

SENSING
OTHERNESS

A Media Archeology
Approach to Touch and
Interaction Design

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interaction design.

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Abstract:

Touch has become an important sense to be explored in recent approaches to interaction design. The design for such interactions appears to be a possibility to go beyond traditional graphical interfaces and be able to have additional experiences with digital media beyond the visual. From a Media archeological perspective, this work analyzes the current narrations of touch inside interaction design and excavates the material relations with a specific artifact: the Smart phone.

Keywords:

Media Archeology, Interaction Design, Touch.

Declaration of Authorship

I, Eliana Corredor Tobón, author of this MA Thesis titled "Sensing Otherness: a Media archeology approach to touch", confirm that this work submitted for assessment is my own and is expressed in my own words. Any uses made within it of the works of any other author, in any form, are properly acknowledged at their point of use and correctly referenced.

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1. Introduction

Since the last two decades touch as a sense that could be extended by means of technology, has become a major topic for interaction design. Numerous conferences¹ and magazines² reference touch as 'the new frontier' for interaction design. Multi-touch devices, tangible electronic artifacts, wearables, robotics, affective computing and tangible interfaces are often mentioning the sense of touch as something that is missing within digital media and that must be explored. The design for such interactions appears to be a possibility to go beyond traditional graphical interfaces and be able to have more 'natural' experiences with digital media beyond the visual.

Current research approaches to touch in digital media and interaction design, focus mainly (at least from what has been found during this study), on finding applications for existing technologies and on developing technologies for sensing or using touch interactions. Touch is often narrated as a stable perceptual category with predetermined meanings that can be applied for design. It becomes important therefore to better understand touch as a media. This implies examining the current narrations of the sense, why this narrations occur and how may be possible to transform them into valuable experiences, rather than follow a *status quo*.

There are two main directions in which touch has been a central topic within interaction design: Tangible interactions and haptic interactions. Tangible interactions refer to the use of tangible artifacts and physical space for human computer interaction, while haptic interactions refer to haptic stimuli for simulating presence of objects and for non-verbal communication. The way in which these two directions of technology develop, appear to be in opposition: tangible interactions often become divergent technologies that narrate touch as strangeness from material relations with technology, while haptic interactions tend to become convergent and narrate touch as intimacy and affection. But why do these meanings appear and why are they used specifically in relation to convergent and divergent technologies?

Sensing otherness is both a practical and theoretical research that looks at the sense of touch within interaction design and asks about the connections behind certain narrations of touch. From a media archeological perspective, it excavates common places of convergent and divergent technologies and seeks for ways to transform this fixed meanings.

1 *Papers: Sensing Touch*. In: *CHI Conference 2013*. <http://chi2013.acm.org/program/by-day/tuesday/#SHC> [last access: 20.04.2013]

2 *Tangible Interfaces*. In: *Weave Magazine*. November 2012. <http://www.weave.de/tangibleinterfaces0612/> [last access: 10.05.2013]

1.1. Structure

This study contains 9 main chapters: a general background to the research perspective of design as an inquiry, an introduction to media archeology as a methodological approach, a summary of some extracted moments in which interaction design has been directly or indirectly interested in the sense of touch and recurrent topics that appear, a theoretical discussion about the *Topos* of touch within interaction design, a documentation of the proposal for transposing strangeness into a convergent artifact and a register of the resulting artifacts for 'sensing otherness'.

After this introduction takes place, chapter two will present the research field in which this study is framed. Design as an inquiry would be presented in connection to critical design but also to a cultural approach to human computer interaction.

The third chapter will explain media archeology as methodological perspective for analyzing interaction design relation with touch. Digital media explains itself usually towards visions of the future and forgets about the antecedents and cultural background that supports it. Media Archeology instead looks to artifacts already there and explores their properties and connections with other media and already existing cultural traditions. This perspective will allow digging discourses and material relations between touch and interaction design.

The fourth chapter will introduce how touch has increasingly become an important topic for interaction design in connection with two technological motivations: ubiquitous computing and telepresence. This will point out two recurrent narrations of touch, one of touch as intimacy and one of touch as strangeness. As it would be shown, these meanings are also connected to opposite design purposes: one that aims for convergence of technology and invisible interfaces and one that presents material relations with artifacts as divergence.

The fifth chapter will discuss from a media archeological perspective what could be some cultural connections of touch as intimacy and of touch as strangeness and how they are used to support convergence or divergence in technological artifacts. This will point out that a tactiloclasm tradition supports the narrations of touch within interaction design.

Chapter six aims to formulate some questions to be addressed by the prototype and a summary of the findings made during the mostly written segment of the thesis.

Chapter seven is the documentation of a design proposal related with touch. Transposing meanings of touch from divergent technology to a convergent one in search for estrangement on the current way we treat touch on technological artifacts.

Chapter eight is the register of the artifacts designed and how they will be presented. The end of the study is chapter nine which makes some final remarks on the design and the theoretical reflections.

2. Design as an Inquiry

It is often understood that the purpose of design is to solve problems that appear in the human environment taking into account the constraints of it. Finding a way into a perfect fit between a need and a product that covers its demands. Nevertheless design research apart from giving account on methodologies for achieving a certain form, has also actively questioned the process of designing for a need which is predetermined. What is actually the need and do we practice design only to fulfill needs? Which would be the future scenarios that design will have to deal with? Questions like these have motivated changes in direction of design purposes that go beyond the usability demands.

Particularly in relation to human computer interaction, critiques to usability as the end purpose of interacting with technology have been addressed as an 'aesthetic turn': "We refer to this research orientation as the aesthetic turn: an emerging trend in the design and research literature that acknowledges the importance of aesthetics and the need to explore more creative and innovative forms of human-computer interaction"³. According to Udsen, there are 4 trends in which human computer interaction is connected to this turn: the cultural approach, the functionalist approach, experience based approach and techno futurist approach.

As a short reference to *the functionalist approach* and the *techno futurist approach* one can say the first is concerned with design of empathic consumer electronics while the other is interested in vision-driven design (future scenarios of technology). For the current research though, the cultural approach and the experience based approach are more relevant.

The cultural approach is described by Udsen as a human computer interaction approach in which humanities and arts have presented the idea of the computer as a cultural interface and explored its expressive dimensions. In this case more related with digital art than with interaction design, *the cultural approach* addresses cultural critique as a general concern and produces art works that go beyond everyday experiences.

By the other hand, the *experience based approach*, aims also on cultural critique, 'critical design', but specifically in relation with the field of interaction design topics. By designing interactions in which emotional friction is introduced, they seek to challenge everyday experience with electronic artifacts. The idea of designing to fulfill needs is questioned and challenged by presenting other ways of everyday interaction. The design research direction in this case is towards pragmatics "[...]the experience-based approach attempts to illustrate how the aesthetics of the interaction has a certain pragmatics, which can be used strategically to create an

3 Udsen, Lars Erik. Jørgensen, Helms Anker. (2005): *The Aesthetic Turn: Unravelling recent aesthetic approaches to Human Computer Interaction*. In: *Digital Creativity 2005*, Vol. 16, No. 4, pp. 205–216, 206.

atmosphere that alters the preparedness of the user and persuades further interaction, communication and reflection”⁴.

Though the cultural approach proposed by Udsen as a way to research human computer interaction is not directly related with design, it is interesting to note that both the *cultural approach* and the *experience based approach* share that they are: “Produced as prototypes for exhibit rather than sale”⁵, and that they make culture critique. The difference as noted before, is that one is concerned with the issues of interaction design discipline and everyday interaction while the other is not constrained by them. As Dunne and Raby answer when asked about if *critical design* is art:

“It is definitely not art. It might borrow heavily from art in terms of methods and approaches but that's it. We expect art to be shocking and extreme. Critical Design needs to be closer to the everyday, that's where its power to disturb comes from. Too weird and it will be dismissed as art, too normal and it will be effortlessly assimilated. If it is regarded as art it is easier to deal with, but if it remains as design it is more disturbing, it suggests that the everyday as we know it could be different, that things could change”⁶.

But the differences between the cultural approaches and experienced based approaches can sometimes be blurry. From a critical design approach Franke explains: “Since we naturally understand the world through interacting with artifacts, design objects may enable us to understand these matters more immediately than abstract theories. The task of design as inquiry is then to produce design objects which allow us to experience the human condition on the technological landscape in a reflective way.”⁷ *Critical design* research understood as an Inquiry claims for the design of everyday artifacts, but additionally its interest in reflective experiences with technology that surpass the topics of interaction design as a discipline. Therefore design as an Inquiry could be as well related with a cultural approach of research through artifacts.

The following study finds a research perspective between the cultural approach to human computer interaction and *Design as an inquiry*. It references interaction design as an influential field that transforms tactility and excavates its narrations and materiality. It is a study focused in understanding touch within interaction design and that frames this discussion from a media archeology perspective which surpasses interaction design purposes.

4 Udsen 2005: 210.

5 Malpass, Matthew (2009): Contextualizing Critical Design. Classification of critical design practices. In: The Robert Gordon University, Aberdeen. 289-293,289. <http://ead09.rgu.ac.uk/Papers/113.pdf> [last access: 22.4.2013].

6 Dune, Anthony. Raby, Fiona. Critical Design FAQ. In: Dunne & Raby. <http://www.dunneandraby.co.uk/content/bydandr/13/0> [last access: 05.0.5.2013]

7 Franke, Bjorn (2007): *Design as Inquiry: Exploring Design as a Philosophical Medium, 2007 (ongoing)*. In: Franke, Bjorn. http://www.bjornfranke.com/research/2007_design_as_inquiry.htm [last access: 23.3.2013].

3. Press Rewind: a
methodological approach.

“As different as these approaches may be, studies of new media often share a disregard for the past. The challenges posed by contemporary media culture are complex, but the past has been considered to have little to contribute toward their untangling. The new media have been treated as an all-encompassing and “timeless” realm that can be explained from within.”⁸

While reading most of the texts related to tangible interaction and haptics, it was surprising to find that dates were very often not mentioned and history was told from milestone to next milestone of success in a persistent progress. Digital media and technology are often mentioned only as new media: as if they were not related with other events in culture and were only concerned with thinking of what is coming next. This vision of media as a single story has been contested by a field called media archeology.

Influenced by Foucault's *Archeology of Knowledge* and by Kittler's work on technical media, the purpose of Media archeology studies is to be able to have a critical view of a media by tracing its connections to a network of references. As Parikka and Huhtamo explain: “Media archeology rummages textual, visual, and auditory archives as well as collections of artifacts, emphasizing both the discursive and material manifestations of culture. Its explorations move fluidly between disciplines, although it does not have a permanent home within any of them.”⁹

Media archeology critical practice shares a “Discontent with 'canonized' narratives of media culture”¹⁰, but also proposes its critics as a way to find what can be really innovative in a media. As Huhtamo summarizes Zielinski's vision of media archeological practice: “[...] excavating the media cultures of the past is important not only in itself, but also for the creation of innovative and critical futures”.¹¹ A media archeology perspective can therefore give a deeper understanding on touch and its relations with technology to find emergent ways to approach this media.

There are different view points of media archeology, but for the purpose of this study, two of them seem pertinent to understand the current narrations of touch within interaction design and also to excavate material evidences as a design proposal. One is the study of media discourses by Huhtamo and the other is the art practice of depunctualization presented by Hetz and Parikka.

8 Huhtamo Erkki (2011): *Dismantling the Fairy Engine*. In: Huhtamo, Erkki. Parikka, Jussi. *Media Archeology. Approaches, Applications and Implications*. University California Press. London, 29.

9 Huhtamo Erkki. Parikka, Jussi (2011): *An archeology of Media Archeology*. In: Huhtamo, Erkki. Parikka, Jussi. *Media Archeology. Approaches, Applications and Implications*. University California Press. London, 3.

10 Huhtamo. Parikka. 2011: 3.

11 Huhtamo. Parikka. 2011: 26.

3.1. Topoi

Erkki Huhtamo proposes the study of media archeology from a term that he calls a *Topoi*: “a stereotypical formula evoked over and over again in different guises and for varying purposes”¹². *Topoi* are ideas that appear and persist in time and can permeate different media. *Topos* study was originally proposed by Ernst Robert Curtius in his text *Europaische Literatur und Latinisches Mittelalter* from 1948. Inspired by the concept of rhetoric *Topoi* “store houses of trains of thoughts”¹³ Curtius reinterprets *Topos* as clichés that spread in all spheres of life. Tracing such clichés, he finds connections between the classical antiquity and the early modern age by means of discourse analysis.

Curtius concept of *Topoi* was nevertheless limited to written media.

Amplifying the definition of *Topos* as a media archeological possible method, Huhtamo gives it 6 principles:

- “1. *Topoi* are created, transmitted, and modified by cultural agents operating in historical specific circumstances, they are not unchanging archetypes or proto-images existing *beyond* culture.
2. *Topoi* are not limited to literary traditions: there are many kinds of *Topoi*, including visual ones, and *Topoi* can also manifest themselves as designs, such as machinery or a user interface.
3. *Topoi* undergo transformations that affect both their form and idea: a *Topos* can shift from one medium (carrier) to another.
4. *Topoi* should be analyzed not only internally within a *Topos* tradition but also externally through relation to the cultural contexts within which they appear.
5. Not all *Topoi* date from antiquity; some have emerged recently and may have short time spans.
6. *Topoi* should be researched as symptoms of both cultural continuities and ruptures.”¹⁴

As can be extracted, Huhtamo suggests *Topoi* can be connected with cultural traditions, be influenced by other cultural traditions, or be recurrent ideas inside a same culture. They can also be discursive formulas used as attractors for giving value to a product. As an example of what could be a *Topos*, in his text *Dismantling the fairy Engine* he presents the *Topos* of the mysterious “hand of God” which can manipulate everything from above. This *Topos* appears from Michelangelo's fresco of *god giving Life*, to product design images of a vacuum cleaner.

The task that proposes such analysis would be to identify *Topoi* inside interaction design narration of touch and from that point find the

12 Huhtamo 2011: 28.

13 Huhtamo 2011: 29.

14 Huhtamo 2011: 34.

connections it may have with a wider cultural background, other cultural backgrounds and the active uses of such Topoi inside the field of interaction design.

3.2. Depunctualization.

The second approach of media archeology that is relevant for the current study, suggests to focus on a specific artifact or media and trace the material conditions and connections that support it. In this case is not about the discourses underlying a media, but about digging inside the materiality of certain artifact and the networks that support them.

In a way opposing to discourse analysis, materialists' vision of media archeology emphasized instead the technical conditions that allow cultural events to happen. As Kittler explains: "discourse analysis ignores the fact that the factual condition is no simple methodological example but is in each case a techno-historical event"¹⁵. The discussion becomes what Latour studies as the western dichotomy of subject and object. Although this study will not focus specifically in such topic, it could be summarized that Latour's perspective to this topic is that facts are both created and real¹⁶ and that both materiality and discourses influence each other.¹⁷ In an attempt to change this dichotomy Latour proposes the study of actor-network theory. Actor-network can be any semiotic or material entity that is active in a system and can transform or be transformed. Actor-network theory therefore goes further from media archeological division of technical or semiotic findings and proposes to analyze the set of actor-networks.

One of the strategies of technical mediation between actors-networks is called *punctualization*. *Punctualization* is a type of mediation between humans and non-humans where *black-boxing* occurs: "a process that makes the joint production of actors and artifacts [become] entirely opaque"¹⁸. Referring to Latour, Hertz and Parikka propose depunctualization as an artistic practice found in circuit bending and other excavations of black boxes: "Punctualization refers to a concept in Actor-Network Theory [19] that is used to describe bringing components together into a single complex system that can serve as a single object. We refer to the disassembly of these single

15 Kittler, Gramophone, Film, Typewriter, 229. In: Huhtamo Erkki. Parikka, Jussi (2011): *Media Archeology. Approaches, Applications and Implications*. University California Press. London, 8.

16 Latour, Bruno (2010): *On the Modern Cult of Factish Gods*. Duke University Press. Durham and London, 19.

17 Latour, Bruno (1999): *A Collective of Humans and Nonhumans*. In: Pandora's hope: essays on the reality of science studies. President and Fellows of Harvard College, United States of America, 174 -215.

18 Latour. 1999: 193.

objects as “depunctualization”—which is a practice that shows a circuit of dependencies and infrastructures[20]¹⁹.

Media archeology as a *depunctualization* method, has been a starting point to choose an artifact -the smart phone- and excavate touch relations that are black boxed in its materiality and connect them with the *Topoi* found, inviting an audience to sense the strangeness of the everyday touch in relation to a convergent device.

19 Hertz, Garnet. Parikka, Jussi. (2012): *Zombie Media. Circuit Bending Media Archeology into an Art Method*. In: LEONARDO. Vol. 45, No. 5, 2012: 424–430, 428.

4.Finding Topoi: Interaction
design and Touch

“One hundred and thirty years after the phonograph recorded sound and one hundred years after cinema replicated the eye, the technological extension of touch remains nascent project”²⁰.

Interaction design from its early stages has been related with touching. The way in which a system, or digital program that lives inside a case gets feedback from entities outside of it was first of all through direct contact. A mouse, a keyboard, even a radio are all electronic devices that use direct manipulation of their material form to do something. One must press buttons, grab and slide objects and become physically active in order to control such electronic artifacts. Nevertheless, the interest in designing for touch is something relatively recent.

As a general definition, touch is part of what medically is called the somatic senses, which include proprioception²¹ (sense of own body position and movement), touch (act of touching) and haptic perception (recognition of objects). Through nerve receptors all over the body (in the skin, epithelial tissues, muscles and inner organs) pain, pressure, and temperature are sensed by touch. There are also ways of contact: grabbing, pressing, rubbing, but also muscular tension and exposure.

From many other issues that may have influenced interaction design to be interested in touch, both the idea of ubiquitous computing and telepresence seem persistently referenced as a technological motivation²². By one hand, considering everyday activities of people with technology meant thinking also of spatial and tactile relations, and by the other hand simulating presence in times of internet communications could benefit from stimulating other senses apart from sight and audition. The purpose of this chapter will be to explain how touch was developed through these two technological motors and what narrations of touch they propose.

20 Parisi, David (2008): Fingerbombing, or “Touching is Good”: The Cultural Construction of Technologized Touch. In: *The Senses and Society*, Volume 3, Issue 3, 307–327, 315.

21 Robles-De-La-Torre Gabriel (2006): *The Importance of the Sense of Touch in Virtual and Real Environments*. In: Computer Vision & Media Technology Laboratory (CVMT), Aalborg University. <http://www.cvmt.dk/education/teaching/e07/hci2/literature/GR-IEEE-MM-2006.pdf> [last access: 05.05.2013]

22 Redström, Johan (2001): *Designing Everyday Computational Things*. Göteborg University. Göteborg. In: <http://www.johan.redstrom.se/thesis/pdf/intropages.pdf> [last access: 23/02/2013]

4.1. There is a world.

In 1988 that Mark Weiser at Xerox Parc coined the term *ubiquitous computing*:

“Weiser saw that the development and diffusion of general-purpose computers, and in particular PC's, had resulted in a focus on the computer rather than on the tasks that the computer was used to accomplish. He argued that ongoing technological developments, particularly in mobile and low-power devices, would transform the nature of computers and the way we interact with them. Why deal with a single, large, expensive computer when you could harness many tiny, low cost devices spread throughout the environment?”²³

This idea was the beginning of a change from thinking computing as symbols and mind processes (desktop paradigm), into an environment where technology was everywhere: an interaction where experience, embodiment and direct action were important factors to be studied. Tangible interactions became a possible answer to ubiquitous computing, as Dourish summarizes:

“The tangible computing work attempts to capitalize on our physical skills and our familiarity with real world objects. It also tries to make computation manifest to us in the world in the same way as we encounter phenomena, both as a way of making computations fit more naturally with the everyday world and as a way of enriching our experiences with the physical. It attempts to move computation and interaction out of the world of abstract cognitive processes and into the same phenomenal world as our other sorts of interaction”²⁴.

Touch and space relations became important in this perspective, because they seemed an opportunity to make interfaces for systems more easy to understand and use by people as they were analog to the relations that occur when physical interaction. Touch was understood as a 'natural' way in which humans can grasp information. Example of this approach to touch are some projects by the Tangible Media Group like *Glume*²⁵ which use inflated balls to construct 3d models by grabbing and attaching one ball to another, or *Slurp*²⁶ an eye dropper that can pick up digital information placed in the physical space and drop it in other computers by pressing the eye dropper²⁷. These

23 Dourish, Paul (2001): *Where the Action is. The foundations of embodied interactions*. MIT Press, Massachusetts, 28.

24 Dourish 2001: 102.

25 Leclerc, Vincent. Parkes, Amanda. Ishii, Hiroshi (2005): *Glume*. In: Tangible Media Group. MIT Lab. <http://tangible.media.mit.edu/project/glume/> [last access: 23.04.2013]

26 Zigelbaum, Jamie. Kumpf, Adam. Vasquez, Alejandro. Ishii, Hiroshi (2007): *Slurp* In: Tangible Media Group. MIT Lab. <http://tangible.media.mit.edu/project/slurp/> [last access: 22.04.2013]

27 See: Appendix 3, Image 01.

interfaces are what Hornecker calls, a data centered view²⁸ type of tangible interactions; where digital information is represented in a physical form in order to make it more easy to manipulate and perceive complex operations.

Other ubiquitous projects aimed instead for 'enriching our experiences' with everyday artifacts. Here as example, the exhibition *Strangely Familiar Future (2005)* by Ivrea institute:

“In the evocative atmosphere of the Old Post Office, located inside the Milan Central Station, the students of Interaction–Ivrea display nine objects for every day working life. Taking cue from mundane devices like a telephone, radio, answering machine or an alarm clock, the students have created a series of electronic interactive prototypes that amplify the lost qualities of the physical and tangible world. From a radio which can only be tuned by moving it across a flat surface, to a working desk that transforms itself into an answering machine and an egg shaped scheduling device that works like an hourglass, many are the possible scenarios devised. In the field of design for office environments, the projects of Interaction-Ivrea aim to suggest more meaningful and poetic interactions with the objects that surround us.”²⁹

Tangible interactions in this example, are not centered on giving materiality to digital data, but are about creating meaningful experiences in everyday life with electronic devices. Interaction design of electronic products that acquire value by engaging with people in playful experiences. As properties of future commercial products, they empathize in the “lost qualities of the physical and tangible world”. Touch could be related with something lost, that has a nostalgic value and that becomes a strange way to interact with digital media.

But why is strangeness associated with tangible interactions? Dourish proposes the discussion of dedicated technologies versus convergent technologies: “Suppose we abandoned the idea of the general-purpose PC, and instead employed a world of specialized computational devices-information appliances. Like the microwave oven, these devices could be designed for particular, limited tasks, with restricted functionality, marrying software design with product design to yield a device that is physically and interactionally specialized for the task at hand”³⁰. Tangible interactions compared to graphical user interfaces have a material presence, are less adaptable and often have dedicated functions (are divergent). As Ishii explains: “One of the problems of physical representation is that we cannot easily change a shape, or a color, or a form dynamically, using current technology.”³¹

28 Hornecker, Eva.(2006): *Physicality in Tangible Interaction: Bodies and the World*. In: Hornecker, Eva. <http://www.ehornecker.de/Papers/TangibleBodies.pdf> [last access: 25.04.2013]

29 *Strangely Familiar Future (2005)*: In: Manuelli, Sara. Press Release. Interaction Design Institute Ivrea. <http://interactionivrea.org/en/news/press/releases/2005/strangely-milano/index.asp> [last access: 2.23.2013]

30 Dourish 2001:195.

31 Moggridge, Bill. (2007): *Designing Interactions*. Massachusetts Institute of Technology, Spain, 527.

In this sense, tangible artifacts are like living bodies, limited to a single place and constrained by a physical condition³². Technology reveals as being part of the bodies in the world. An enthusiasm for tangible artifacts seems to uncover a strangely familiar sense of co-implication with material things.

A third perspective of touch from ubiquitous computing motivation, could be related with critical design and its relation with product design. By designing tangible artifacts, this variant of interaction design, comments and exposes “the potential consequences of current socio-technical conditions”³³

Proposing a post-optimal object, Dunne proposes a more critical relation with everyday electronic artifacts: “If user-friendliness characterizes the relationship between the user and the optimal object, user-unfriendliness then, a form of gentle provocation, could characterize the post-optimal object. The emphasis shifts from optimizing the fit between people and electronic objects through transparent communication, to providing aesthetic experiences through the electronic objects themselves.”³⁴ Touch becomes in this variant an awareness, that allows to experience the material implications of cohabiting with technology.

Although critical artifacts don't refer to touch explicitly as an interest (sometimes they are even not meant to be touched, but observed and reflected upon), they are often heavy and touchy artifacts that embody ironic relations of how to cohabit with technology. For example in *Desire Management* “a film comprising five sequences in which objects are used as vehicles for dissident behavior”³⁵, Noam Toran presents a giant black box machine whose only apparent function is to open a little window to look inside it, a very special vacuum cleaner which sucks the skin producing pleasure to a fetishist³⁶, and an airplane trolley that shakes and so simulates air navigation for a nostalgic flight attendant. These artifacts are divergent technologies that show strange tactile relations as dissident behaviors with technology that disturb and turn back to become machines of reflection.

As potential tangible interactions, critical artifacts are also divergent as they don't aim to integrate functions into a single device, but to embody possible interactions if certain dedicated technologies were produced. As touch seems to bring a sense of strangeness, this artifacts explicitly propose they are not meant to become mass products in the way industrial design traditionally aimed to, but objects of reflection.

A last instance of touch interactions that could be related to ubiquitous computing, is personal fabrication. Here, tangible artifacts are also not meant

32 Foucault, Michel. Allais, Lucia. (2006): *Utopian Body*. In: Jones, Caroline A. *Sensorium*. Embodied experience technology and contemporary art. MIT Press. Cambridge, 229.

33 Malpass 2009: 292.

34 Dunne, Antony (2008): *Hertzian Tales*. *Electronic products, aesthetic experience, and critical design*. Massachusetts Institute of Technology, Cambridge, 35.

35 Toran, Noam (2009): *Desire Management*. In: Noam Toran. <http://noamtoran.com/NT2009/projects/desire-management> [last access: 1.4.2013]

36 See: Appendix 3, Image 02.

to be mass produced, but to be individual industrial crafts: “a return to our industrial roots, before art was separated from artisans, when production was done for individuals rather than masses. [...] it's to put control of the creation of technology back in the hands of its users.”³⁷

Designers and amateurs³⁸ shift in this case from designing for mass production, to the design of customized artifacts. How to cohabit with everyday technology is placed as a question to be answered in a heterogeneous way. Projects like *Gambilogia*³⁹ in Brazil or *the Free universal Construction Kit* by F.A.T. Lab and Sy-lab New York⁴⁰ are examples of DIY artifacts that place, 'hands on', tangible manipulation of materials as a transgression of current uses of technology and the empowerment of producers. Touch is then narrated as diversity of forms and as a possibility of transforming materiality.

As has been seen, ubiquitous computing motivated different variants of tangible interactions: from tangible user interfaces, tangible augmented everyday artifacts, critical artifacts to personal fabrication. These tangible interactions often become divergent technologies, either as dedicated functions, or as embodiment of particular desires. This occurs in connection to how they propose to interact, through direct material contact, and its also why they are often not mass produced. Touch is narrated in these interactions as a 'natural' way to interact, as something lost and strange, as something that disturbs and confronts and as the revolutionary power to transform production into an exotic diversity of forms.

However, invisibility was one of the principles expected by engineers when designing ubiquitous computing systems. In this direction Weiser argues: “The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it.”⁴¹ Computation was intended to be task oriented and embedded in the environment so that people could do what they need to do without being disturbed by the permanent contact with electronic devices. Tangible interactions in many ways are not invisible and are less convergent.

37 Gershenfeld, Neil (2005): *FAB. The coming revolution on your desktop-from personal computers to personal fabrication*. Basic Books, New York, 8.

38 *Review Amateurism*. In: *Dialogues in Design*. Feb 1 2010. <http://dialoguesindesign.wordpress.com/2010/02/01/review-amateurism/> [last access: 22.04.2013].

39 *Gambilogia*. In: *Gambilogia* <http://www.gambilogia.net//blog/about/> [last access: 1.4.2013].

40 See Appendix 3: Image 03.

41 Weiser, Mark. (1999): *The computer for the 21st century*. In: *Scientific American*. September 1991. 94-104, 94. http://wiki.daimi.au.dk/pca/_files/weiser-orig.pdf [last access: 05.04.2013]

4.2. Telepresence .

Probably a way in which touch has developed into something immaterial, can be in relation to the second technological motivation why interaction design came to be interested in touch: telepresence. In 1980 Marvin Minsky introduced the term telepresence to further explain the technology aim for distant manipulation via robotic arms:

“You don a comfortable jacket lined with sensors and muscle-like motors. Each motion of your arm, hand, and fingers is reproduced at another place by mobile, mechanical hands. Light, dexterous, and strong, these hands have their own sensors through which you see and feel what is happening. Using this instrument, you can "work" in another room, in another city, in another country, or on another planet. Your remote presence possesses the strength of a giant or the delicacy of a surgeon. Heat or pain is translated into informative but tolerable sensation. Your dangerous job becomes safe and pleasant”⁴².

Minsky's idea of telepresence was to use sensors and actuators to send and receive real-time haptic stimuli⁴³ between a robot and a person, so that a tele-operator could be able to grasp things with accuracy. Telepresence technologies try to simulate the feeling of being at a place while distantly interacting with other entities who as well sense your presence. This presence involves qualities of interaction, like haptic sense (recognizing objects when you touch them), coordinated interaction through movement and three dimensional appearance in a place.

Telepresence idea spread in different sectors apart from engineering and industrial use. With the expansion of internet, telepresence becomes a common place for reducing space-time distancing in mediated communication: “Communication by means of letters, for instance, deprives the participants of cues associated with physical co-presence (gestures, facial expressions, intonation, etc.), while other symbolic cues (those linked to writing) are accentuated”⁴⁴. By accessing face-to-face communication one could sense nonverbal cues that complement the context of a typical internet messaging interaction. From business meetings to art performances nonverbal cues like proximity, velocity of response, face and body gestures, eye gaze, body movements and touch behaviors were explored.

Particularly in the case of touch, which was one of the least used senses for distant communication before telepresence, haptic feedback is used to fill a 'touch lack' of mediated contact with other people in telecommunications or with virtual objects in gaming. Haptic feedback is understood as a response

42 Minsky, Marvin (1980): Telepresence In: MIT Media Lab.

<http://web.media.mit.edu/~minsky/papers/Telepresence.html> [last access: 5.4.2013]

43 Though haptic perception refers to recognition of objects, haptic stimuli could be better understood as mechanical stimulation to recreate virtual objects.

44 Thompson, Jhon B.(1995):The Media and Modernity. Polity Press, Cambridge, 21.

from a system to a person as vibration or movement (force feedback). Examples of such interactions can be found in projects like *InTouch*: “The idea behind *inTouch* is to create the illusion that two people, separated by distance, are interacting with a shared physical object. In reality, each user is interacting with his/her own object; however, when one of the objects is manipulated, both users’ objects are affected. [...] When one of the rollers is rotated, the corresponding roller on the remote object rotates in the same way. This behavior can be achieved using haptic (force-feedback) technology with sensors to monitor the physical states of the rollers and internal motors to synchronize these states.”⁴⁵ Touch is understood as the movement of an artifact that replicates a distant movement⁴⁶ of another artifact controlled by a person.

Telepresence approach to touch proposes to simulate haptic sensations in contrast to tangible interactions, which aim to become part of a physical environment. What matters is the sensation of presence that can be replicated. Being able to feel someone touches you and that you can touch someone that is not there. Responsive membranes that resemble skin have been often explored to achieve this, but also for example, Kevin Warwick and made an experiment in embedded subcutaneous microchips⁴⁷, that seek to replicate what a distant person senses directly on his own skin.

As touch requires direct body contact with a sensed object or person, it is often given the meaning of nearness. Specially in the design of interactions for intimacy at distance, touch is narrated as a feeling of caress and as an affective gesture⁴⁸. The project interactive pillows⁴⁹, addresses closeness at distance through pillows that react to touch by changing color; or feel me⁵⁰ a smart phone application which uses synchronous touch on a screen to complement chat and messaging services between couples and people close related⁵¹; can be both examples of touch as intimacy.

45 Brave, Scott. Dahley, Andrew (1997): *InTouch: A Medium for Haptic Interpersonal Communication*, 363-364, 363. In: <http://alumni.media.mit.edu/~andyd/paper/intouch-chi97.pdf> [last access: 4.4.2013].

46 See: Appendix 3. Image 04.

47 Schwartzman, Madeline (2011): *See Yourself Sensing. Redefining human perception*. Black dog Publishing, London, 158.

48 Vance, Brendan. Li Krystle. Powell, Daniel (2009): *Vibration as a Source of Intimacy in Telepresence Technology*, 1. In: Simon Fraser University. <http://www.sfu.ca/~bav/misc/IAT320/FinalPaper.pdf> [last access: 22.3.2013].

49 Von Dorrien, Christina. Ernevi, Anders. Eriksson, Daniel. Jaksetic, Patricija. Worbin, Linda. Redström, Johan. Redström, Maria. Wistrand, Erik (2005): *Interactive Pillows*. In: Interactive Institute Goteborg. http://www.tii.se/reform/projects/_casestudies/casestudy_pillow.pdf [last access: 15.11.2012]

50 Triverio, Marco (2012). *Feel me, digital touch and new channels of bit intimacy*. In: Creative Applications Network. <http://www.creativeapplications.net/iphone/feel-me-by-marco-triverio-digital-touch-and-new-interactive-channels-for-bit-intimacy/> [last access: 22.4.2013]

51 See: Appendix 3, Image 05.

Recently haptic interaction design has been mentioned as a field by its own. Currently, this field is addressed when building fast prototypes of experiences with haptic behaviors. Camille Moussette refers to haptic sketching⁵², while Fabian Hemmert in *Intimate Mobiles*⁵³, prototypes how we could use smart phones to sense closeness in distant communication. Oriented towards convergent technologies, haptic interaction design aims for frameworks of touch which are not a materially constrained. Touch becomes adaptable. The haptic behaviors are rapid prototyped and later incorporated to different devices such as touch-screens or gaming controllers.

Touch interactions motivated by telepresence involve replicating non-verbal behaviors by means of vibration, force feedback, and other active stimuli. Their focus is on movement and not on tangibility. They aim for a non-verbal language of active touch often associated with closeness and intimacy.

Interaction design has worked around touch in many different ways, from functional to evocative, from immaterial to material, from commercial to critical, from inclusive to subversive. Yet there is much to be excavated on why tangible artifacts are sensed as strange and why transparent interactions are accepted as closeness. For doing so, perhaps we need first to grasp the cultural contexts that support these ways of touch.

52 Moussette, Camille (2012): *Simple Haptics. Sketching Perspectives for the Design of Haptic Interactions*. University Uvrea. Uvrea, 259. In: Moussette, Camille. *Simple Haptics*. http://www.simplehaptics.se/files/SimpleHaptics_Oct3.pdf [last access: 23.02.2013]

53 Hemmert, Fabian. Gollner, Ulrike. Löwe, Matthias. Wohlauf, Anne. Joost, Gesche (2011): *Intimate Mobiles: Grasping, Kissing and Whispering as a Means of Telecommunication in Mobile Phones*. In: Fabian Hemmert. http://www.fabianhemmert.com/content/download/hemmert2011b_mobilehci11_intimatemobiles.pdf [last access: 23. 02.2013]

5. Between monsters and
white collar criminals.

As shown in last chapter, touch has been related with intimacy in connection to immaterial experiences of haptic interactions. Touch without tangibility has been narrated as closeness, while tangible interactions are often related with strangeness. From a media archeology perspective in the following chapter these two *Topos* will be considered from a western tactiloclasm tradition, the encounter with 'other' cultures judged as fetishistic and how touch is more or less intentionally brought back as convergent or divergent technology.

5.1. Tactiloclasm.

Tactiloclasm tradition can be understood as the disregard and a prohibition of touch. In *Art and the (Anti-) Tactile Tradition*, Huhtamo places the history of interactive art as a response to what he calls the previous manifestations of tactiloclasm: “[...] cases where physical touching is not only absent, but expressly prohibited and suppressed.”⁵⁴ Such a prohibition could be linked to the Christian story of *Doubting Thomas*⁵⁵. In a passage of the bible⁵⁶, it is said that Thomas, one of the apostles, was not present at the moment in which Jesus appeared resurrected to the others. As he refused to believe without a proof, Jesus allowed him to touch his wounds, but also responded by saying: *blessed are them who have not seen and yet have believed*. 'Seen' could be understood in this passage referring to touch as a material verification of existence, that should not be requested to religious things. The story gives a background on Christianity's 'cult value' to religious icons, as artifacts which are forbidden to touch and so, acquire an aura of holiness. The 'cult value' ends up sensed as the purity of not being touched by humans and as the denial of their hand made nature.

But this prohibition was not the only disregard of the sense of touch. Aristotle had already mention touch as the most primitive sense related to pleasure and nutrition⁵⁷, opposed to Democritus' previous concept of touch and vision as the senses that describe objects. As Parisi argues, the disregard of touch had also to do with the debate of the epistemological order of the senses: “this discussion is linked to the paradigm of vision as the path to knowledge that emerged during the Enlightenment. [...] The techniques for producing true, empirically verifiable experience were emerging, and by the end nineteenth century vision would firmly be entrenched as the preferred

54 Huhtamo, Erkki. (2006): *Twin-touch-test-redux: Media Archeological Approach to Art, interactivity, and tactility*. In: Grau, Oliver. *Mediaarthistories*. MIT Press. Spain, 75.

55 See: Appendix 3, Image 06.

56 John 20:24-29

57 Aristotle. J. I. Beare. (1931): *On the Sense and the sensible*. In: University of Adelaide. Ebook@adelaide. <http://ebooks.adelaide.edu.au/a/aristotle/sense/> [last access: 22.04.2013].

mode of knowing, with techniques such as photographic profiling emerging as means of institutional observation”⁵⁸. As many as can be the examples of western disregard of touch, the outcome was, the relation of touch with the non-rational, the 'primitive' and with emotional feelings.

From the Church to the museum, tactiloclasm became dominant in public situations and touch only allowed in the private domain. Following Huhtamo's account on tactiloclasm: “The prohibition of touching was linked with the 'untouchability' of private property, as the 'cult value' was gradually replaced by exchange value.”⁵⁹ In the nineteenth century, industrial products sell the private possibility of touch. Department stores use sensory stimulation to attract buyers: “Previously, goods had been kept behind counters and it was presumed that a customer would enter a shop with the purpose to buy. In the department store, by contrast, goods were largely out in the open and anyone could enter simply with the purpose of having a look. The expectation was that the display of goods in such abundance would prove so seductive that even those who were ‘just looking’ would be lured into buying, particularly given the atmosphere of pleasurable self-indulgence that prevailed.”⁶⁰

Touch as closeness and intimacy can be related to tactiloclasm: a private and pleasurable touch that is regulated. You touch your lover or your family and the things you buy. You don't touch other people and you don't touch artifacts that are not yours, unless touch encourages you to buy them. Touch as closeness within interaction design goes even further from product design: the desire of touching that had been repressed can now be achieved in a mediated way. Telepresence technologies offer to fill a 'touch lack' without the responsibility of getting involved and even without the confrontation with tactiloclasm tradition.

In the case of tangible interactions the relation with tactiloclasm can be one of *nostalgia for a pre-technological past*⁶¹, concretely a past where touch and fetishism were not condemned. Latour explains about the meaning of the word fetishism: “To designate the aberration of the coastal Guinea Blacks, and to cover up their own misunderstandings, the Portuguese (very catholic, explorers, conquerors, and to a certain extent slave traders as well) are thought to have used the very adjective *feitiço*, from *feito*, the past participle of the verb 'to do, to make'. As a noun, it means form, figure, configuration, but as an adjective, artificial, fabricated, factitious and finally enchanted.”⁶² In short, fetishism is the worship of artifacts which are made by humans and that become entities (or bodies) by their own: “The fetishist is accused of being mistaken about the origin of power in question. He has built an idol with his own hands- his own human labor, his own human fantasies, his own

58 Parisi 2008:316.

59 Huhtamo 2006: 76.

60 Howes, David (2005): *Hyperesthesia, or, The Sensual Logic of Late Capitalism*. In: Howes, David. *Empire of the Senses: The Sensual Culture Reader*. Berg. Oxford. 281-303, 284.

61 Parisi 2008: 307.

62 Latour 2010: 3.

human powers – yet he attributes this labor, these powers to the very object that he has created.”⁶³ Recalling the research perspective proposed for the present work, Franke proposes *Design as an Inquiry*: “Since we naturally understand the world through interacting with artifacts, design objects may enable us to understand these matters more immediately than abstract theories.”⁶⁴ The design of everyday tangible electronic artifacts as a project of ubiquitous computing, is forced to rethink fetishism as the co-implication of humans and technology that cohabit and influence each other, reflectiveness is opened by a repulsion to touch.

5.2. How interaction design uses tactiloclasm.

Coming back to the field of interaction design I will try to bring together how interaction design relates with tactiloclasm and proof that convergence and divergence are strategies to cope with it. Hiding materiality reduces critical judgment while tangibility reminds of fetishism and consumerism.

5.2.1. Black boxing

“I have a dream, a fantasy
To help me through, reality
And my destination, makes it worth the while
Pushing through the darkness, still another mile.

I believe in angels, something good in everything I see
I believe in angels.”
ABBA. *I have a Dream*.

In the Episode *15 Million Merits* from the series *Black Mirror*⁶⁵, Charlie Brooker presents a world where people live inside a facility wrapped by screens on every wall. The nightmarish scene shows an everyday life where all activities converge on the screen, from waking up, to eating and working. In one of the scenes, paradoxically a woman in a talent show sings the song of ABBA that says 'I believe in angels'.

As was mentioned in chapter two, *black boxing* is the process of hiding a network into a container so that it seems to be a single actor. For technology realms a black box is a container where several processes are stored and only input and output are sensed by the interactant. In way black boxing always exists as even creating an artifact, putting it together requires an assemble, the issue is the limit of what to pack.

63 Latour 2010: 8.

64 Franke 2007.

65 *15 Million Merits*, UK, 2012, 45 min, Zepotron, director: Lyn, Euros, screenplay: Brooker, Charlie. Huq, Connie. *Black Mirror*, Episode 2.

Black boxing is often related to convergence, and with the *invisible interface*. Dourish explains: “The invisible interface- one that would not obscure the tasks and objects that lay underneath-[...]”⁶⁶ By one side assembling a general purpose device that is useful for everything and by the other side making its interface task oriented, so that no disturbance occurs from the presence of the technology. Such a perfect device, invisible, omnipresent and almighty could only resemble an 'angel'.

One could argue that less artifacts should be produced and that multiple functions can be better put together into a single device. Convergence of multiple tasks in a single device could reduce environmental impact of electronic products. When touch converges in haptic interactions, there is nevertheless a fixation of the body to a single artifact which creates an experience of immersion. Graphical interfaces dominate the interaction, while touch supports audio-visual media. The interaction experience includes the surroundings as source of information but not as contextual relations. The artifact becomes invisible as a body in the world.

Hiding the body of electronic artifacts or even making them invisible offers the seduction of creating a new icon: untouched and holy. Who will resist the temptation of making an artifact not only 'perfect' but as well omni-buyable? All material responsibilities with an artifact, disappear as well, when materiality is not there. Convergence not only offers 'optimal' artifacts but uses as well tactiloclasm's cult value for its profit.

However a paradox of touch is opened. How can a convergent electronic device offer going beyond a GUI by exploring touch as a media without losing its holiness? As Parisi explains referring to Nintendo DS campaign of *Touching is good*⁶⁷, touch is recalibrated to cope with intangibility: “Touch is introduced into the image; the finger (which functions as an icon for touch) is pressed into a space normally reserved for the eye, but in the process touch as a category of experience is fundamentally transformed as our expectations for the experience of touch are recalibrated to fit the capacities of its technological extension. Rather than disrupting the logic of the image, touch is brought under the control of a visual logic by pretending that touch's technological reintegration under the eye's mastery is sufficient to reproduce it”⁶⁸.

The nostalgia of restoring touch becomes a deception. Touch is emptied to become a promise of touch. Ethereal and guiltless, private and comfortable, but without fear of co-implication, without risk and without dirt. *15 Million Merits* also shows that convergence is sensed by its main character as a feeling that there is nothing 'real' and worthy⁶⁹.

66 Dourish 2004: 201.

67 Nintendo TM (2005): *Touching is Good*. In: *Touching is Good*.
<http://www.touchingisgood.com/> [last access: 5.4.2013].

68 Parisi 2008: 314.

69 *15 Million Merits*, UK, 2012, 45 min, Zepotron, director: Lyn, Euros, screenplay: Brooker, Charlie. Huq, Connie. Black Mirror, Episode 2. Min 21.

5.2.2. Monsterizing.

First of all, what is a Monster? 1. a large frightening creature⁷⁰. 2. an aberrant occurrence, usually biological, that was taken as a sign that something was wrong within the natural order 3. Something that de-monstrates a sign or an instruction⁷¹.

Referring to Japanese Device art, Kusahara says: "It is often observed that many of these works from Japan share certain features. Probably the most notable feature is a playful and positive attitude toward technology, rather than a negative or critical stance"⁷². Device Art in Japanese context has similarities to tangible interactions, as they also build over-the-function electronic artifacts for everyday life. Yet this relation with technology through materiality doesn't become critical, but playful. Actually many Japanese Device art works are turned into commercial products⁷³ that are sold cheap in their market. It is clear that a different cultural background motivates the emergence of tangible interactions in Japanese context. Such artifacts are divergent, but also abundant in the market.

The Topos of strangeness in tangible artifacts could be said to come from an association of such interactions with monstrosity. As was described before, a monster is something big and anomalous. The strangeness of a monster is that it questions identity and presents as otherness. What builds the criticality of tangible artifacts is consequently, that they are other compared to tactiloclasm's cult value on untouched 'ethereal' artifacts. A fear of finding a cult value in fetishism haunts. When west meets *Chindogu* the un-useless bizarre gadgets⁷⁴ or device art, is similar to the encounter of the Portuguese and the Guinea people: Anti-fetishism is the immediate reaction. How can they mass produce something useless and which people value emotionally? Blasphemy! But the feeling is nevertheless mixed, part nostalgia, part rejection, part recognition: -consumerism is not about buying things you need either- the difference is just that one worship is open and the other is hidden under a claimed pure functionality.

The question is how otherness is presented and how conscious the use of the stereotype of monster is used. In tangible artifacts there is every single variety: from trained monsters (tangibles as tools), domestic pets (emotional tangibles), regret monsters (critical tangibles), to proud monsters (protesting tangibles). What remains important is if a monster opens the hidden

70 Monster. In: Oxford Dictionaries.

<http://oxforddictionaries.com/definition/english/monster> [last access: 05.05.2013]

71 Monster. In: Wikipedia. http://en.wikipedia.org/wiki/Monster#cite_note-2 [last access: 05.05.2013]

72 Kusara, Machiko (2006): *Device Art: A New Approach in Understanding Japanese Contemporary Media Art. Media Archeological Approach to Art, interactivity, and tactility*. In: Oliver Grau. *Mediaarthistories*. MIT Press, Spain.

73 See: Appendix 3, Image 07.

74 Kawakami, Kenji (1995): *101 Japanese un-useless Inventions*. Norton & Company, Italy.

connections between artifacts and people. After all, a monster can be an opened black box a set of relations that was unnoticed.

As has been seen, the *Topos* of strangeness and the *Topos* of closeness and intimacy are two sides of a tactiloclasm tradition. One hides touch relations and arrange them so that they don't contradict tactiloclasm's principles of immateriality while the other contradicts tactiloclasm. Convergence of multiple functions and an immersive experience of interaction makes technological artifacts seem optimal and immaterial. Strangeness instead diverges and finds a way out of the market of mass consumption, but sometimes becomes legitimate as a moralizing demonstration of fetishism.

6. Discussion and Research questions

Ubiquitous computing opened up a scenario for rethinking what role would technology have in everyday lives. Dreams of huge artifacts for dedicated desires were innovatively designed. Nevertheless, many of these artifacts hardly ever arrived to the market and stayed as an agency of technology.

Meanwhile, in the commercial sectors multitask, nanotechnologies are growing, allowing light mobility and immateriality to consolidate as an almost religious market of convergent devices (Smart phones, Tablets and so on). It seems as if this objects were not embedded in everyday life but were portable worlds that we should serve. This “ethereal and guiltless” technologies, are even so not as innocent as they seem, they actually result in incredible amounts of toxic wastes and are produced on precarious human conditions, they are to say, white collar criminals. But the heavy gadgets are the ones who should be eliminated for a better future. Is it?

Changing paradigms of interaction design would probably require as a well rethinking the role of touch in it. Presenting the topic of touch in relation to interaction design helps to understand how technologies are judged and why. Tangible interactions are not only strange, while haptic interactions are not only closeness and intimacy, the opposite could be said as well: actually most tangible interactions are not becoming commercial products and convergent technologies are selling the new and obsolescent fast and effective. When nothing tangible remains of our interactions, it seems as if there were no consequences in the world. Actual discussions on military Drones⁷⁵ are a good evidence that distant interaction can also have deadly consequences.

In such conditions of immersion, touch can bring relations of co-dependance that are usually hidden. Probably this is the importance of touch interactions for current technology discussions, not only to help immersive computer experiences, or to become critical, but also to reflect material coexistence with everyday technologies.

If visual and screen based media are predominant in a future, what type of connection would we have with divergent objects that stress touch or weight and other attributes different from the screen?

How can we change the Myth of Convergent technology?

How can we bring co-implication to a convergent artifact?

75 Cole, Chris. Wright, Jim (2010): What Are Drones? In: Drone Wars UK. <http://dronewarsuk.wordpress.com/aboutdrone/> [last access: 3.4.2013].

7. Documentation

7.1. Excavating Convergent touch.

Fat is a hidden secret of all touch screens. Frequently you can see people cleaning and cleaning their 'black mirrors'. People touch these surfaces all day and suddenly decide to erase any trace of interaction. One wants to be able to manipulate easily the GUI but not to sense touch. The proposal is to excavate the touch relation that exists with mobile phones and the people who own them through the fat of the screens, making the screen interfaces of this devices less transparent and capturing a moment in the relation as a texture.

By using a fingerprinting powder and a uv lamp, the fat on the screens of smart phones from 10 people was photographed. The photos show the fingerprints and grease patterns in a moment of time left by the owners on the devices. Afterwards, the photographs are rendered and processed as height maps, so that the shadows and lights are recognized as depth of field. These 3d renders are used as a main texture for the design of Mobile cases which finally are 3d printed. During the photographic session, the owners of the devices are also asked to answer the question: how has been your relation with this phone? Each text is also transcribed and printed for the exhibition.

The cases work as tactile memories of a relation with an artifact, a materialization of a sensual object in between⁷⁶. The tracked grease patterns were incorporated to the design of a product (the telephone case) because products compared to sculptures are traditionally understood as touchable artifacts (closer to everyday life). Also, referencing the market of customized accessories for mobile phones was interesting, as it offers "individual" self expression for people, but doesn't count on the everyday relation with the artifact (mobile phone). In the design of the cases for *Sensing Otherness*, the case is instead expected to become an accessory for the phone, a mark that protects it from being disposable.

During the exhibition, the cases are additionally presented as an evidence of an interaction and an enigma about how people relate with an artifact. The phone is recognized as otherness, as a strange object that was apparently not there and suddenly is evidently touched everyday.

76 Harman, Graham (2011): *The Road to the Object*. In: *Continent*.3.1 (2011)171-179, 173. <http://www.continentcontinent.cc/index.php/continent/article/viewArticle/48> [last access: 20.4.2013].

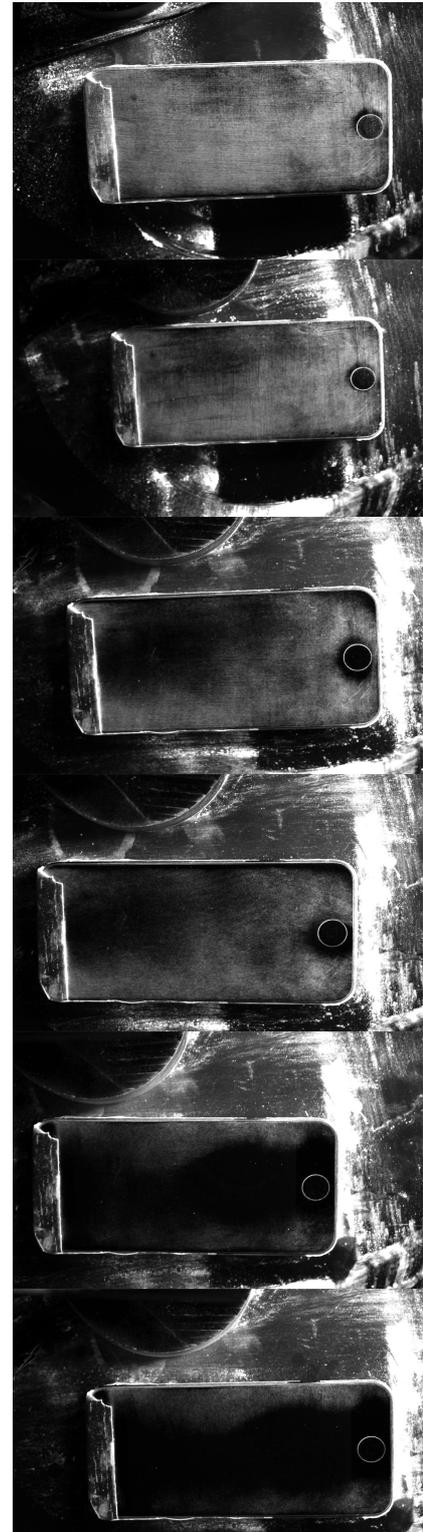
7.2. Collecting Samples.

It was decided to collect 10 samples for building cases of the relation mobile-person. This amount allowed for choosing 5 cases to be presented in an exhibition where people could actually touch all of the cases, sense a variety of relations and be able to remember some of their differences.

The samples taken were from people of a same city (Bremen), between 20 and 40 years old, from different academic backgrounds. All the mobile phones chosen had a touch screen as a main interface. This samples are nevertheless not meant to be a user experience study, or a quantitative analysis, but a material source for a design project. Each case is taken as a particular relation and is excavated and presented as an 'evidence' to the public.

For making the samples, the involved people were asked not to clean the touch-screen during the day the photographs would be taken, as the grease marks (specially in new devices) can erase very easy. This was somehow a technical constrain that limited the range of time in which a touch relation could be tracked: the longer a person has been using a mobile, the easier it would be to notice permanent traces of grease, the shorter the relation, a more instant last use trace would be obtained.

The samples obtained were 10 photographs of mobile screens where the grease appears as a florescent orange trace. Fingerprint powder is brushed over the screens, the excess are removed and the powder stays in the parts that are more greasy than others. Then, in a dark room with a UV lamp the mobiles are photographed using a same exposure level and resolution in the camera.

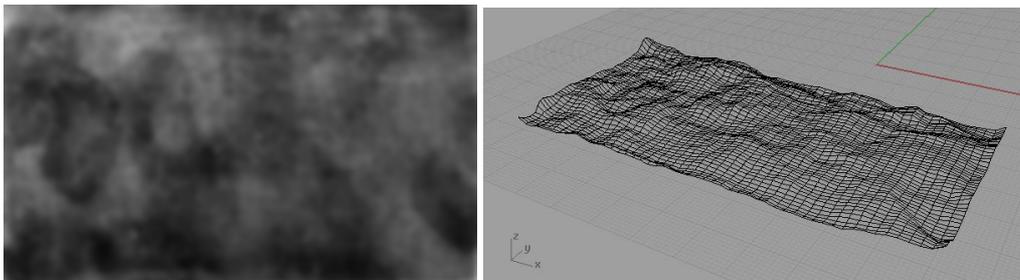


After each photo was made, a short declaration⁷⁷ about the Mobile was requested from the participants, as well the model and measurements of the device were noted.

Though special products like fingerprinting powder were used, the results are as unpredictable as the differences between screens, time of use, or cleanness of the fingers. Inspired by Kirlian photography's paranoiac recognition⁷⁸ and how traces of color whose origin couldn't be identified became a place for speculation, the ambiguity of the samples was accepted as the results were not expected to be measurable but evocative.

7.3. Rendering Height maps

After the photography samples were taken, the images were cropped, converted to black and white, and inverted. This image editing was done as a batch process, so that the conditions of the sample remained constant.



The processed images were then taken to a 3d program where the color value (lightness/darkness) was made as a parameter for rendering a mesh height map with a maximum height to be tested.

77 See the appendix 1 for the declaration format used and appendix 2 for statements.

78 Kaplan, Louis. *Where the Paranoid Meets the Paranormal: Speculations on Spirit Photography*. In: *Horror Vacui*. Ed Gruenfelder, Berlin. 75-90.

7.4. Design of Cases



For the design of the cases various things were to be considered: the texture of the case, the materials chosen, and the assemble of the case (if it was a whole hard case or if it was part hard 3d printed and part flexible fabric).

For the desired texture of the cases, some first prototypes were made in a sandstone material. With them, it was tested how much height would be required to sense bubbles in a plain surface without the volumes becoming an independent form. Some versions were made with high elevations (2 – 3 cm) and others with low (1cm). Also some glitch versions were also prototyped thinking of the data sample noise that was part of the height map. Finally a low elevation without glitch was chosen, where fat traces could be easily associated.

With the purpose of transposing the monstrous-primitive narration of touch to the forms and materials of the cases, as a final material for 3d printing, a semi

transparent photopolymer⁷⁹ was chosen. This material is more smooth and less porous than sandstone and has a yellowish transparency. Given that the cases resemble the relation of two entities, a human and an electronic device, a brown leather was used for the back of the case and a 3d printed plastic for the front.

For the assemble of the materials, each height map was rendered to a thin surface of the size of each mobile front view. Wholes were placed in the border of the 3d model so that after printed it could be sewed with the leather mold. As the leather molds should allow for the thickness of the mobile phones, some versions were prototyped on how to gain this thickness. A final solution for this was found by laser cutting the leather in a wider mold than the front height map, which had the same holes so that when the cases were assembled they became curved. Finally the pieces were sewed with a thick dark thread.

79 *Detail Plastic*. In: Shapeways. <http://www.shapeways.com/materials/detail> [last access: 05.05.2013]

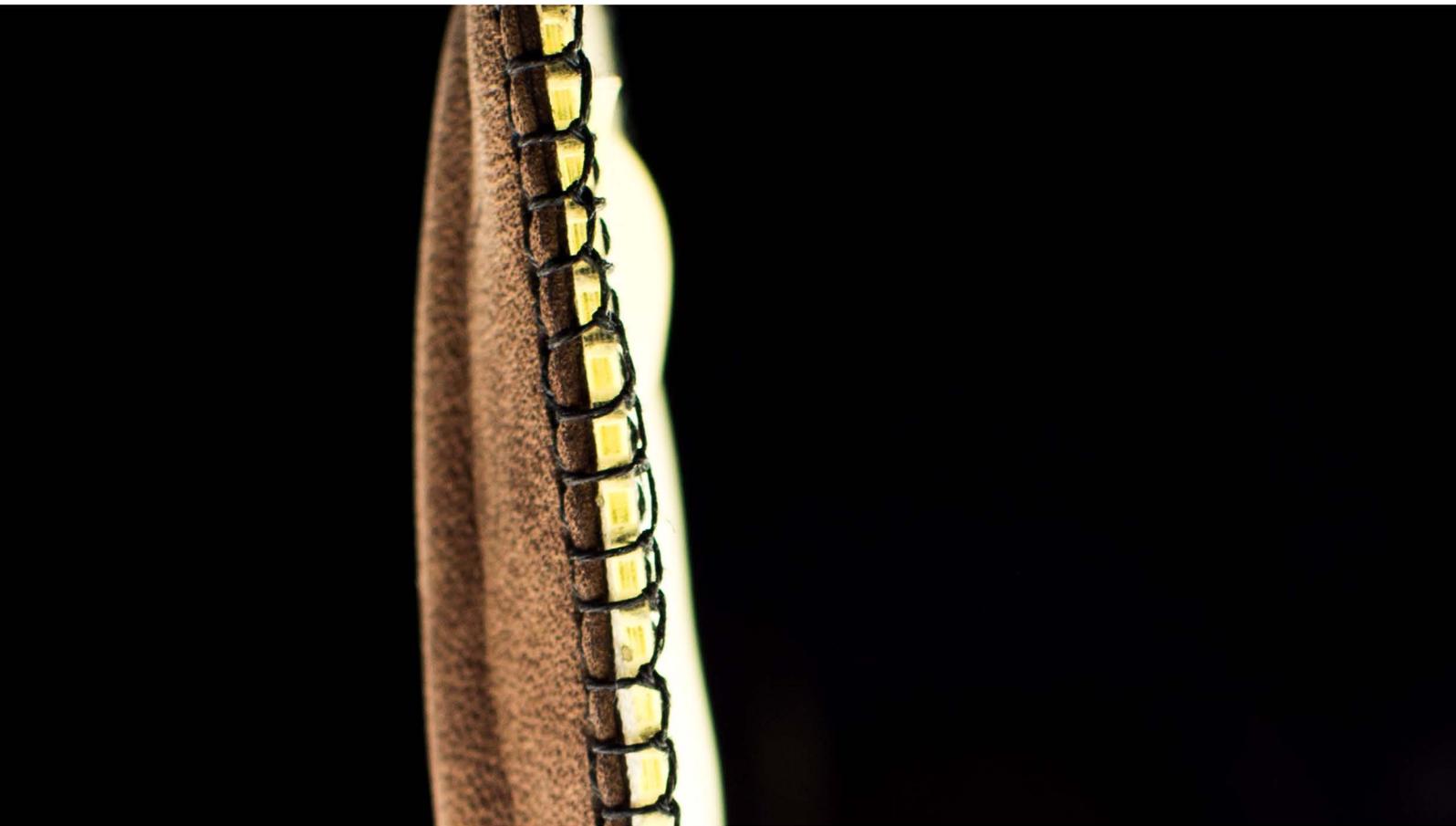
7.5. Exhibition

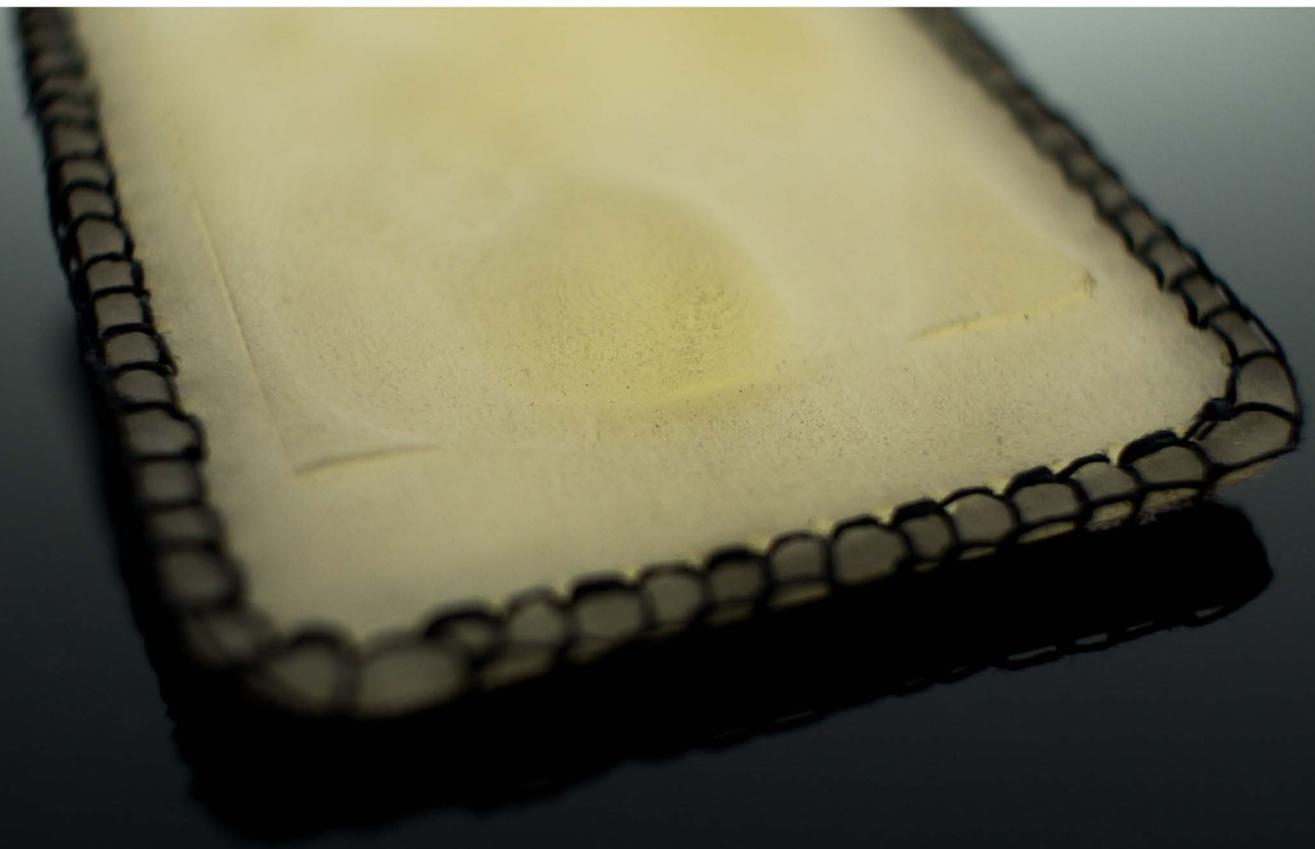
The Cases are presented as an exhibition of 'fetishes' in an Anthropology Museum. Each piece is exhibited in a pedestal between two layers of acrylic that allow visitors to touch the pieces. On the top transparent acrylic, the statement of each case is 3d printed.

8. Sensing Otherness.









9. Conclusion

Departing from a design as inquiry approach, a question was made on how we relate with technologized touch and why we do so. By a media archeological methodology of Topos, strangeness and intimacy as narrations of touch were connected to tactiloclasm tradition in western culture and the return of touch as the other. What was found was a tactility that has been for long repressed and undervalued and now comes back as a nostalgia for the primitive touch. While technological conditions allowed to explore ways out of the GUI, touch was modified to fit the black boxes of convergent media and forget the repression of touch by hiding it and transforming it into a touch without co-implication. Nevertheless touch is not really challenged and offers not much from the promises of presence and experience.

By means of *Depunctualization*, the smart phones were taken as an actors-network to open the box of relations that exist hidden inside. The excavation of fat on screens of smart phones brings traces of tangibility as clues to what touch is in current technologies. Although the sampling of fat traces cannot show a long term relation between the artifact and the owner, the connection is made and recognized as 'true'. The cases rebuild therefore a bond between owners and devices. The reciprocal action between this two entities is revealed.

Questions can be opened from the interaction with these cases: Do we really sense touch with touch screens? Is the awful fat of the screens something so undesirable? Why do we touch so much a device that we don't even notice? What experience do we expect when touching an artifact?

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10.2. Images

Image 01: Zigelbaum, Jamie. Kumpf, Adam. Vasquez, Alejandro. Ishii, Hiroshi (2007): *Slurp* In: [http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_\(Caravaggio\)](http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_(Caravaggio)) [last access: 04/04/2013]

Image 02: Toran, Noam (2009): *Desire Management*. In: Noam Toran. <http://noamtoran.com/NT2009/projects/desire-management> [last access: 1.4.2013]

Image 03: FAT Lab and Sy-lab(2012): *The Free Universal Construction Kit*. In:
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Image 04: Brave, Scott. Dahley, Andrew (1997): *InTouch: A Medium for Haptic Interpersonal Communication*. In:
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Image 06: Caravaggio(1602): *The Incredulity of Saint Thomas*. In:
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Image 07: Denki, Maywa.(2009): *Otomatone*. In: Maywa Denki.
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10.4. Films/ Video.

15 Million Merits, UK, 2012, 45 mins, Zepotron, director: Lyn, Euros, screenplay: Brooker, Charlie. Huq, Connie. Black Mirror, Episode 2.

11. Appendix

Appendix 1

How was your experience with this device?

Here I acknowledge that my text can be used as an anonymous declaration for the purpose of an exhibition. Also I allow changes to be made so that the smartphone is only mentioned as "it".

Signature:

E-mail:

Appendix 2

IMG 0117

“it is the first I have, it's 2 months old.”

IMG 0121

“It's Magic!”

IMG 0123

“I stand in a warm relationship with it:
It organizes my life - professionally and personally
- and I let it take it gladly”.

IMG 0129

“many times an angel but often the devil”

IMG 0130

“Right now I feel I need something more powerful but I don't blame
it, it's just one more cycle of technology.”

IMG 0143

“I hate it.
I am embarrassed to show it in public.
It is able to do everything that is not necessary,
Its like a fake ceramic plate, but not good for what is meant”.

Appendix 3

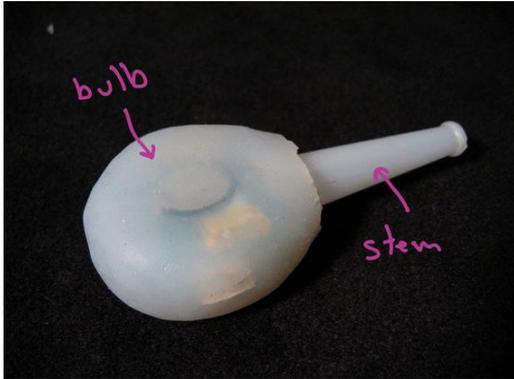


Image 01:

Zigelbaum, Jamie. Kumpf, Adam. Vasquez, Alejandro. Ishii, Hiroshi (2007): *Slurp*
In: [http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_\(Caravaggio\)](http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_(Caravaggio))
[last access: 04/04/2013]



Image 02:

Toran, Noam (2009): *Desire Management*. In: Noam Toran.
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Image 03:

FAT Lab and Sy-lab(2012): *The Free Universal Construction Kit*.
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Image 04:

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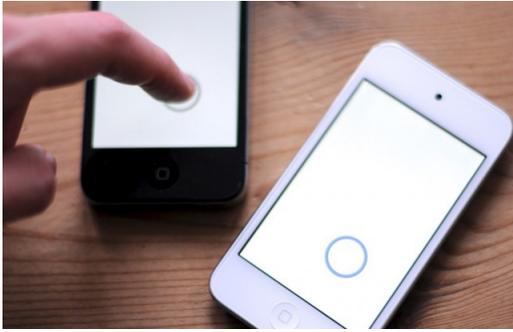


Image 05:

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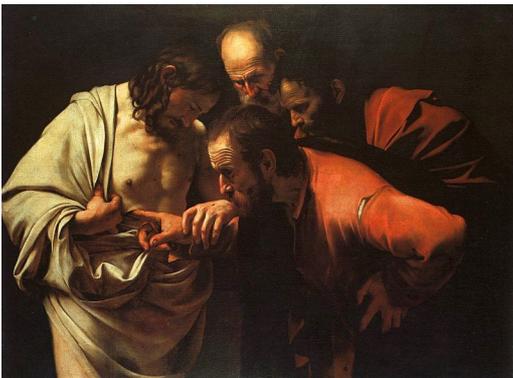


Image 06:

Caravaggio(1602): *The Incredulity of Saint Thomas*. In:

[http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_\(Caravaggio\)](http://en.wikipedia.org/wiki/The_Incredulity_of_Saint_Thomas_(Caravaggio))

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Image 07:

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