any questions.

Please read the information sheet and sign the consent form.

Write your responses on the cards and post them, together with the signed consent form, in the stamped envelop enclosed.

Thanks again!

PaulinaYurman
p.yurman@gold.ac.uk
PhD student in design
Design Department
Goldmiths College, University of London

Figure 111: Probes information sheet

DEPARTMENT OF DESIGN

Research and Enterprise Committee

RESEARCH ETHICS APPROVAL FORM (Staff and students)

This form should be completed for any research project that involves human participants or if the research involves animals or if it may involve environmental harm. The principal investigator or, where the principal investigator is a student, the supervisor, is responsible for exercising appropriate professional overview of the research.

You should:

- first, read and understand the Goldsmiths Code of Practice on Research Ethics: http://www.gold.ac.uk/media/research-ethics.pdf
- then complete and submit this form
- then, wait for approval before contacting any potential participants in any research.

Section One **Applicant Details**

1.1 Name of researcher	**PAULINA YURMAN**
1.2 Status (undergraduate student, postgraduate student, staff)	**Postgraduate**
1.3 Goldsmiths email address	**p.yurman@gold.ac.uk**
1.4 Contact address	**148 Powerscroft road, London E5 0PR**
1.5 Contact phone number	**07939 061642**

Section Two **For students only**

2.1 Programme	**PhD**
2.2 Course	**Design Department**
2.3 Your supervisor or module leader's name	**Prof. William Gaver**
2.4 Your email address (if different from above)	
2.5 Your contact address (if different from above)	

Section Three **Project Details**

3.1 Project title: **DESIGNING FOR AMBIVALENCE**
3.2 *Brief* outline of the project, including its purpose: **To investigate how design can interpret parent's ambivalent attitudes towards separation/integration of home and work life, and the role of technology implicated in this.**
3.3 *Brief* description of methods of data collection/activity: **Design Led Workshop**
3.4 Where will the data collection be undertaken?: **At Goldsmiths College.**

Figure 112: Research ethics form

Section Four **Human participants**

4.1 How many and what type of participants are involved in the research? **Up to 18 participants, many of which will be parents. Participants are researchers, design students, PhD students and designers in industry.** ***If NIL go to Section Seven. Otherwise, complete this Section.***
4.2 How will the participant(s) be recruited? *(Attach copies of any recruiting materials if used).* **PLEASE SEE LEAFLETS**
4.3 How will the participant(s) consent be obtained? *(Include a copy of any proposed consent form).* **Signed consent form**

Insert ✓	Y	N
4.4 Will it be necessary for participants to take part in the study without their knowledge and consent at the time? (e.g. covert observation of people in non-public places)	*	✓
4.5 Is there any deception involved?	*	✓
4.6 Will the participant(s) be paid or rewarded?	*	✓
4.7 Will the participant(s) be fully informed about the nature of the project and of what they will be required to do? (*Attach any associated materials.)*	✓	*
4.8 Will the participant(s) be told they can, if they wish, withdraw from participation at any time? (*Attach any associated materials.)*	✓	*
4.9 If you have ticked a box marked * please give the question number/s and fuller information here:		

Section Five **Persons who are young, vulnerable or in legal custody**

Insert ✓	Y	N
5.1 Will any persons who are: young (under the age of 18 years); vulnerable (e.g. with learning difficulties or with severe cognitive disability); or, in legal custody be involved in the research? ***If NO, go to Section Six. If YES please complete this section.***		✓
5.2 How will consent be given (i.e. from the participant themselves or from a third party such as a parent or guardian) and how will agreement to the research be asked for? (*Attach any associated materials.)*		
Insert ✓	Y	N
5.3 If you are conducting research with young persons under the age of 18 years or 'vulnerable persons' do you have Criminal Records Bureau/Disclosure and Barring Service clearance? (*Please attach evidence of such clearance.)*		
5.4 Will face-to-face interviews or observations or experiments be overseen by a third party (such as a teacher, care worker or prison officer)?	*	✓
5.5 Is it possible that the research might disclose information regarding child sexual abuse or neglect? *(If yes, indicate how such information will be passed to the relevant authorities (e.g. social workers, police), but also indicate how participants will be informed about the handling of such information were disclosure of this kind to occur. A warning to this effect must be included in the consent form if such disclosure is likely to occur.)*	*	✓

Figure 113: Research ethics form

Section Six **Participants' personal data**

Insert ✓	Y	N
6.1 Will personal data of any kind (including digital and images) be gathered on participants? ***If NO go to Section Seven. If YES, complete this Section.***	✓	
6.2 Will the data be anonymous?	✓*	*
6.3 Will the data be treated confidentially?	✓*	*
6.4 Will the study involve discussion of topics sensitive to the participants (e.g. religious or culturally sensitive issues, sexual activity, drug use)?	*	✓
6.5 How long will the data be stored and how will it be eventually destroyed? For the duration of my PhD. It will be destroyed afterwards		
6.6 If you have ticked a box marked * please give the question number/s and fuller information here: I will use synonyms when transcribing the data for my thesis. I will keep all data safely in a hard drive and laptop, with a password		

Section Seven **Risk and Duty of Care issues**

Insert ✓	Y	N
7.1 Will the research involve the investigation of illegal conduct?	*	✓
7.2 Are there any potential adverse consequences to the participant(s), or any other person?	*	✓
7.3 Are there any procedures which may cause discomfort, distress or harm to the participant(s), or any other person?	*	✓
7.4 Will the research place you in situations of harm, injury or criminality?	*	✓
7.5 Have you any special personal considerations or vulnerabilities that might influence your safety while carrying out fieldwork (injuries, disabilities, allergies, asthma, personal conflicts with informants/community etc.).	*	✓
7.6 Might the research cause harm to those represented in it?	*	✓
7.7 Will the research involve any animal subjects?	*	✓
7.8 Will the research cause any environmental harm?	*	✓
7.9 Are drugs, placebos or other substances (e.g. food substances, vitamins) to be administered to the study participants or will the study involve invasive, intrusive or potentially harmful procedures of any kind?	*	✓
7.10 Will blood or tissue samples be obtained from participants?	*	✓
7.11 Is pain or more than mild discomfort likely to result from the study?	*	✓
7.12 Could the study induce psychological stress or anxiety or cause harm or negative consequences beyond the risks encountered in normal life?	*	✓
7.13 Will the study involve prolonged or repetitive testing?	*	✓
7.14 Do you know of any other potential developments arising from this research that may lead to ethical, health, safety, risk, harm, or duty of care concerns?	*	✓
7.15 If you have ticked a box marked * please give the question number/s and fuller information here:		

Figure 114: Research ethics form

Section Eight **Other matters**

Insert ✓	Y	N
8.1 Are there any conflicts of interest regarding the investigation and dissemination of the research (e.g. with regard to compromising independence or objectivity due to financial gain)?	*	✓
8.2 Is the research likely to have any negative impact on the academic status or reputation of the College?	*	✓
8.3 Is data to be collected from an institutional location (such as a school, prison, hospital)? *If so, attach evidence of agreement obtained from the relevant authority (e.g. Head Teacher, Local Education Authority, Home Office)?*		✓
8.4 If you have ticked a box marked * please give the question number/s and fuller information here:		

Section Nine **Attachments, signatures and submission**

Wherever possible, applications will be dealt with within two weeks of receipt. Delays will occur if the application has not been carefully completed. The decision regarding your application for ethical approval will be communicated to you and your supervisor (if applicable) directly.

You should now complete the following checklist, supply any necessary signatures and submit the full application/documentation to the Department Research and Enterprise Committee Chair/Department Ethics Officer via the Design Office.

9.1 Attachment checklist:
Have you attached copies of all supporting materials? Please indicate which and insert ✓ in the appropriate column

Document	Not applicable	Attached
Recruitment document/s		✓
Informed consent		✓
Other information for participants		✓
Consent agreements for young, vulnerable or 'in custody' persons		
Criminal Records Bureau clearance		
Institutional location agreement		
Other *(please specify)...*		

9.2 To be completed by student applicants…
Please note that your Supervisor and the Department Research and Enterprise Committee Chair/Department Ethics Officer should be notified of any adverse or unforeseen circumstances arising out of this study. If there are significant changes to the research design regarding research ethics, please notify the Committee immediately.

Signature of Applicant Date 2 FEBRUARY, 2016

Paulina Yurman

Figure 115: Research ethics form

9.3 To be completed by Principal Supervisor…

Please note that the Department Research Ethics Committee Chair/Department Ethics Officer should be notified of any adverse or unforeseen circumstances arising out of this study or of any emerging ethical concerns that the Supervisor may have about the research once it has commenced.

Insert ✓	Y	N
Has the student read and understood the Goldsmiths Code of Practice on Research Ethics?	✓	
Has there been appropriate discussion of the ethical implications of the research with you as Supervisor?	✓	
Are the ethical implications of the proposed research adequately described in this application?	✓	
Please add any other comments you wish to make here:		

Signature of Principal Supervisor

Date

2 February 2016

10 Statement of Ethical Approval

This project has been considered using agreed Departmental procedures and is now approved. This approval is valid for a maximum period of ____ year/s.

Signed

Date

Print Name

Department Research Ethics Committee Chair/Department Ethics Officer

Design: R&E Ethics July 2015

Figure 116: Research ethics form

Appendix 2
Dissemination material

Designing for Ambivalence: Mothers, Transitional Objects and Smartphones

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CHI'17 Extended Abstracts, May 06-11, 2017, Denver, CO, USA
ACM 978-1-4503-4656-6/17/05.
http://dx.doi.org/10.1145/3027063.3027120

Abstract
For many women, the first few years of motherhood demand complex negotiations of maternal and work related roles. The versatility of smartphones, functioning for both work and play, can add complexity to the blurring of boundaries in this period: the phone is often used for work while doing childcare, and at other times to keep children quiet or entertained. Transforming from tool into toy, it becomes an object of competition for parental attention, but equally turns the mother into a rival since its use is often shared. My research investigates how design can explore the relationship between mother, child and the smartphone, using proposals to expose the tensions brought by this device in family life.

Author Keywords
Speculative design; ambivalence; toy; tool; smartphones; transitional objects; motherhood.

ACM Classification Keywords
H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous

Research Situation
I am a doctoral student in the Design Department at Goldsmiths College, University of London. My background is in product design and I have worked in

Figure 117: Paper for CHI 2017

Figure 1: quick proposal *Guilt Teacup* by workshop participant Luca Alessandrini. *Photo credit Jennifer Heller.*

Figure 2: The proposals helped participants articulate ideas around the management of home and work identities. *Photo credit Jennifer Heller.*

the design industry for many years. My research has been informed by my work as Research Associate in the Family Rituals research project [23], where I could observe how design proposals can help expose latent aspects of family life.

Through speculative design proposals, my practice based PhD investigates the ambivalent attitudes towards the smartphone, experienced by mother and child, as it blurs boundaries between work and play, creating tensions. I have done pilot interviews with parents, where I presented early proposals that addressed aspects of my research, and recorded participants' reactions. Together with cultural probes [6], these have allowed me to identify the salient themes of my research. In February 2016 I carried out a design led workshop [24], using props and quick design proposals to help articulate themes related to the management of work and home identities (figures 1 and 2). In December 2016 I ran the Conversation Pieces [25] workshop sessions, where I presented experimental designs to participants, and documented the responses and discussions that emerged. I am currently working on these proposals, some of which are slightly provocative and critical of the situation I am exploring. I aim to develop some of these designs to a semi or simulated working state, and give it to a family in the Summer 2017 to live with for a short period, and document this experience through interviews.

Context and Motivation

My study focuses on mothers of pre-school children, who are the primary carers, and indirectly, their children. In this 'in between' period, when a child is still small and maternal identities begin to exist in tension with work or non-maternal identities, many mothers create solutions to accommodate simultaneous demands, often using digital devices as childcare, though with reluctance. Bardzell proposes opportunities for HCI and design practitioners to draw on feminist standpoint theory, as it can bring clarity in the ways encounters with technologies can be considered through the subjectivities of the 'marginal' user [3]. By looking at the experiences of mothers and their young children, I hope to be able to unravel unexamined experiences and present alternative perspectives.

Much of my work is inspired by my own experience, observing that the associations mothers, fathers and children have with the digital technologies prevalent in their lives can vary according to parents' assumed roles in the family and the age of their children. Neustaedler & Sengers consider that an autobiographical design approach using personal experiences can be a great source for providing nuanced considerations of the research space [14]. The accumulated, implicit knowledge that I have collected in my experience as a designer, researcher and working mother, shape the repertoire that informs the processes and decisions in this research. However, in presenting my proposals to participants, the result is that I gradually expand onto new understandings beyond my own.

Speculative design is an established approach that explores possible scenarios and critiques established practices while allowing the emergence of new design spaces [1,5,7,20]. While drawing from such perspectives, I hope to offer the HCI community some practical approaches that explore how design propositions can give material form to complex themes and offer opportunities for debate, while exposing aspects of the impact of technology in family life.

Taking part in the CHI2017 doctoral consortium would be an invaluable opportunity to receive feedback on my design research and proposals, and to engage with a diversity of scholars.

Background

The domestic space is an arena of performance and interaction with objects, each with a significance and association with its owners' history. Many new mothers spend more time at home than before giving birth, and so are surrounded by objects that represent previous and new experiences. During this period, new maternal identities have to be accommodated to coexist alongside work roles, often put temporarily on hold. As sociologist Nippert-Eng noted, the blurring of boundaries between work and home life tends to be particularly acute for parents, predominantly when children are small, and this can be more visible in mothers [15]. In this context, the relationship with objects, particularly those previously associated with work, such as the phone, becomes more complex. Just as a grandfather clock in a home may come to stand for the family's ancestors, as Daniel Miller suggests, [13], a mobile phone, as well as digital devices such as laptops and tablets, may come to represent a connection with work, career, aspirations, or simply other non maternal roles.

The emergence of maternal identities during this period coincide with the gradual development of the child's own identity as a separate being from its mother. Ambivalence during these early years has been widely investigated by child psychologists and psychoanalysts, as it points to the complexity of the emotional landscape for both mother and child [2,16,18,21]. Toys and child objects can play a significant role during this time. Transitional objects [22] – such as security blankets or preferred soft toys, are a child's first possession, providing comfort and enabling separation when the mother is unavailable. As psychoanalyst Lisa Baraitser observes, the mother also has her own unique relation with the child's transitional object, beyond the unique and special relationship the child has developed with the object itself [2]. From a design perspective, this points to a set of affordances brought by childhood, maternal and shared objects that are distinct for mother and child: a favourite teddy bear can offer relative separation through the comfort it provides a child and through the (short) temporary freedom to be occupied elsewhere it offers the mother.

In the case of the smart phone, this affordance duality has added complexity as it blurs the boundaries between work and play. Defending boundaries may produce seemingly self-contradictory behaviours (the phone can be off limits to children, but it is often used to keep them quiet or entertained). It can also bring up ambivalence: fascination at how able they may be with the technology; mixed feelings for allowing too much screen time; guilt for using it while doing childcare [11]. Children can also feel ambivalent towards the device: as it flexibly transforms from work tool into plaything, it becomes an object of competition for parental attention, but equally turns the mother into a rival since the device is often shared. In this oscillation, it becomes a sort of transitional object for both mother and child, creating tensions and ambivalences that this research investigates through design proposals.

Figure 119: Paper for CHI 2017

Figures 3 and 4: exploring narratives through proposals

Research Questions

As a designer, I see fertile ground for exploring this space. The main output of my research will be my proposals (in the shape of images, designs and artefacts), the thought processes behind them, and the debates and responses they elicit about the issues that they raise. The main questions that my research will address are:

- How can designs critically explore the ambivalent attitudes towards the smartphone that mother and child experience, as it flexibly transforms from work tool into play thing?

- How can these proposals be used to provoke responses from publics about our relationship with smartphones in family life and the possibilities for design and technology to reshape the existing situations for mothers and young children?

My Approach

My research aims to use design proposals to elicit responses through the narratives that they raise. Carl Di Salvo argues that the idea that images and objects can stimulate meaningful reflection is the potential of speculative design, and that creating events that make use of artefacts and the processes behind them to engage the public give them performative qualities, helping them incorporate in the public debate [4]. Using design proposals to draw out responses from participants is an established practice in design and HCI research. Examples of this research through design [9] approach can be seen at [8,10,12,17]. In my experience, I tend to have more immediate and useful reactions to my research when I show my proposals than when I speak about it without the help of visual material or models. Collaboratively analyzing the narratives that the designs bring about in the interactions that they propose is intended to increase engagement with participants, help articulate themes in my research, and spur dialogues about our relationships with smartphones in family life. Recently, I have been exploring with proposals that aim to playfully address the tensions between tool and toy, as well as exploring with the smartphone as a sort of family member or pet (figures 3 and 4), a mediator of tensions [19]. This has been a useful approach in presenting the complex, tangled themes of my research to diverse audiences.

Acknowledgements

I would like to thank Prof. William Gaver for his ongoing support as my doctoral supervisor, and Prof. Janis Jefferies for her valuable contributions as second supervisor. Two grants from the EPSRC's Balance Network have enabled me to carry out workshops as part of my research.

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Figure 121: Paper for CHI 2017

CHI 2017 Doctoral Consortium
May 6th and 7th 2017, Denver, Colorado, USA

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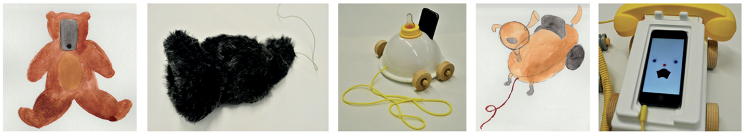
Designing for Ambivalence:

Mothers, Transitional Objects and Smartphones

Exploring the competing discourses offered by smartphones to mothers and their young children

Paulina Yurman
Design Department, Goldsmiths College, University of London
p.yurman@gold.ac.uk @PYurman13 www.yurman.co.uk



Experimental design proposals

Background

For many women, the first few years of motherhood demand the complex negotiation of maternal and work related or non-maternal identities. The accommodation of multiple roles evolves in parallel with the gradual development of the child's own identity as a separate being. Toys and objects can play a significant role during this time, and smartphones also form part of this material world. In their versatility, functioning for both work and play, smartphones add complexity to the blurring of boundaries in this period. The device is often used for work while doing childcare, and at other times to keep children quiet or entertained. Transforming from tool into toy, it becomes an object of competition for parental attention, but equally turns the mother into a rival since its use is often shared. As a result, the smartphone offers multiple and competing discourses, creating tensions that this practice based research investigates.

Approach

This research combines design approaches with psychoanalytic, feminist and related perspectives on the meaning of products. Through experimental objects, it explores the role of smartphones during childcare to articulate ambivalent attitudes towards the device. These design proposals give materiality to narratives around the complex behaviours brought by the phone and are used to engage with participants about their own complex behaviours, exposing maternal and child subjectivities, while exploring the possibilities for design to reshape our relationship with technologies in family life.

Research Questions

•How can experiments in design explore the tensions brought by the smartphone as it signifies both tool and plaything, offering competing uses for mother and child?

•How can these design proposals be used to provoke responses from publics?

•What are the possibilities for design to reshape these tensions and our relationship with technologies in family life?

Using the experimental design proposals to engage with participants

Two grants from the EPSRC's Balance Network have supported workshops as part of this research:

EPSRC
Engineering and Physical Sciences Research Council

Figure 122: Poster for CHI 2017

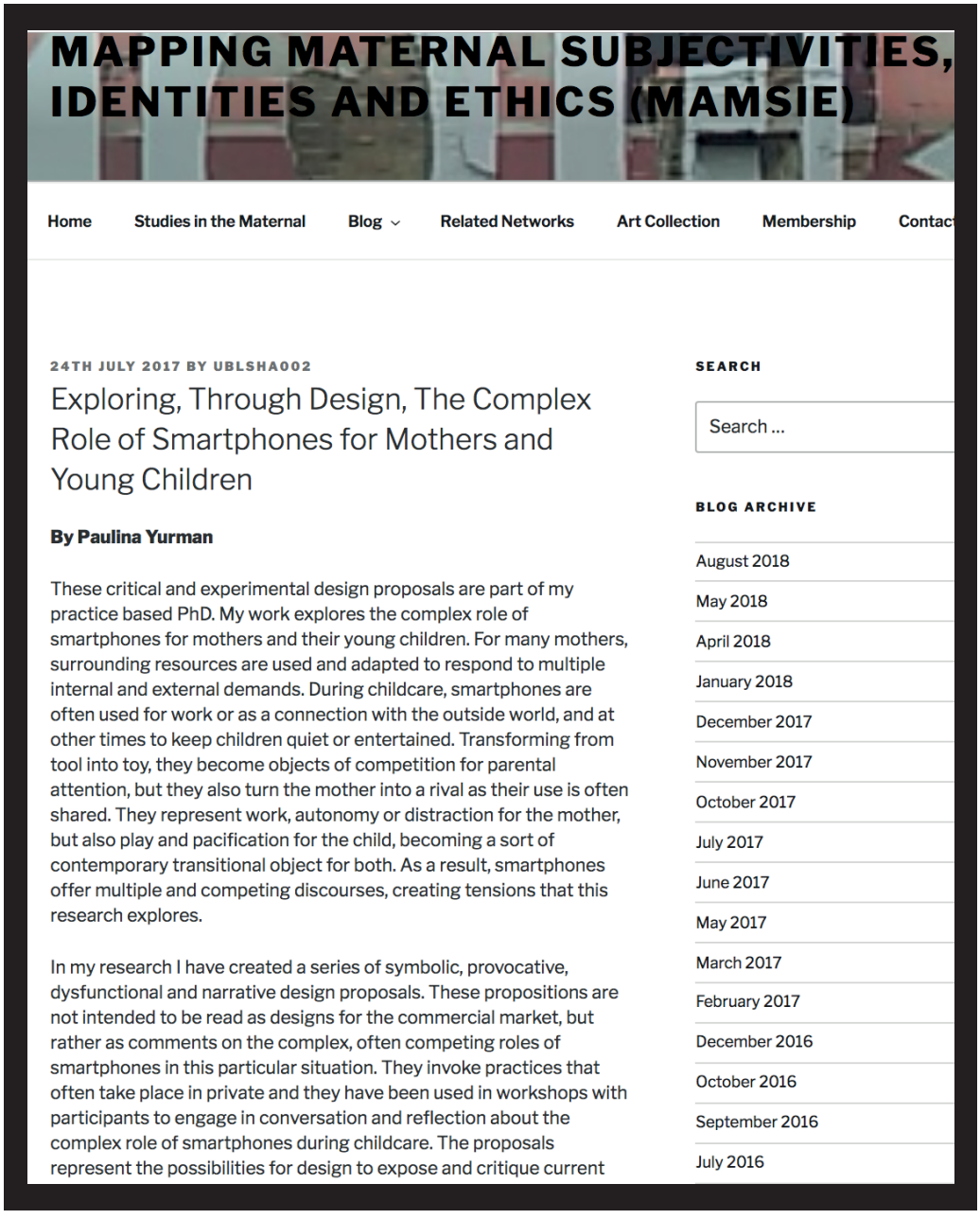


Figure 123: MaMSIE article

Full article:

www.mamsie.org/2017/07/24/exploring-through-design-the-complex-role-of-smartphones-for-mothers-and-young-children/

Figure 124: Information link for talk at the Freud Museum

Figure 125: Anna Freud and Play Conference program

Figure 126: V&A link to drop-in session

Shared Pacifiers: Mothers as Complex Users

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ABSTRACT

This paper presents a designer's research into the role of smartphones for mothers and young children. Used at times to connect with work or non-domestic spheres, at others as playthings to keep children quiet or entertained, smartphones become objects of competition for parental attention, but also place the mother as a rival since their use is often shared. Most commercial mother and child related products are the result of design narratives that offer ergonomic solutions, often overlooking complex psychological landscapes. Such approaches are frequently based on idealised notions of motherhood, contributing to gender stereotypes. This research, informed by critical design's depictions of complicated, often dark needs in users, together with feminist and psychoanalytic perspectives, presents proposals that engage with ambivalences towards technology in family life, expose unintended uses of smartphones and challenges conventional user portrayals by presenting mothers as complex users.

KEYWORDS

Motherhood; smartphones; critical design; feminist design; inventive methods; transitional objects; psychoanalysis

ACM Reference format:

FirstName Surname, FirstName Surname and FirstName Surname. 2018. Insert Your Title Here: Insert Subtitle Here. In *Proceedings of ACM Woodstock conference (WOODSTOCK'18). ACM, New York, NY, USA, 2 pages.* https://doi.org/10.1145/1234567890

Introduction

This design-led research focuses particularly on mothers of pre-school children who have the role of being their primary carers. Many mothers in such contexts use and adapt available means to create solutions and environments for the bringing up of their children. In this early period, at times isolating, maternal identities begin to coexist in tension with work or non-maternal roles. The accommodation of multiple roles for the mother evolves in parallel with the child's gradual development of its own separate identity, and child psychologists have recognized the value of toys and preferred objects in these early stages. British child psychoanalyst D.W. Winnicott famously developed his theory of transitional objects [30]. These are preferred objects such as a blanket or teddy bear, which have a significance in the development of the child's emerging understanding of the world, providing comfort when the mother is unavailable. In recent decades, feminist psychoanalysts have questioned traditionally child-centric approaches in psychoanalysis, offering explorations of maternal subjectivities. Lisa Baraitser, for example, suggests that the mother also develops a distinct relationship with a child's transitional object, beyond the relationship that the child has with the object itself [3]. This points to the existence of multiple affordances: a soft toy can comfort a crying child in the back seat of a car, while allowing a mother to drive without too much distraction, for example.

Smartphones also form part of the realm of objects that populate the infant and mother's world, offering a set of multiple and competing affordances. Used at times to connect with work or non-domestic spheres, at others as playthings to keep children quiet or entertained, they are objects that are variably given and taken away, becoming objects of competition for parental attention and eye contact, but also placing the mother as a rival, since their use is often shared. Blurring boundaries between public and private, and between work and play, smartphones provide pacification, tension, intrusion and relief for mother and child, presenting conflicting discourses. Informed by perspectives from critical design, psychoanalysis and feminism, this paper looks into the particular subjectivities of mothers as complex users of technology and presents suggestive design proposals that were used to explore this space.

*Article Title Footnote needs to be captured as Title Note
†Author Footnote to be captured as Author Note

WOODSTOCK'18, June, 2018, El Paso, Texas USA

Figure 127: Paper for CHI 2019 (submission)

Figure 1: The multiple roles of the smartphone for mother and child

Consumer goods and motherhood

Motherhood and childhood are often charged with idealizations and cultural expectations. Constructions of motherhood often work on narratives of complete devotion to children; with fears of being a bad or incompetent mother presenting market opportunities for products aimed to assist mothers into 'good' motherhood [10]; while the 'good' mother is often understood through the consumption choices she makes [9]. The design conceptualization of consumer products for mother and child often respond to practical needs such as (for example) mobility, sterilization of equipment, feeding time management. Resulting from solution driven approaches, these tend to respond to ergonomic needs, while attention to psychological aspects of parenthood tends to focus on emotions of fear and uncertainty, also manifestations of devotion. Examples of these are electronic products such as pacifiers that measure a baby's temperature regularly [33] or tags for alerting a parent when a child wanders out of proximity [34].

Smartphones and young children: a notion full of ambivalence

A smartphone can allow a mother to be close to her child, while also being connected elsewhere. It allows her a means to simultaneously attend to maternal and non-maternal identities. Some mothers use the smartphone while they breastfeed to access information or to keep an older child quiet. Others find the smartphone a useful breastfeeding support: there are a number of apps that can be used for managing schedules, accessing nursing tips and videos [35, 36], or for finding and reviewing public breastfeeding places [2].

Either used to help in the maternal task or to connect to non-maternal roles, the use of smartphones during childcare raises contradictory attitudes. Some parents might see the smartphone as an intrusion into the natural and organic bond between mother and child, while others might see it as empowering. Such conflicting views share commonalities with the politics of biomedical interventions in the female reproductive cycles, pregnancy and birth, where opinions will differ: for some they are seen as oppressive, while for others they can signify privilege and status [21]. Wolgar and Cooper point to the importance of engaging with the ambivalence of artefacts: technology is good and bad, enabling and oppressive; such tensions are manifestations of competing discourses in our relationship with them [31]. The notion of smartphones being used during childcare is one of ambivalence: it is simultaneously seen as intrusive, addictive, empowering, educational and recreational.

An approach informed by critical design, feminism and psychoanalysis

One contribution made by critical design lies in its depictions of users with complicated, 'even neurotic' needs and desires [14, 29, 6], challenging conventional visions of consumers as docile, predictable and uncomplicated. Such approaches expose the complexity of our relationship with objects and technology, and the psychological meaning they have, beyond the immediately practical. This research incorporates such a stance through the development of critical, suggestive and experimental designs that explore the ways in which mothers use and relate to smartphones during childcare.

The proposals presented in this paper explore the role of smartphones as comfort objects (a contemporary interpretation on the concept of the transitional object) and work towards exposing a complex picture of mothers as users, challenging conventional depictions that contribute to gender stereotypes while offering examinations on the significant yet conflictive role of smartphones in family life. Such an approach looks into the previously unexamined subjectivities of mothers, here recognized as a source for the production of knowledge. Such presentation of viewpoints of what Bardzell calls 'marginal users' [4] stems from feminist perspectives as they inquire into the particular experiences of women, in this case women who are mothers.

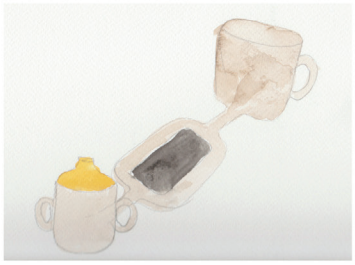
A spectrum of design proposals

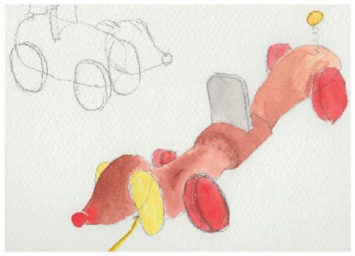
A range of design proposals were developed in this research. The initial stages of exploration comprised a mixture of methods that included observations and use of autobiographical experiences [23], anecdotes [22, 1] and Cultural Probes [17]. In addition, a large collection of watercolour drawings was generated, giving visual form to themes and narratives around the role of smartphones during childcare and its relationship with the objects that populate mother and infants' worlds. A number of artefacts was developed, representing three dimensionally some of the ideas explored on paper. As a collection, they represent a spectrum of objects ranging from highly conceptual and critical to semi-functional, potentially deployable artefacts that explored possibilities for managing the disruptive nature of smartphones in family life. The use of artefacts to draw out specific responses from participants is an established practice in research through design [16]; the designed artefacts generally understood as the demonstration of a research contribution [15, 26, 32, 20].

For the purpose of this paper, I focus on the most critical, evocative and abstract of these artefacts. They were used in tailored activities, giving them performative qualities [8, 11, 12, 13], encouraging collaborative discussions. Suggestive and

Figure 128: Paper for CHI 2019 (submission)

unfinished, these proposals relied on interpretation and ambiguity [27,18,19,25] as a source for revealing subjects' complex relationship with smartphones.





Figures 2 and 3: Exploratory sketches about the presence of smartphones in the world of mother and infant

Ambivalent Objects

Ambivalent Objects evoke the protagonism of the smartphone during childcare, integrating it with child related objects such as bottles or toy parts. They represent unintended uses of technology in family life, suggesting the smartphone as pacifier or comfort object, exposing practices that often take place in private and that are ridden with ambivalence and guilt. The smartphone, awkwardly rammed into the objects, also represents its intrusion into the world of infants.

Ambivalent Objects 1 simultaneously hold feeding bottle and smartphone. The result of experiments with ready-made objects and 3D printing, these artefacts evoke the role of smartphones at feeding times and the use of technology as a form of childcare.

Ambivalent Object 2 is a portable comfort object that makes reference to pull along toys and the shape of the breast, here a symbol of maternal nurture and nourishment.

Figure 4: Ambivalent Objects 1

Figure 5: Ambivalent Object 2

Encounters with participants

The design proposals were discussed during three two-hour workshops named *Conversation Pieces* [37], each with two participants. In addition to these activities, the designs were presented in a display at the Victoria and Albert Museum in London, where members of the public were able to approach me and discuss the designs.

Figure 129: Paper for CHI 2019 (submission)

Figure 6: Discussing the proposals

As conversational objects, the designs encouraged participants to interpret them and in doing so, to tell me a little about themselves:

'*I feel like I have done the things you are showing here, these are narrative objects aren't they, you are showing potential scenarios, but they actually already exist*'.

The first reactions towards Ambivalent Objects were negative, prompting responses such as '*these feel inappropriate*', '*disturbing*', '*unpleasant*'. However, later on there were responses that pointed to other nuances:

'*women already have a network of objects they use*' or '*you have to be careful not to judge people who might need this, right?*'.

The objects also incited participants to discuss feelings of guilt for the use of technology during childcare: '*they make me think of X, who is apologetic to strangers for relying on technology to get through the day*'. A participant told of her regret for having relied too much on technology when her son was little, worrying it may have caused a delay in speech.

There were admissions of the use of smartphones as a form of escape: '*being sort of trapped, breastfeeding, on the sofa, trying to distract him with whatever I could*' and as a source of tension:

'*you are trying to keep back a bit of yourself through the phone, and what it represents to you, and the child develops a relationship with it that is not necessarily what you think it is*'.

There were accounts of using the smartphone as a respite while feeding children, '*which can be at times endlessly boring*', and admissions of secretly using the phone while children ate, away from their sight to avoid their asking for it or trying to grab it.

There were also revelations about its value at moments of isolation:

"*they are like an addictive thing, you know, you can see, it's like an addictive Pringles, the more you see the more... especially yesterday, I had a day, 14 hours on my own with them, and actually you do look at your phone more on a day like that because you're on your own, not talking to anyone, 14 or 15 hours*'.

The artefacts prompted general conversations about the addictive nature of smartphones, often making references to junk food (as above) or sugar: '*it is like a drug, you could just be on it all the time, it is like sugar*'. Sugar, a foe many mothers militate against also has resonances of ambivalence: it is both the enemy of a healthy diet and a symbol of childhood pleasure [28].

A parent observed that the designs were also about '*parents being slightly proud of children's facility with smartphones... all parents think their children are smart and this is another demonstration*', an indication of parental pleasure towards children's ability to use the device from an early age.

Despite negative feelings towards Ambivalent Objects, there were also observations about their possible desirability: '*there may be moments when these may be useful*'; '*you could make it waterproof*' or '*maybe if the angle was different*'. These were manifestations of ambivalence, as if implying: we do not approve, but can you make it more user friendly? At the V&A, two mothers attracted by the designs exclaimed while smiling: '*oh this is terrible!*', their facial expressions showing fascination and delight.

Figure 7: Discussing the proposals

In general, participants demonstrated curiosity towards the research. Younger mothers asked for recommendations about how best to manage the children's attraction towards smartphones or my moral opinion about mothers' reliance on smartphones, their questions awkwardly placing me in the position of *expert*. This resonates with a general need in mothers to look at others for signs of confirmation or condemnation of their styles of mothering [24].

Figure 8: Public display at the V&A

Figure 130: Paper for CHI 2019 (submission)

Anecdotes

The creation of design proposals exploring the research space, and the encounters of these with diverse audiences contributed to the development of a particular attention towards incidents in daily life that I would have previously considered not special, but that gradually became field observations that affected my role as researcher. Anecdotes contributed to the co-emergence of 'research, researcher and researched' [22] and the development of 'a sensitivity tuned to mundane aspects of everyday life' [1]. The exposure of my work also prompted others to make revelations, that I considered worth noticing. I present two from a collection of anecdotes that contributed to the research:

Anecdote 2: *After I tell the topic of my research to an acquaintance, he tells me of his two-year old son's eating habits. He was small as a baby and a fussy eater. His mother, anxious to feed and fatten him up, started using the screen of her smartphone or tablet to distract him, so that she could spoon food into his mouth without him putting too much of a fight. Now that he is a toddler, he will only eat in front of a screen.*

Anecdote 5: *I am chatting outside my children's school to a mother who knows about my research. She tells me that she sometimes breastfeeds her daughter in order to have a quiet moment when she can check things on her smartphone. She prefers to feed her on her left breast, so she has her right hand free for swiping.*

Conclusions

In this paper I have presented selected designs that form part of a wider exploration into the relationship that mothers of young children establish with smartphones. By exposing the use of smartphones as forms of relief and support, I am presenting a depiction of mothers as complex users of technology.

I have described designs that are critical, conceptual and suggestive, used in tailored activities to prompt conversations. The unfinished and experimental nature of the designs invited participants to interpret them and in doing so to reveal attitudes that comprise a mixture of guilt, dependence, pleasure, intrusion and relief. As such, Ambivalent Objects produced contradictory responses (the objects themselves caused both fascination and rejection) allowing for a reflective engagement with the ambivalence of technology, often seen in society as good and bad, enabling and oppressive [31].

While this paper only partially presents selected proposals and activities developed during the research, I hope that these concepts and ideas can encourage the examination of previously unexplored subjectivities in users and the multiple discourses of technologies, beyond their immediately practical purposes.

Interweaving perspectives from critical design, psychoanalysis and feminism, which have been suggested as stemming from common origins in their ambitions to critique and expose [5,7,26] this research also hopes to contribute to designers' reflections that may lead to drawing information and inspiration from a diverse range of disciplines, beyond design.

ACKNOWLEDGMENTS

I am indebted to all participants who took part in this research.

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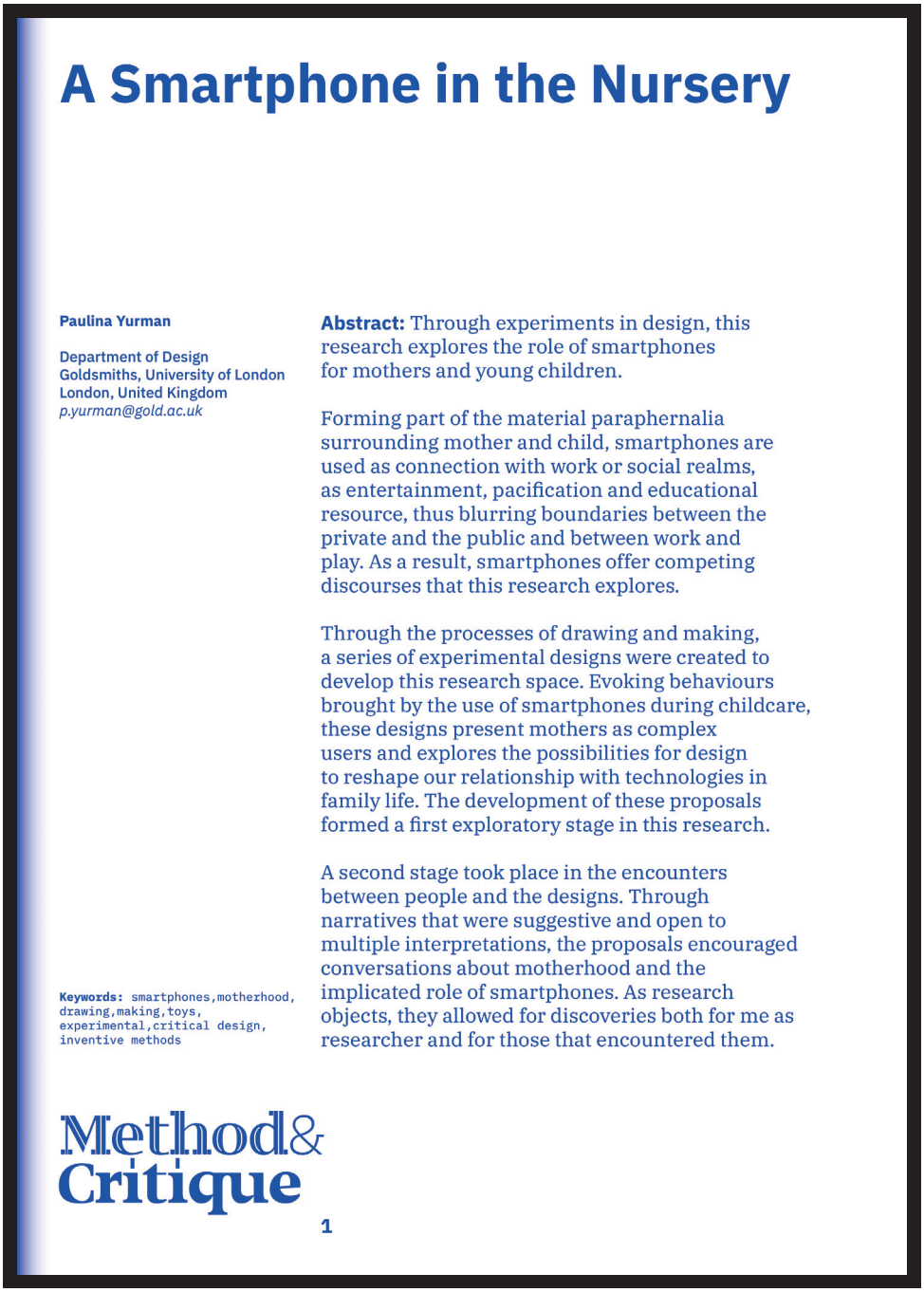

A Smartphone in the Nursery

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Abstract: Through experiments in design, this research explores the role of smartphones for mothers and young children.

Forming part of the material paraphernalia surrounding mother and child, smartphones are used as connection with work or social realms, as entertainment, pacification and educational resource, thus blurring boundaries between the private and the public and between work and play. As a result, smartphones offer competing discourses that this research explores.

Through the processes of drawing and making, a series of experimental designs were created to develop this research space. Evoking behaviours brought by the use of smartphones during childcare, these designs present mothers as complex users and explores the possibilities for design to reshape our relationship with technologies in family life. The development of these proposals formed a first exploratory stage in this research.

A second stage took place in the encounters between people and the designs. Through narratives that were suggestive and open to multiple interpretations, the proposals encouraged conversations about motherhood and the implicated role of smartphones. As research objects, they allowed for discoveries both for me as researcher and for those that encountered them.

Keywords: smartphones,motherhood, drawing,making,toys, experimental,critical design, inventive methods

Method& Critique 1

Figure 133: Paper for Research Through Design conference 2019

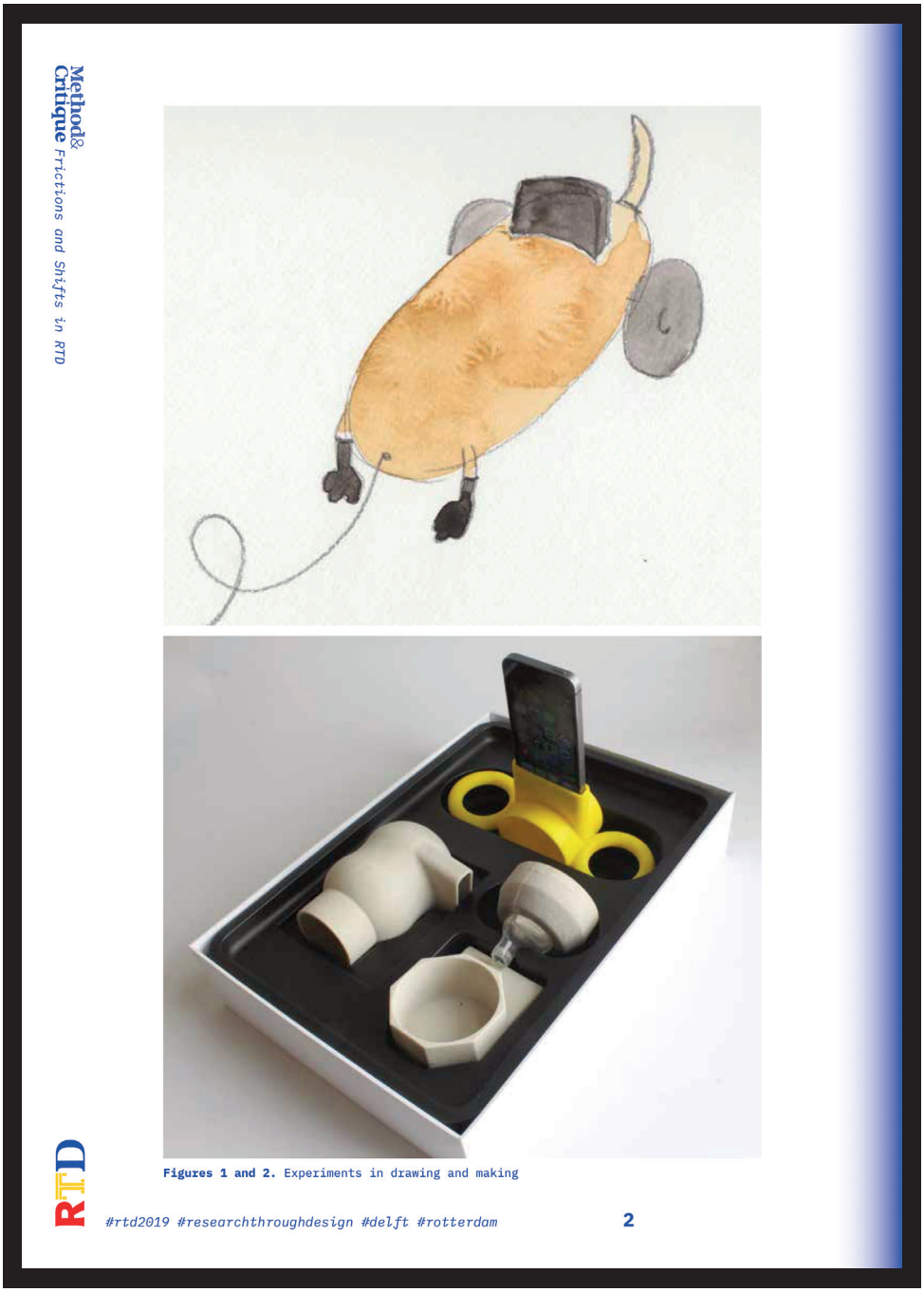

Figure 134: Paper for Research Through Design conference 2019

Figures 3 and 4. Experiments in drawing and making

Yurman, P. | A Smartphone in the Nursery

Figure 135: Paper for Research Through Design conference 2019

Introduction

This paper describes a design exploration into the role of smartphones for mothers and young children, focusing on situations where mothers have the primary role of childcare. During this period, at times of isolation (Lee et al., 2017; Rokach, 2004; Stadlen, 2004), many mothers use and adapt available means to create suitable environments for their children and to attend to multiple, often conflicting demands. In this realm of resources, which includes bottles, pacifiers and toys, smartphones have a particular significance, performing multiple roles. Flexibly transforming from tools into playthings, smartphones are used for connecting to work or social spheres, for keeping children quiet or distracted or for support with breastfeeding or other childcare activities (such as managing schedules, accessing tips and videos or locating public breastfeeding places (Balaam et al., 2015)). Shared and variably given and taken away, smartphones become both desired objects and rivals for parental attention. Often sources of conflict in family life, they offer multiple and competing discourses that this research investigates.

Through the practices of drawing and making, a range of experimental and suggestive designs were created. These processes became forms of sense making as recurrent narratives and themes of the research emerged. The result was a collection of sketches and artefacts evoking behaviours around the use of the smartphone during childcare and its significant yet conflictive role. The designs were used in workshops with participants, encouraging discussions and reflections about the protagonism of smartphones and about practices, often private, that involve ambivalence and guilt.

Figure 5. Multiple uses of the smartphone

Motherhood, psychoanalysis and critical design

In 1953, British paediatrician and psychoanalyst D.W. Winnicott published his famous theory on Transitional Objects, proposing that infants develop a strong relationship with a preferred object (a teddy bear or blanket, for example). A child's first possession, the transitional object lives in a space of transition between mother and infant and signals the beginning of the child's experiencing the world as a separate entity, providing comfort when the mother is unavailable. Though Winnicott's contribution has been unquestionably recognised, feminist psychoanalysts have in recent decades challenged such psychoanalytic narratives that place the mother as an entity entirely responsible for the child's wellbeing, and began exploring maternal experiences. Lisa Baraitser, for example, proposes that the mother also has a unique relationship with the transitional object, distinct from that of her child (Baraitser, 2009), suggesting multiple affordances. Roszika Parker explored maternal subjectivities, presenting mothers as separate objects from their children, with both positive and negative traits (Parker, 1995). Parker suggests that there is a cultural ambivalence towards accepting complex, often difficult aspects of motherhood, resulting in the embracing of portrayals of mothers as benevolent, impossible icons. Motherhood, a socially constructed aspect of femininity (Choi et al., 2003), often works on ideologies of pure devotion to children, offering market opportunities for guiding

Figure 136: Paper for Research Through Design conference 2019

mothers into 'good motherhood' (Cook, 2011; Clarke, 2014). Such idealisations affect the conceptualisation of designed goods, which tend to work on ergonomic needs around mobility, sterilisation or safety (for example), but often under explore users' psychological complexity. One important contribution made by critical design is in its exploration of our complex relationship with objects, often presenting users as contradictory, 'even neurotic' (Dunne & Raby, 2007). In its challenge to conventional and solutionist design narratives that present users as uncomplicated, critical design can offer a useful perspective for exploring mothers as complex users of technology, thus contesting gender stereotypes in design.

This research explores these families of ideas through the design practices of drawing and making. The resulting proposals were used to engage in conversation with participants, aiming to comprehend how mothers understand their experiences around the use of smartphones during childcare. More generally, the work explores ambivalent attitudes in society towards the presence of technology in family life and the possibilities for design to explore potentials for change.

Drawing as research

Drawing was an integral activity in this research. Mäkelä et al. (2014) propose that research is both creative and rationalising, where drawing can be a reflective process with a crucial role of moving the research inquiry forward, while Rosenberg (2008) considers drawing an epistemological tool that works in tension between the known and the unknown. Informed by toy design, literature on transitional objects, observations and autobiographical experiences, drawings worked as suggestions, allowing a playful exploration of ideas without pressures about how they would be made or indeed if they should be made. Inhabiting a suspended imaginary space in which concepts and forms merged and mutated, drawing began as a description of the A,B,C of an infant's world, gradually incorporating the smartphone, producing suggestive and often strange combinations, a visual process of sense making. Sketches told stories about the smartphone, its uses and missuses in the material realm of infant and mother, a world populated by toys, bottles, blankets, pacifiers and milk.

Through the production of many narrative drawings, certain themes started to surface: the smartphone as an object of rivalry, as a sort of pet, a mediator between mother and child, a form of childcare, a toy and tool, a transitional object. An assortment of sketches drawn over 150 sheets of paper was compiled and put together in a book. As a collection, they reflect the manner in which an understanding of the research space unfolded on paper.

'Drawing is another way of telling; it flows and unfolds with time, both hand and head working together.'

Tim Ingold, 2013

Figure 6. Sketch exploring the smartphone as a mediator between mother and child

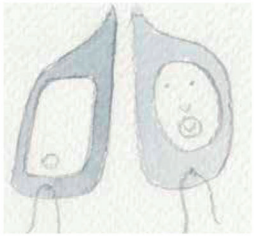

Figure 7. Sketch, the smartphone as object of rivalry

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Figure 137: Paper for Research Through Design conference 2019

Figure 8. Exploratory sketches: the smartphone as tool and toy and its prominence in childcare and feeding.

Making as research

Margetts describes making as a series of repetitious acts, incrementally shaping objects with meaning, stimulating a non-verbal curiosity towards the unknown and widening our abilities to communicate (Margetts, 2011). In this research, making and drawing became processes of sense making that informed and complemented each other. While ideas were explored on paper, a series of iterations also took place through the adaptation of materials, textures and ready-made objects such as bottles, wooden wheels and machined models. This exploration also included the smartphone as a material that offered technical effects (Chatting et al., 2017).

Figure 9. Exploratory sketch, the smartphone as comfort object

While some proposals progressed from sketch to object, others were made, redrawn and remade, each variation offering a new interpretation. A sketch re-drawn in CAD would sometimes become clinical, masculine, less childish, at times reminiscing science-fiction imagery. Turning a drawing into a 3D object helped ideas exist with other objects, offering some tangibility to abstract ideas (Bødker, 1998). The incorporation of simulated apps and animations on the smartphone suggested its agency, stimulating further play with forms and materials. As forms on paper were transformed into tangible objects, their three-dimensionality also made them more intimidating as protruding features became real. Though materially palpable, the objects retained some of the ambiguity seen in their hand sketched forms. The result was a collection of experimental and suggestive artefacts.

Figure 10. Trying out shapes

Figure 11. Existing toy, sketch model and experimental artefact

Figure 138: Paper for Research Through Design conference 2019

A collection of artefacts

A spectrum of experimental artefacts was produced. At one end of this spectrum are artefacts that are provocative, abstract and critical, performing as conversational objects that invite reflection and discussion. At the opposite end are artefacts that are conversational, but also potentially deployable and offer conceivable possibilities for managing the intrusion of smartphones.

Figure 12. Ambivalent Objects 1.

Suggestive and provocative, these objects evoke the use of smartphones as a form of childcare. Causing both fascination and rejection, they invite dialogue and reflection.

Ambivalent Objects represent unintended uses of technology in family life, suggesting the role of smartphones as pacifiers. They challenge conventional user portrayals by presenting mothers as complex users of technology.

Figure 13. Ambivalent Object 2

This artefact suggests the smartphone as a comfort object and invites discussions about ambivalent attitudes towards smartphones and young children.

The smartphone, awkwardly rammed in, evokes its intrusion into the world of infants, often perceived as natural and organic.

7

Figure 139: Paper for Research Through Design conference 2019

Method& Critique *Frictions and Shifts in RTD*

Figure 14. Herby.

Herby uses humour to make difficult issues 'safe' to discuss. Using the smartphone's embedded accelerometer, it reacts when it is being used as a toy. It gets annoyed when pulled along.

The faster it is pulled the angrier it gets, and the angrier it gets, the more ridiculous it seems.

Herby argues "I am not a toy" or "take me to your mum". It evokes the mother's reluctance to share and her plea to leave the smartphone alone.

Herby suggests the phone as a grumpy family member. Making the phone angry gives it agency.

Figure 15. An Uncanny Pet.

An Uncanny Pet uses the metaphor of a sleeping pet. It is a charging station.

The smartphone is temporarily unavailable, it snores and its eyes are closed.

It loses hairs.

Evoking sleeping routines, easily understood by young children, it invites adult and child to take a break from the phone.

Suggesting that the smartphone is part of the family, it proposes a temporary break, not a permanent solution.

RTD

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8

Figure 140: Paper for Research Through Design conference 2019

Using objects and images as a form of inquiry

Susanne Bødker refers to prototypes and drawings as representations with tangibilities that can be pointed out and discussed back and forth between designers and users (Bødker, 1998). Using artefacts to draw out specific responses from participants is an established practice in design and HCI research. Examples of this approach can be seen in projects such as The Prayer Companion (Gaver et al., 2010); the Fenestra project (Uriou and Odom, 2016) or Family Rituals 2.0 (Kirk et al., 2016). Such projects use highly finished, deployable artefacts (thanks to sufficient financial and human resources) but other projects with less finished and more conceptual designs have also resulted in fruitful discoveries. For example, Counterfunctional Things, by Pierce and Paulos (2014) used experimental artefacts with intentionally limited performances, conceived as conversational objects that enabled researchers and subjects to engage in conversation and reflection during one-hour interviews. Suggestive, unfinished and conceptual designs can be open to interpretation and ambiguity (Sengers and Gaver, 2006; Gaver et al., 2003 and 2004; Pierce, 2014), enabling reflections about ideas that may not necessarily need to be developed, or that may lead to further explorations for possible outcomes, while giving proposals performative qualities (Bødker, 2009; Danholt, 2015; DiSalvo, 2012). In this research, the evocative nature of the proposals invited participants to interpret them, and in doing so, to tell of their own experiences towards smartphones in family life. For the purpose of this paper, I present only a selection of the responses emerging from the encounters between the designs and people.

Encounters between the designs and people: Conversation Pieces workshops

Three workshops called Conversation Pieces invited participants to meet and discuss the designs. Recruitment took place through social media, personal contacts and flyers distributed at nurseries, cafes and a child clinic in SE London. Each session lasted under two hours. Ambivalent Objects were shown first, followed by Herby and Uncanny Pet. Sketches were shown at the end of the sessions.

Figure 16. Conversation Pieces workshops

"These are narrative objects, aren't they, you are showing potential scenarios, but they actually already exist"

"the mother is trying to maintain and wrestle back, it's like wrestling most, you know you are trying to keep back a bit of yourself through the phone, and what it represents to you, and the child develops a relationship with it that is not necessarily what you think it is"

quotes from workshop participants

Figure 141: Paper for Research Through Design conference 2019

The objects and drawings worked as triggers for conversation. Participants' interpretations of the designs prompted revelations about their own use of smartphones. The proposals produced both rejection and attraction, inciting participants to identify and tell of practices, often held in private, that produced guilt and ambivalence. Examples of themes discussed were mothers' need to use a network of objects during childcare, including smartphones as forms of childcare support, and the social expectation that mothers should protect their children from the dangers of too much screen time, a fear that was described as old and that started with television sets. There were accounts of regret for having relied too much on technology as distraction, either for mother or child: a mother expressed concern about having used it to keep her toddler entertained while she breastfed her baby, worrying it might have caused his speech impediment. Another mother observed how feeding times can be repetitive and 'endlessly boring', the smartphone offering her some distraction and respite. There was also a recognition of the phone's significance for the mother, distinct from what it may represent to the child. Another insight that emerged was the importance of not judging mothers, who are often condemned for the ways in which they manage childcare (particularly in public).

Ambivalent Objects generally produced negative responses to begin with, although upon conversing further there were recognitions that they might be useful at particular moments (when the mother may be unavailable, for example), with recommendations of how to make them more ergonomic or where they might sell well. This duality of responses might point to a general ambivalence towards the notion smartphones entering children's realms, perceived as organic and belonging to the world of nature, with technology seen as bringing both intrusion and relief.

Participants seemed to enjoy pulling Herby along, while ignoring its pleas to be taken seriously as a tool. Herby's requests, which often interrupted our conversations, prompted some to suggest it could incorporate parental commands for young children. Despite an initial rejection towards the notion of toys integrating smartphones, some participants saw in Herby the possibility to introduce young children to the world of technology and coding (despite the fact that Herby could in no way teach to code). In this case, technology, seen as polluting, was made safe through its perceived educational potentials.

An Uncanny Pet's metaphor of a sleeping animal was welcome in its possibilities for offering a break from the intrusive presence of the smartphone for both mother and child. Some participants pointed to the strong contrast between the fur-like texture and the hard, masculine aesthetics of the phone, here softened and domesticated.

The provocative nature of some of the objects prompted reflective discussions about the ways in which technology can at times offer relief from the demands of looking after young children alone, which enabled some participants to share accounts about the difficult aspects of motherhood. As the designs exposed unintended uses of technology during childcare, they prompted participants to recognise aspects of themselves, sharing and comparing experiences with others, in a manner similar to that of playgroups. This resonated

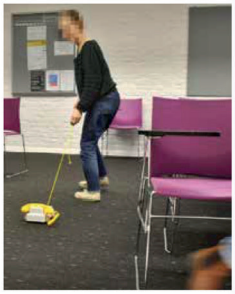
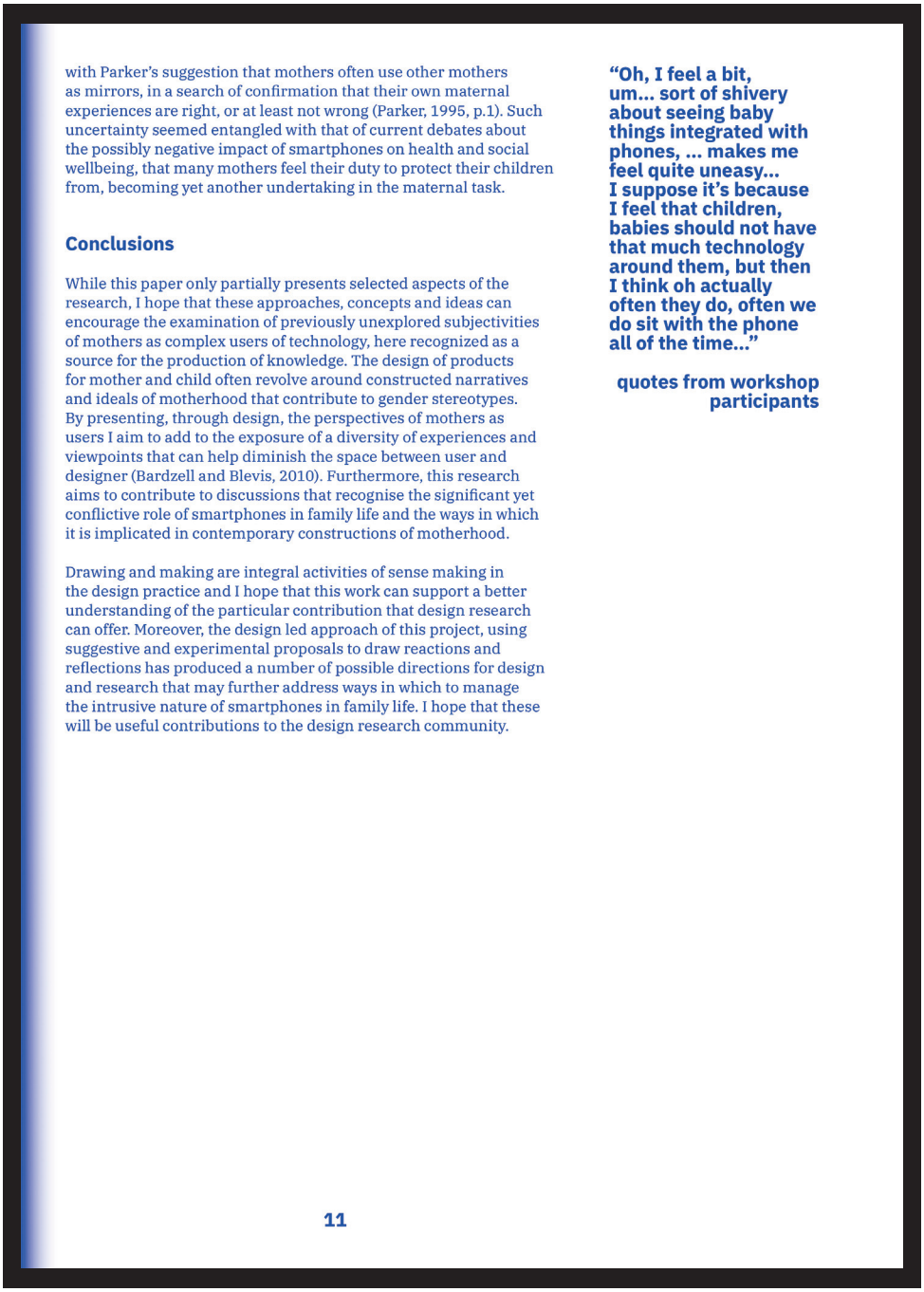


Figure 17. Conversation Pieces workshops

"they are like an addictive thing, you know, you can see, it's like an addictive Pringles... especially yesterday, I had a day, 14 hours on my own with them, and actually you do look at your phone more on a day like that because you're on your own, not talking to anyone, 14 or 15 hours"

quotes from workshop participants

Figure 142: Paper for Research Through Design conference 2019



with Parker's suggestion that mothers often use other mothers as mirrors, in a search of confirmation that their own maternal experiences are right, or at least not wrong (Parker, 1995, p.1). Such uncertainty seemed entangled with that of current debates about the possibly negative impact of smartphones on health and social wellbeing, that many mothers feel their duty to protect their children from, becoming yet another undertaking in the maternal task.

Conclusions

While this paper only partially presents selected aspects of the research, I hope that these approaches, concepts and ideas can encourage the examination of previously unexplored subjectivities of mothers as complex users of technology, here recognized as a source for the production of knowledge. The design of products for mother and child often revolve around constructed narratives and ideals of motherhood that contribute to gender stereotypes. By presenting, through design, the perspectives of mothers as users I aim to add to the exposure of a diversity of experiences and viewpoints that can help diminish the space between user and designer (Bardzell and Blevis, 2010). Furthermore, this research aims to contribute to discussions that recognise the significant yet conflictive role of smartphones in family life and the ways in which it is implicated in contemporary constructions of motherhood.

Drawing and making are integral activities of sense making in the design practice and I hope that this work can support a better understanding of the particular contribution that design research can offer. Moreover, the design led approach of this project, using suggestive and experimental proposals to draw reactions and reflections has produced a number of possible directions for design and research that may further address ways in which to manage the intrusive nature of smartphones in family life. I hope that these will be useful contributions to the design research community.

"Oh, I feel a bit, um... sort of shivery about seeing baby things integrated with phones, ... makes me feel quite uneasy... I suppose it's because I feel that children, babies should not have that much technology around them, but then I think oh actually often they do, often we do sit with the phone all of the time..."

quotes from workshop participants

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