Whitespace

an explorative inquiry into value-sensitive design and postphenomenology

final bachelor project
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Whitespace

I believe in a societal transformation of rediscovering the quality of real experience. Where we understand that temporary stimuli bring temporary satisfaction, where we are conscious of our needs and desires, and choose the products we use accordingly, resulting in caring for the things we use.

Reality is always there. It's only hidden in between the things, products, stimuli and thoughts.

Whitespace is an analogy for experiencing that which exists in between the things, the products and the thoughts. Of awareness of the real world. Of awe. Because we only have to look out our windows or stand still for a moment to find beauty. What would happen, were we to stand still for a minute and simply observe every day?

Whitespace is an attempt to help the individual become conscious of how they perceive reality, as well as aiming to rediscover awe of the world. With awe comes appreciation, and with appreciation comes care. A small step in a transformation, but in a transformation, every step counts.

Introduction

Whitespace is an exploratory inquiry into subjectivity and technology which aims to learn from and with the individual in the form of human values (Friedman, 1996; Kheirandish, Funk, Wensveen, Verkerk & Rauterberg, 2020), via a designed technological mediator (Ritter, 2021; Hauser, Oogjes, Wakkary & Verbeek, 2018). The project follows a Reflective Transformative Design Process (Hummels & Frens, 2009)) and frequently makes use of the Design Workbooks (Gaver, 2011) approach, where quick design concepts are developed and presented as a design workbook with high open-endedness, often in combination with a co-design methodology. The scoping is set to the practice of photography to bind the concepts of value-sensitive design and technological mediation.

The drive for this project was my deep curiosity to understand values, as they seemed like such a magical concept that everybody understood but at the same time nobody could provide an actual concrete definition of. I noticed that I would use values myself to make sense of abstract phenomena.

What are values? What is their definition and role in design? These questions led to a thorough exploration through thinking, reading and making. When I found the theory on postphenomenology, the curiosity shifted to finding and making the link with value-sensitive design explicit. To do so, throughout the project a comprehensive definition for ‘value’ was sought and constantly updated.

In the scoping of this project, a personal definition of a (human) value was set up: a value is defined as a highly subjective self-defined concept, based on a feeling of importance for the individual. Individuals hold several of their own defined values, based on social-cultural context. Even though values are subjective, individuals can feel connected to things or (groups of) people with corresponding values, and can feel a (strong) disconnect to conflicting values, hinting at some objective quality. Complicated phenomena can be elucidated using values. In design, one way of incorporating values is for communication purposes, towards users, participants or other designers. As an example, users would use the values of openness, situatedness, consciousness and self-awareness for describing how they felt during a study. These values can then be used for making informed design decisions (e.g “the product should stimulate self-awareness and situatedness”).

Whitespace is an attempt to help the individual become conscious of how they perceive reality, as well as aiming to rediscover awe of the world, leading to the discovering of values as part of the new paradigm. With awe comes appreciation, and with appreciation comes care. The goal of Whitespace is to find and make explicit a link between value-sensitive design and postphenomenology, in which it makes such abstract, philosophical subjects tangible and easy to understand.

Whitespace

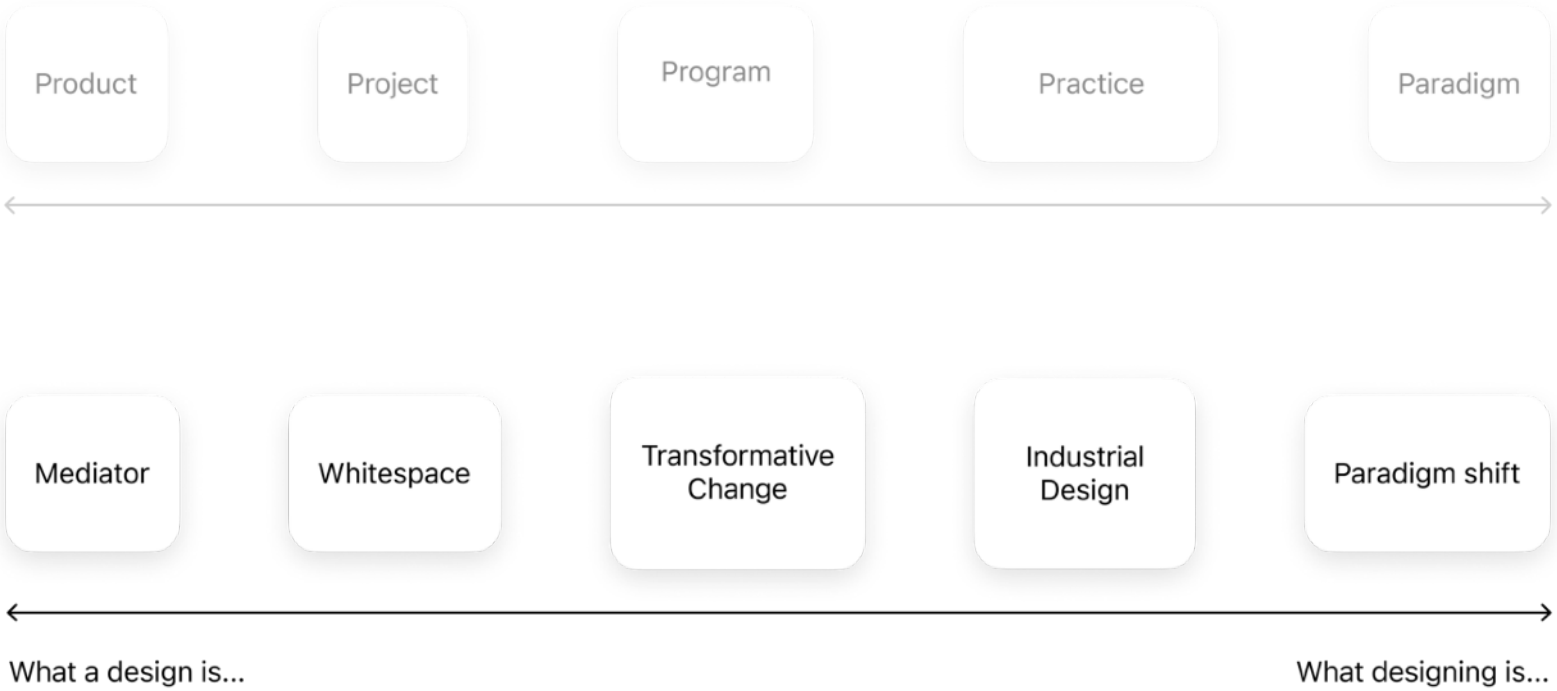


Figure 1. The product and project related to the vision, from the model based on the model presented in Making Design Theory (top) (Redström, 2017)

2. Related works

2.1 Postphenomenology

Postphenomenology is, as the name implies, based on phenomenology, the study of phenomena, the philosophy of experience. Postphenomenology modernizes phenomenology as it tries to describe how we perceive reality, mediated by technology, hence the associated term 'technological mediation' (Hauser et al, 2018, Ritter, 2021), in this project referred to simply as mediation. Postphenomenology combines philosophy and empirical research (Hauser et al, 2018).

In the model described in the paper 'An Annotated Portfolio on Doing Postphenomenology Through Research Products' (Hauser et al, 2018), a reciprocity between subject and the 'world' is shown, mediated by technology. A distinction is made between actions/practices and perception/experience, which can be 'invited' or 'inhibited' and 'amplified' or 'reduced' (figure 1). This model is expanded upon in the framework Material Aesthetics by Pauline van Dongen (van Dongen, 2019), which aims to enable designers to "develop a better understanding of the material influence of the products they design".

In postphenomenology, the term 'world', to which individuals are related, hints at a persons' "immediate surroundings" (van Dongen, 2019). Someone's perception and action possibilities in these surroundings are influenced by the technological mediator, where for example, a camera might justify actions for the user such as standing still and observing on a busy square, or the using of a skateboard might turn the street into a skatepark.

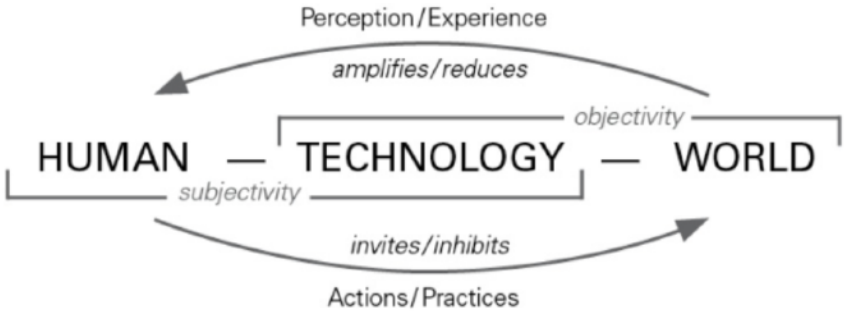


Figure 1. Technological mediation (based on Verbeek's descriptions).

2.2 Value-sensitive design

Throughout the project, I have regularly updated my own definition of ‘value’ in the context of design and this project as it progressed. A value, in its broadest form, is something we as an individual find important. A thing, idea, choice, way of living, that we assign value to. It’s an individual’s personal understanding of Quality, emerged from and based on culture, put into practice. The definition and selection of value can be regarded as entirely subjective, and almost any term can be made a value.

Different people in different social groups have different values and thus make different choices, have different goals, and beliefs. What I find remarkable, personally, is when values conflict.

With human values in design, we can translate what we find important into the tools we are creating. But what exactly is a value? And how are values defined? According to Batya Friedman, “Values emerge from the tools that we build and how we choose to use them.” (Friedman, 1996). The practical value of using values is that they can be seen as a means of ‘clustering’ or simplifying concepts or phenomena, which can then be used as metrics, or for the sake of communication. It’s our best attempt in defining what a ‘preferred’ state is that a design should turn a situation into (Kheirandish et al, 2020). Rokeach (1973) states that a value is “an enduring belief that a specific mode of conduct or end-state of existence is personally or socially preferable to an opposite or converse mode of conduct or end-state of existence”. Besides referring to states, human values also “guide human actions and behavior in daily situations.” (Kheirandish et al, 2020).

From these sources, the interpretation can be made that values are defined as concepts/beliefs, that indicate some form or feeling of quality, of what is good, or preferred over something else. In a practical sense, they guide our actions and behavior. In this project, although we still adhere to this definition, a value can also be just a means of simplifying rather abstract phenomena, often the result of introspection. In the study, participants were asked to associate *values* with their experience, which were later used as input for designing a concept. These values did not necessarily indicate some form of quality, they did not intend on making something better compared to something else.

2.3 Design workbooks

Whitespace makes use of the Design workbooks method as proposed by William Gaver (2011). Design workbooks are a collection of quick design proposals, expressed with openness, which define much larger design spaces.

The workbooks contain open-endedness and have room to move around. The concepts within the workbook are not bound to a certain level of fidelity, or resolution. Creating the workbook in a team, given the multiple ideas and open-endedness, the methodological approach “recognises that ideas may develop slowly over time, that important issues and perspectives may emerge from multiple concrete ideas”. Ideas can be further developed and elaborated on or lead to new ideas with use of participatory design.

The workbook containing proposals forms a “much larger landscape” or design space, which can be analyzed according to differences and similarities among the concepts, making visible things like certain issues, technologies to be considered or options for “further investigations”. “The notion of a ‘design space’ is a valuable metaphor for the way design workbooks can affect designers’ perceptions of possibility.”.

Different construction techniques are using images; collages from found images, diagrams, renderings, sketches or hybrid, using text, or a combination of both, each with its own amount of open-endedness and use-case.

In this project, workbooks are created in multiple forms during the participatory co-designs. Participants would gather data in the form of observations, writing them down in provided booklets (see method section) and using associated values for coming up with quick design proposals, with varying resolution depending on the study, forming the design workbooks. The workbooks methodology has also been combined with the theory on value-sensitive design, where values functioned as an input for making the spaces.

2.4 Co-design

As the project is about understanding how an individual perceives reality, a co-design approach was used throughout the process in order to have the maximum open-endedness in the designing of artifacts and retrieve values of the participants.

In the scope of this project, the term co-design has been used, instead of the common co-creation. Where Allison Metz (2015) claims that the terms are much the same but based on context of use, Windasari & Visita (2019) state that the difference lies in customer involvement, steps and processes, relationships and phase.

Much discussions can be held on the exact definition of-, and differences with the common methodology co-creation in design. This project made use of the term *co-design* simply as there were multiple steps of designing that users went through, partly individual, and partly as a group. The participants cooperated in collecting data and designing a lot of concepts, forming the design workbooks (see section 5.2).

2.5 General concepts

2.5.1 AWE

In this project, Awe is based on the descriptions of Nietzsche's 'Also Sprache Zarathustra' (Nietzsche, 1909), in which, through three transformations, one is transformed into a child. Perceiving the world in a child-like state, we find wonder in the tiniest of details, and we let go of pre-imposed values to build our own.

2.5.2 WHITESPACE

"White space is the area between design elements. It is also the space within individual design elements, including the space between typography glyphs (readable characters)." (The Interaction Design Foundation, 2020).

2.5.3 TRANSFORMATIVE PRACTICES

Whitespace is a part of a paradigm shift that aims to understand and create new values of individuals in the new paradigm, as is described in the framework of Transformative Practices (Hummels et al, 2019). Transformative Practices aims to address a large number of societal challenges, such as climate change and social inequality, creating solutions necessary for sustainable change and new ways of living with each other, achieved "through design research and innovation".

3. Iterations

Designing the mediation

As stated before, Whitespace is built upon the framework Reflective Transformative Design Process (Hummels & Frens, 2009) (figure 2). Whitespace cycled through 5 major iterations, or phases, while in-between diving deep into and switching regularly between the four outer circles (envisioning, thinking, validating quality and making), to make informed design decisions and to gather information adding to the knowledge that is the middle circle. In-between the switching happened critical reflection.

In this report, the model is not used for elucidate the iterations, as this would result in describing too many irrelevant details of the process. The model is presented in order to make clear that it formed the basis of the approach of this project.

The project started with a big, abstract vision, and could only speculate on what form the final design could have assumed. With every step, this final design as well as the link to the vision became more explicit, and could be better articulated.

Figure 2. The Reflective Transformative Design Process (Hummels & Frens, 2009).

3.1 Scoping

3.1.1 VALUES

In order to make sense of the open-endedness of the definition of values and their role in design, as well as their practical use, a (non-scientific) list of values was consulted (appendix 2). A selection was made based on relevance for the project, using the Symbioscene for envisioning. The selection of values was clustered (appendix 3) in an attempt to make their meaning more concrete.

3.1.2 META-INVENTORY VALUES

The own exploration of values and clustering had provided a head start, which was compared with the literature found on clustering and using values. The paper 'Meta-inventory of values' provided the knowledge on values that was necessary. From the literature, a selection of 10 values was made as this would provide enough context to make the project concrete, while still allowing for open-endedness (appendix 3), to be used for making the design workbook.

3.1.3 PHOTOGRAPHY

In order to come up with anything concrete, a practice needed to be determined for the scoping. A brainstorm was held where a timer of 20 minutes time boxed the coming up with any practice, without validating (appendix 4). After 20 minutes, the practices were validated and placed on an axis-system; with complicated/easy on the Y-, low resource/resource intensive on the X-axis, inductively generated by reviewing the data (appendix 4). By adding 'awe/wonder' as a general value, the practices' context increased and became more interesting. Three practices were selected: 'taking photos', 'drinking coffee' and 'jamming' (appendix 4). After careful consideration, the practice of Photography was selected as it seemed to allow for an interesting practical yet abstract approach; where one can immerse themselves in awareness of reality, 'real world' experience, where reality can be abstracted by taking a picture. The main value of the project would now be Awe.

3.1.4 ABSTRACTION AND POSTPHENOMENOLOGY

In order to explore the possibilities within the realm of photography and the combination with Awe, a day was spent in nature with a camera. While taking photos, I carefully observed my own (abstract) observations and stumbled upon the levels of abstraction when taking photos, noticing the fact that the camera changes my perception of reality, resulting in the concept of Postphenomenology.

The results can be seen in figure 4 - 8. The image of the pinecone has high symbolic value, as this little object resulted in the reflection on levels of abstraction with a camera. Postphenomenology was further explored and combined with the social relations we have with strangers, drawing a parallel with Sarte's 'Hell is other people' (Sartre, 1944): in the play No Exit, three people are trapped in a room which symbolizes hell. The saying refers to the construction of your own world in your mind while being alone. As soon as another person enters the scene, we are being labeled, or objectified. Unable to escape the judgment of the people around us, we are no longer the 'main character' of our experience. This phenomena was later further explored in the first co-design.

A concept map was created on the levels of abstraction within photography and an understanding of postphenomenology put into practice (figure 3). This map, combining the theory on postphenomenology and a theoretical but pragmatic approach to photography, along with the knowledge on values and set-up for a participatory study, mark the start of the next iteration.

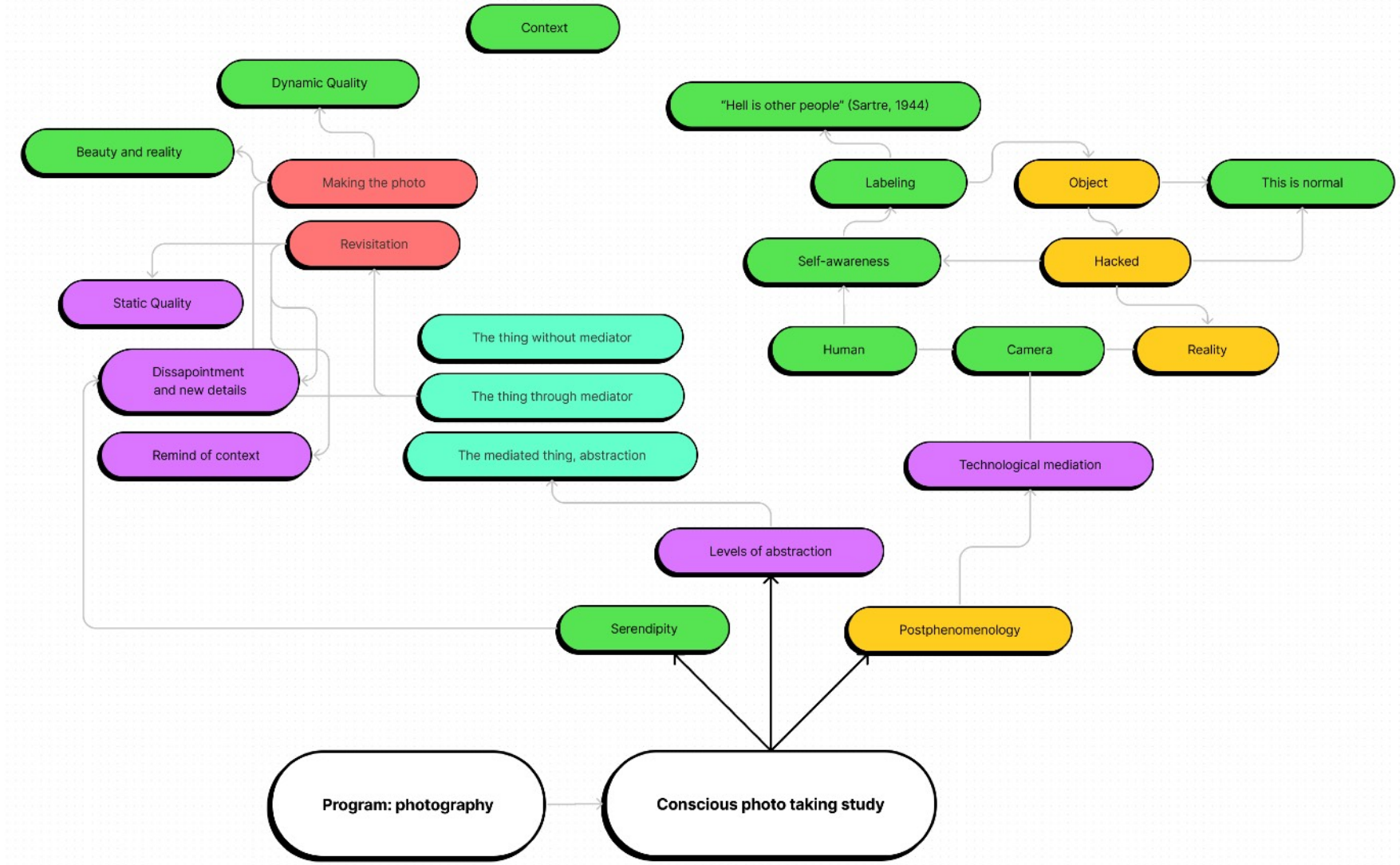


Figure 3. The concept map.

Figure 4

Figure 5

Figure 6

Figure 7

3.2 First co-design

If you have an object, say a camera or a dog, it justifies standing still doing nothing, observing the world.

When walking in a busy area, I noticed over-stimulation because of my sensitivity to all the sounds surrounding the station, making the large number of people hard to bear. I was encouraged to research the influence of a camera, a mediator, on people's feelings and observations in a busy location. The overarching theme here was the fact that a mediator could give you a reason to be somewhere, and would therefore justify standing still in the eye of other people.

The target group was kept quite open, but set to somewhat introspective, social people for whom self-observation would feel close to home. All participants ended up being from the same department, Industrial Design at the Technical University of Eindhoven, with one exception. A relatively large group of participants (n=11) was selected, in order to generate a diversity of design concepts.

Figures 8 - 10 show the booklet to be used in the individual assignment.

After consideration, the decision was made to have the study feature an individual homework part and a co-design session where participants would share their insights and create design concepts together. This combined the open-endedness of an individual assignment and creative stimulation/inspiration when designing in a group, as well as allowing them to form their own ideas and idea of quality in context to be applied in the making phase. In order to minimize bias, the participants would be provided equal starting points. In the individual assignment, a restriction was set on what camera they could use. In the co-design, they would be provided materials and would share their individual insights to create a collective source of knowledge.

3.2.2 PILOT

Two pilot studies were conducted in order to validate the script. I also did the individual assignment myself in order to better be able to emphathize with the participants.

3.2.3 METHOD

Participants would observe a busy location with and without the viewfinder of the camera. How would their observations change? What did they notice? And what values did they associate with their experience?

Their observations and values would then be used as input for generation of quick design concepts. The participants would have three rounds of 10 minutes for creating conceptual cameras based on their experience and associated values. In-between the rounds, they discussed and shared their ideas. Printed out catalogs, magazines and images of cameras were provided in the co-design session.

3.2.4 RESULTS

This co-design resulted in a rich variety of data;

- The design workbook consisting of many quick concepts
- A list of quotes based on the written down experiences of the participants
- A list of values associated with the experiences.

The data were combined, where each design concept was expanded into a design space based on my own interpretation. For each design concept consisting of the collage, value and short description, three values and a number of quotes were added to increase the context. All combined, a new description was added (figure 16). The design spaces were clustered in order to find overlapping themes.

3.2.5 FINDINGS

After multiple iterations, the design spaces were categorized into four themes: patience, situational-awareness (awareness of your immediate surroundings), self-awareness and relating to social environment. The themes were deducted from the data. These themes were used as input for the physical product design phase, where they functioned as values that the designed mediator could impose on the user. These values were later merged into the main value of *situatedness*, as a concrete form of awe. Could the mediator improve one's *situatedness*, therefore help the user obtain the quality of caring more for their surroundings?

Figure 8. Frontpage of the booklet used in the first co-design.

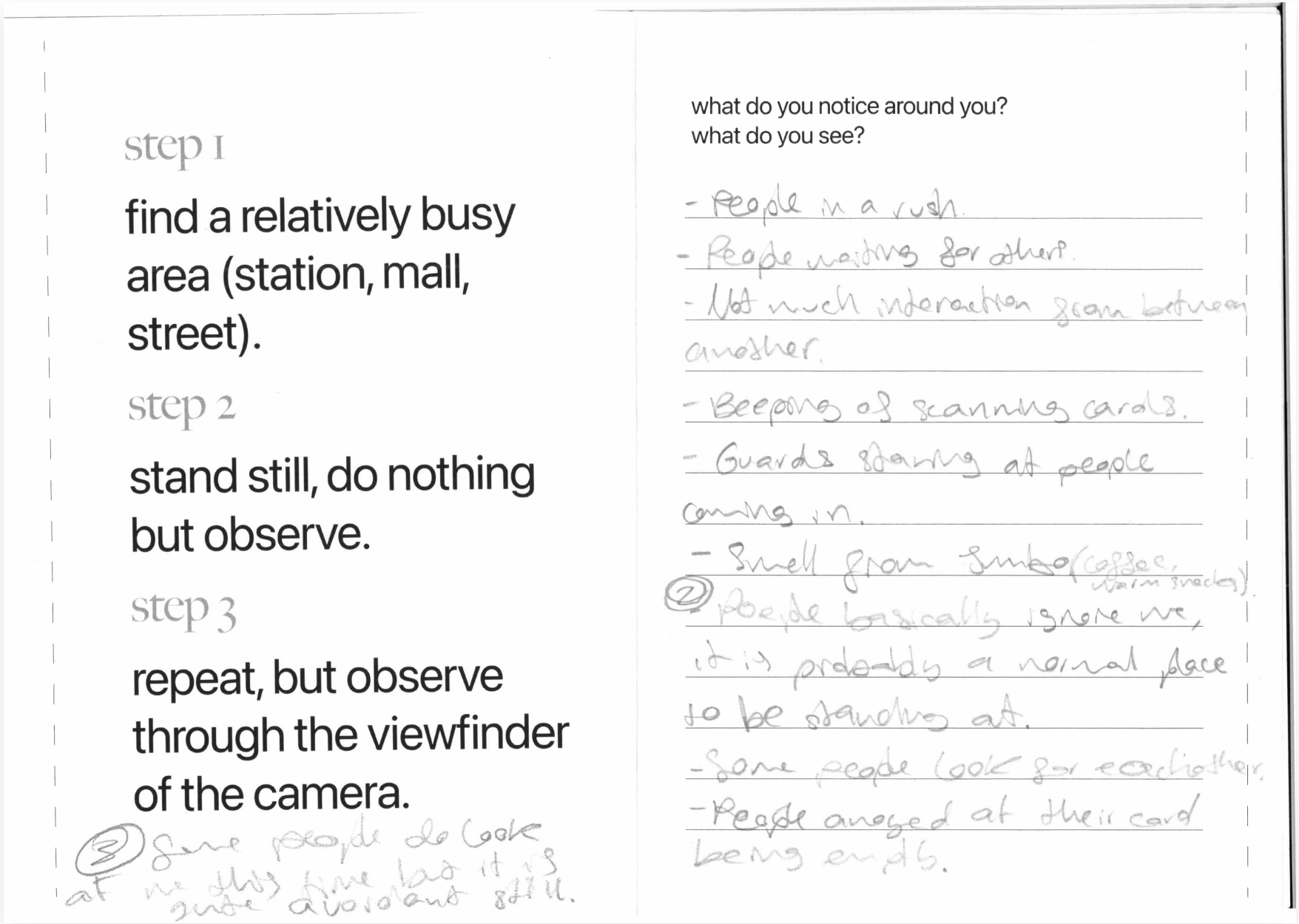


Figure 9. Pages from the booklet used in the first co-design.

write down some introspective observations.
what do you feel?

- At first very uncomfortable bc not having a purpose to be there.
- My body feels stiff.
- Maybe it is warm or maybe I am nervous
- After 30 seconds (ish) in I realize it is a ♫ I was waiting for someone that makes me calm.
- I do not normally do this without music on, it feels uncomfortable.

what (human) values are related to or found in your experience?

e.g transparency, confidence, framing

- Insecurity.
- Self-awareness.
- Uncomfortability.
- Impatience.
- Lack of purpose.

Figure 10. Pages from the booklet used in the first co-design.

Figure 11. Results from the co-design: purposelessness.

Figure 12. Results from the co-design: throwing knife camera.

Figure 13. Results from the co-design: awareness, transparency

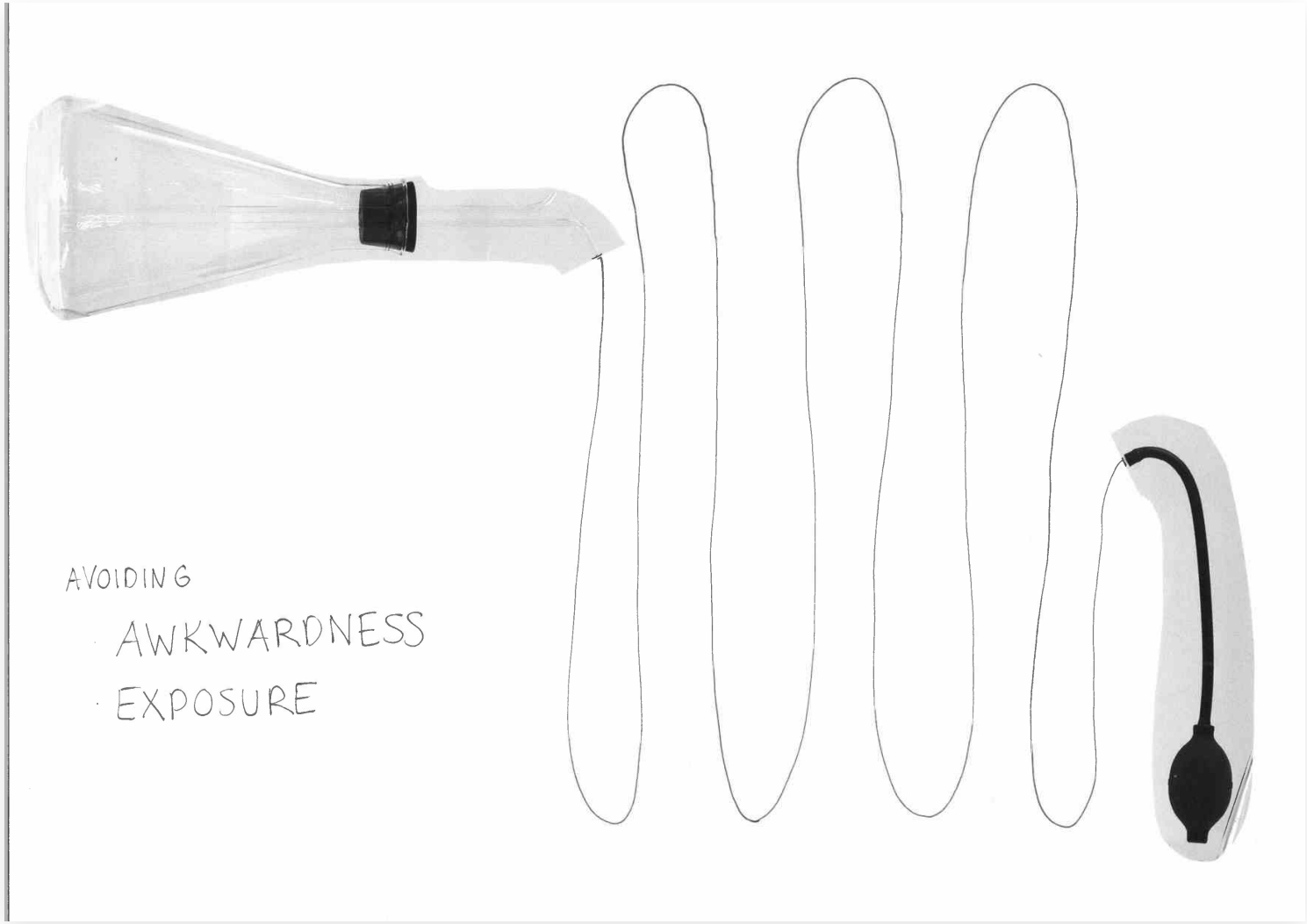


Figure 14. Results from the co-design: avoiding awkwardness/ exposure.

Figure 15. Results from the co-design: movability, selectivity, intrusiveness

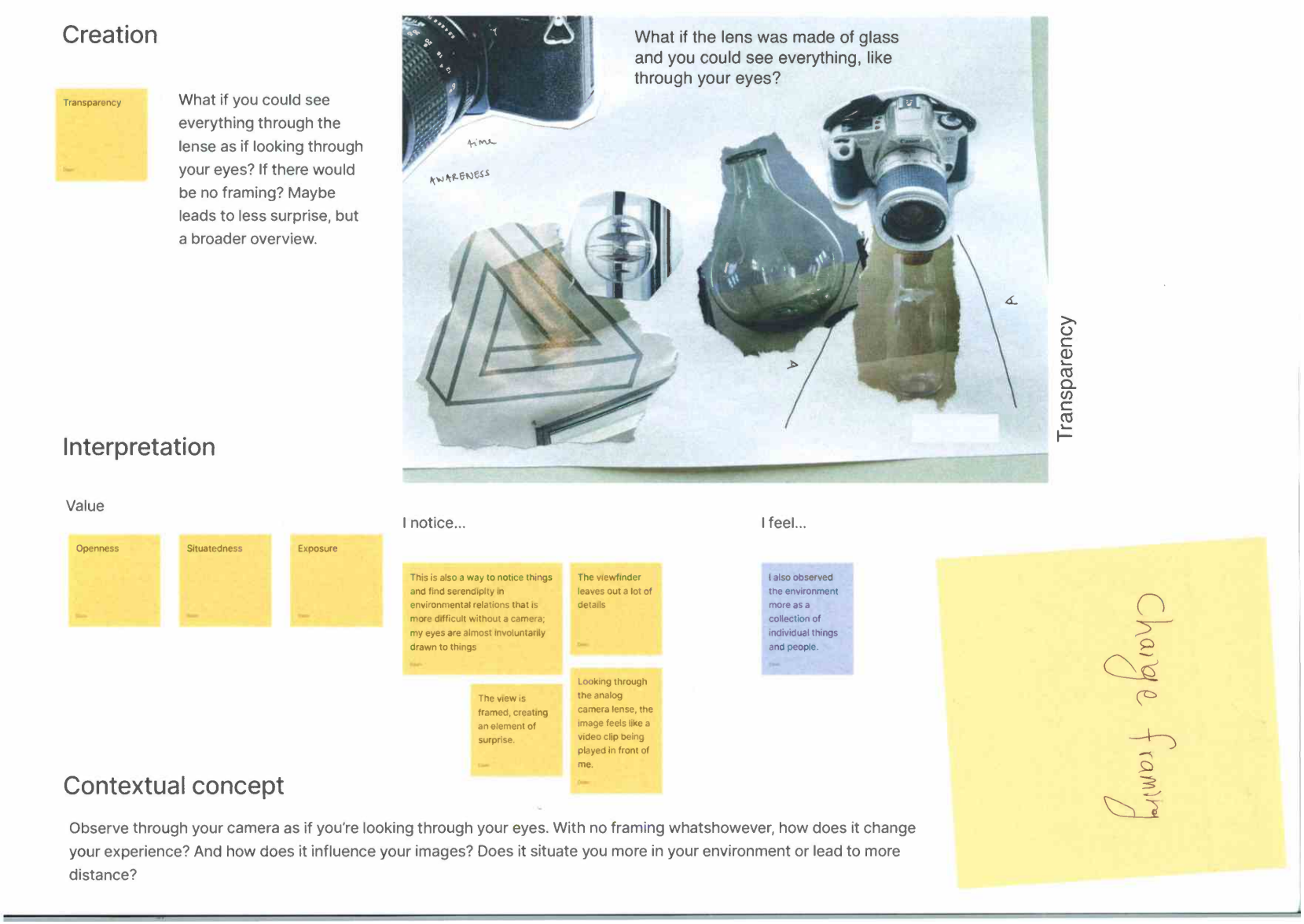


Figure 16. One example of the added context to the design space from researchers' own interpretation, forming the 'contextual concept'

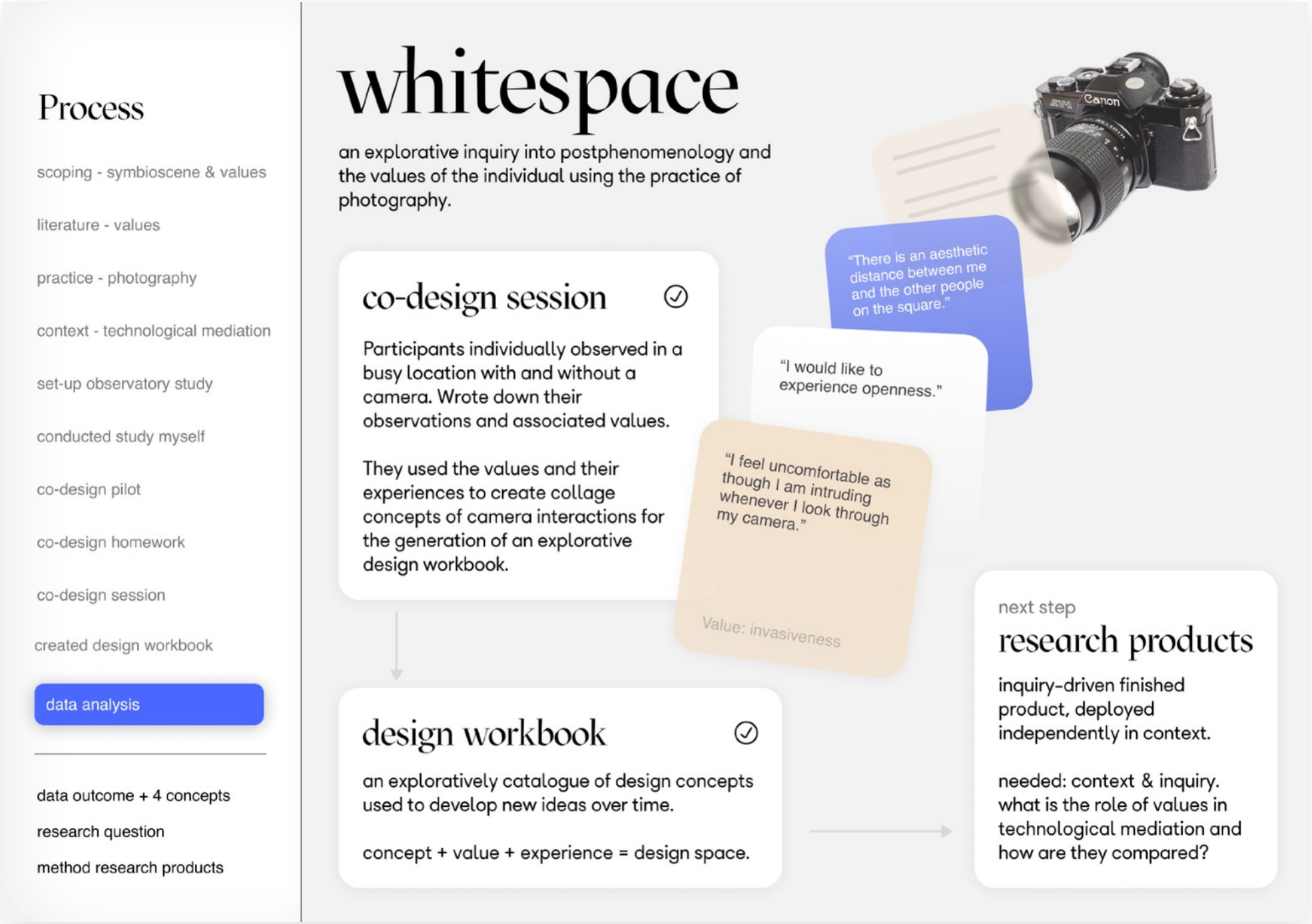


Figure 17. The midterm demoday poster.

3.2.5 CREATING THE PHYSICAL MEDIATOR

In a three week design sprint with multiple iterations, brainstorms, acting out, sketching and prototyping led to the exploration and creation of the physical product. The initial goal of this brief was to create a self-designed, handheld device capable of capturing photos, where the interaction would improve the user's situatedness. Figure 18 to 25 visualize this process.

The concept of a handheld environment scanner was generated, where you would pay close attention to your surroundings while scanning it, and afterwards tell the mediator what you experienced. Validating and iterating led to the scanner becoming a regular lens for taking photos of your surroundings, where the mediator forced the user to stand still and pay close attention. In an attempt to act out the scanning interaction, the idea arose to have a shutterspeed of one minute in order to take the photo.

A first list of requirements was set up based on the value of situatedness. After validating this concept, it was concluded that a one minute shutterspeed would generate blurry images. The concept was developed into having a one minute shutter that would have to be held and will take a random photo in the timeframe.

The decision was made to create a new camera instead of adding a mechanism to an existing one, for three reasons:

1. The sake of being able to tweak the code would allow for quick re-iterating of the design

2. Using a normal camera would result in old connotations and habits, possibly getting in the way of the experience that would be imposed.

3. Creating the shutter mechanism seemed harder than making a new camera.

The camera would, by this interaction, increase the situatedness of people in physical space, preferably in areas where nature is present. A booklet would then be used to question a person's experience and to determine whether the person is more aware of their surroundings, as well as feeling present.

After 3D printing the first iteration of the camera, I noticed that the design direction missed some of the richness of the scoping of the project and wasn't utilizing values enough. If participants would design their own camera, it would increase the open-endedness and provide much richer results, possibly forming another design workbook. They could use their own designed cameras for researching the influence of their own mediator on their view on reality.

The results so far were processed into the posters for presenting the project and gathering feedback during final demoday (figure 30 and 31).

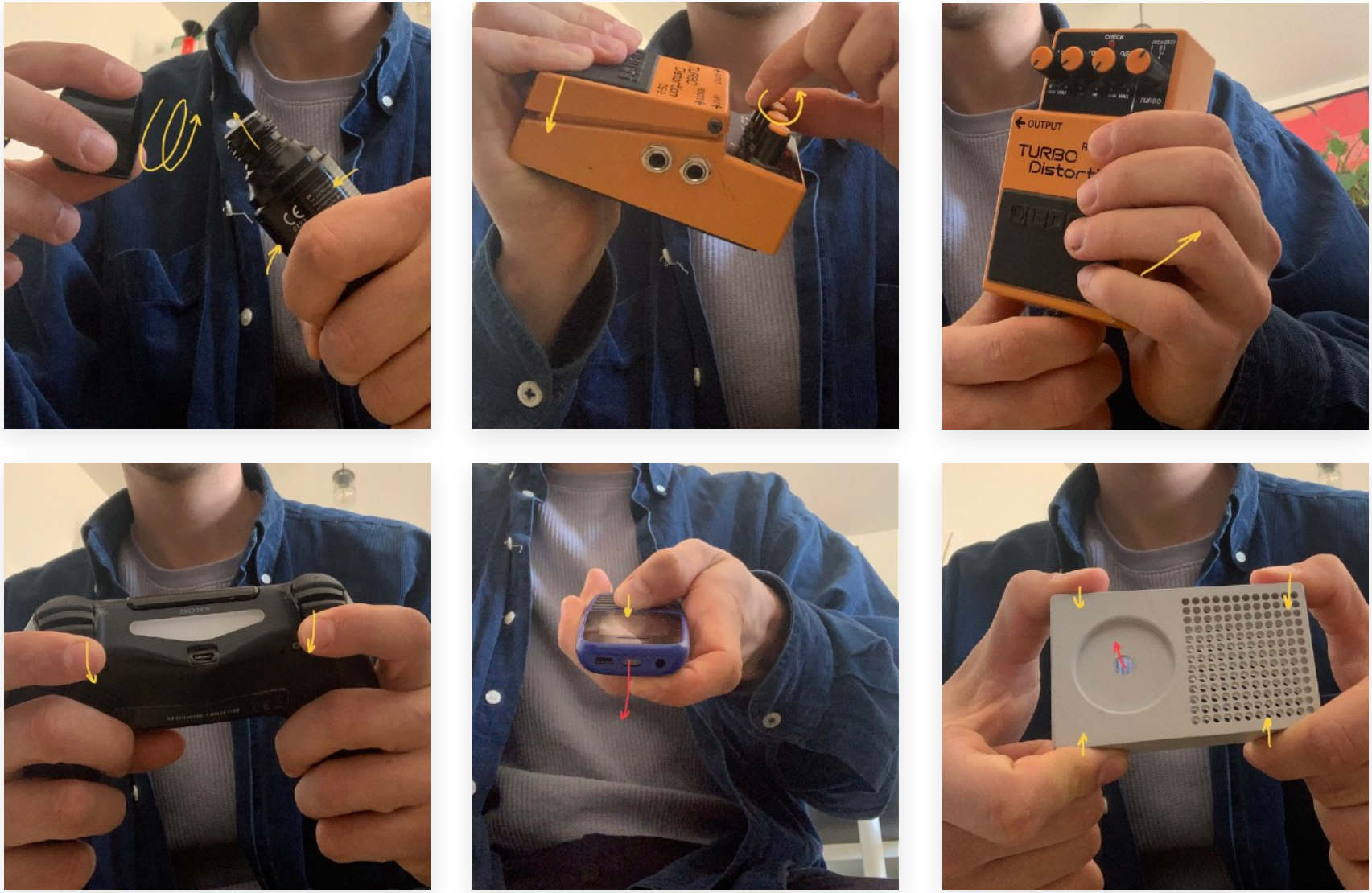


Figure 18. explorations of structural variants (interaction)

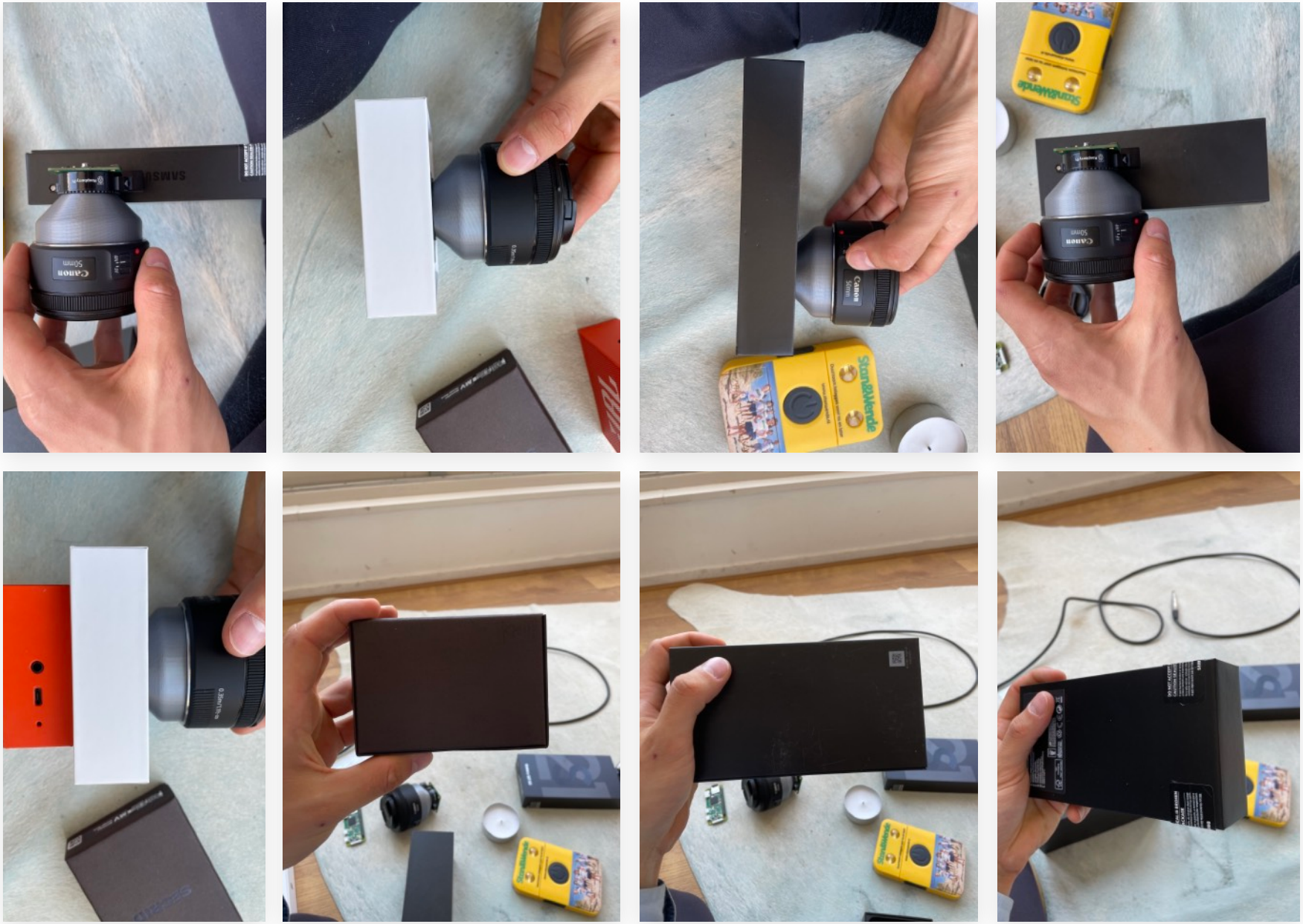


Figure 19. explorations of structural variants

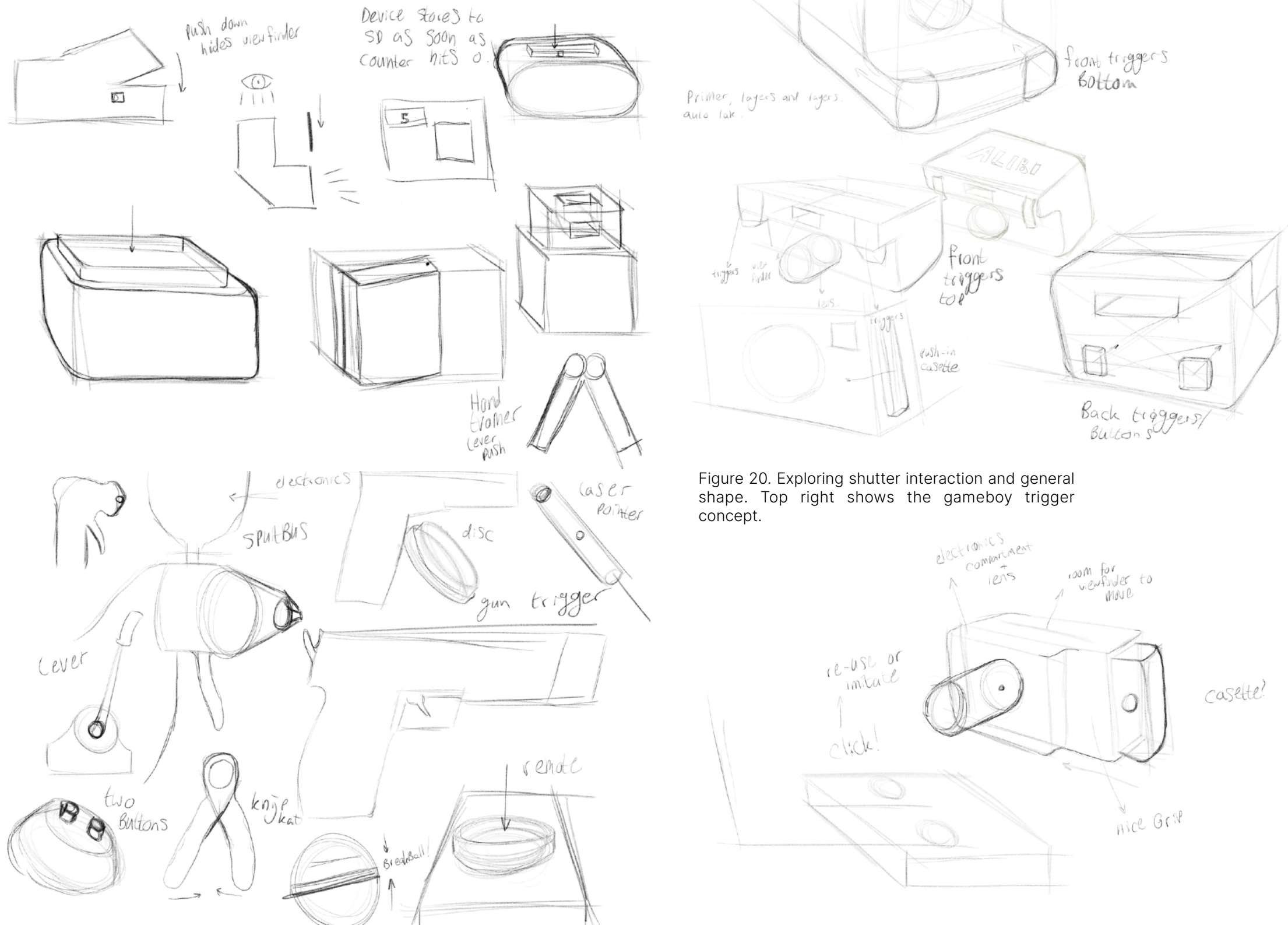


Figure 20. Exploring shutter interaction and general shape. Top right shows the gameboy trigger concept.

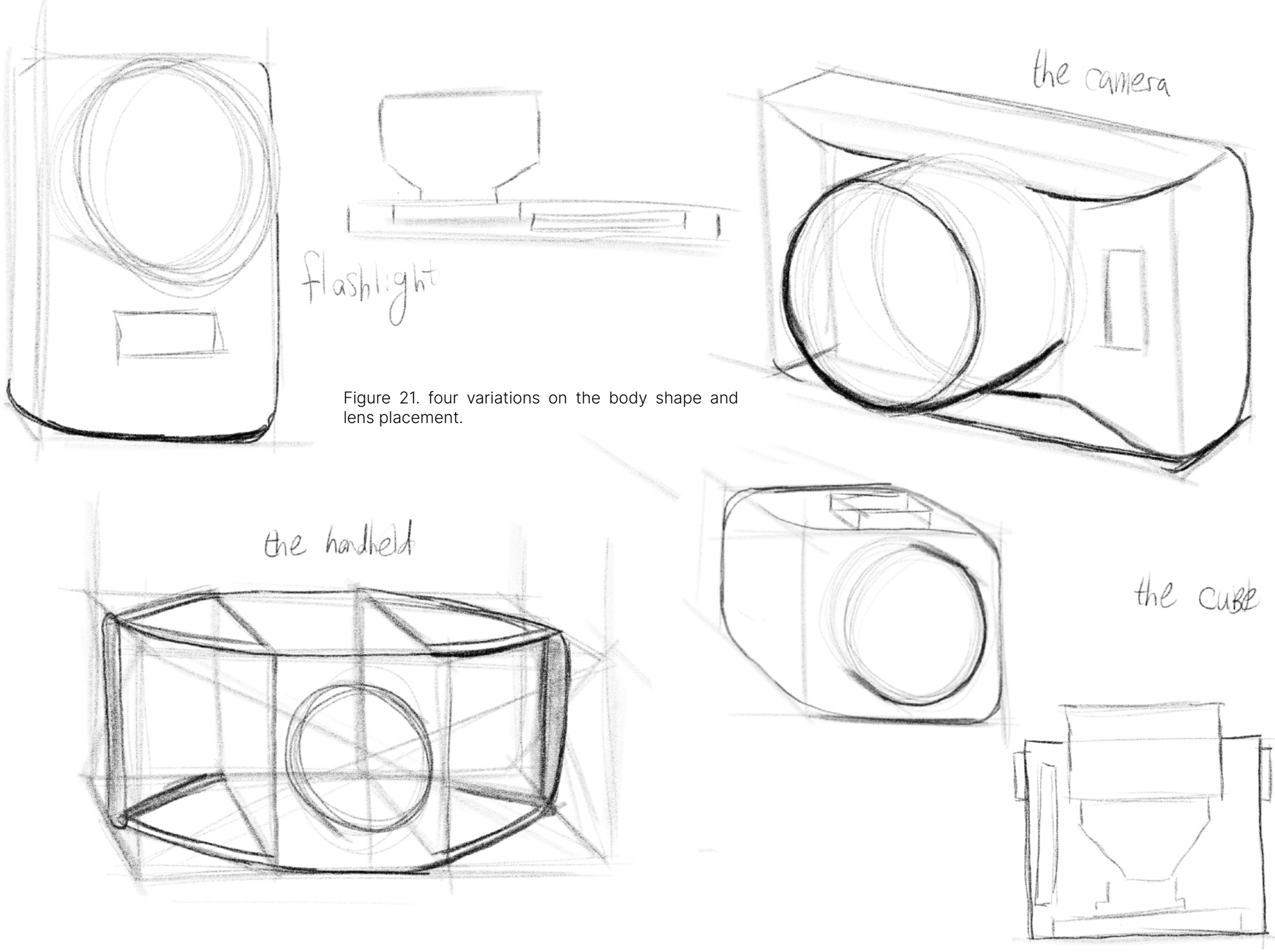


Figure 21. four variations on the body shape and lens placement.

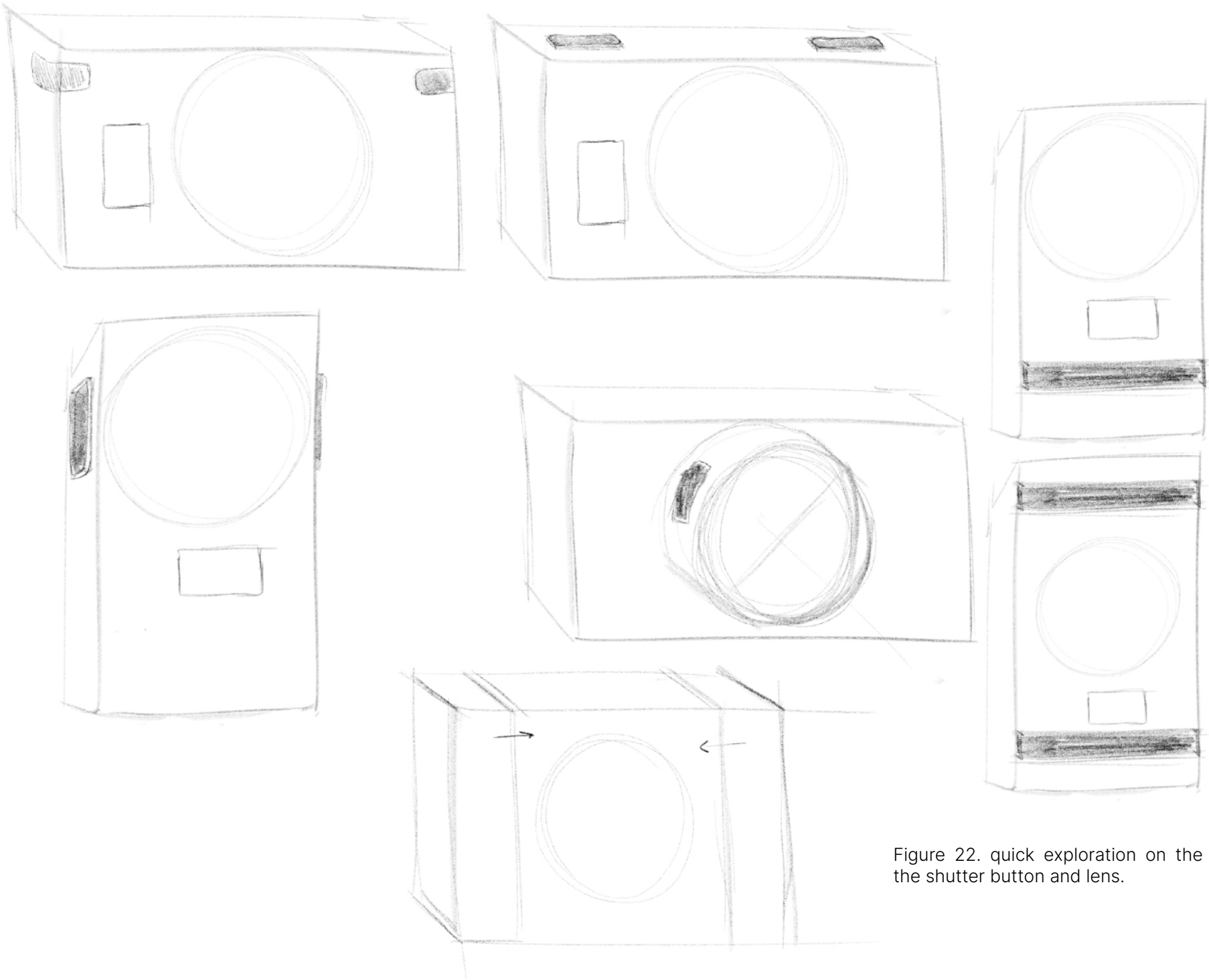


Figure 22. quick exploration on the placement of the shutter button and lens.

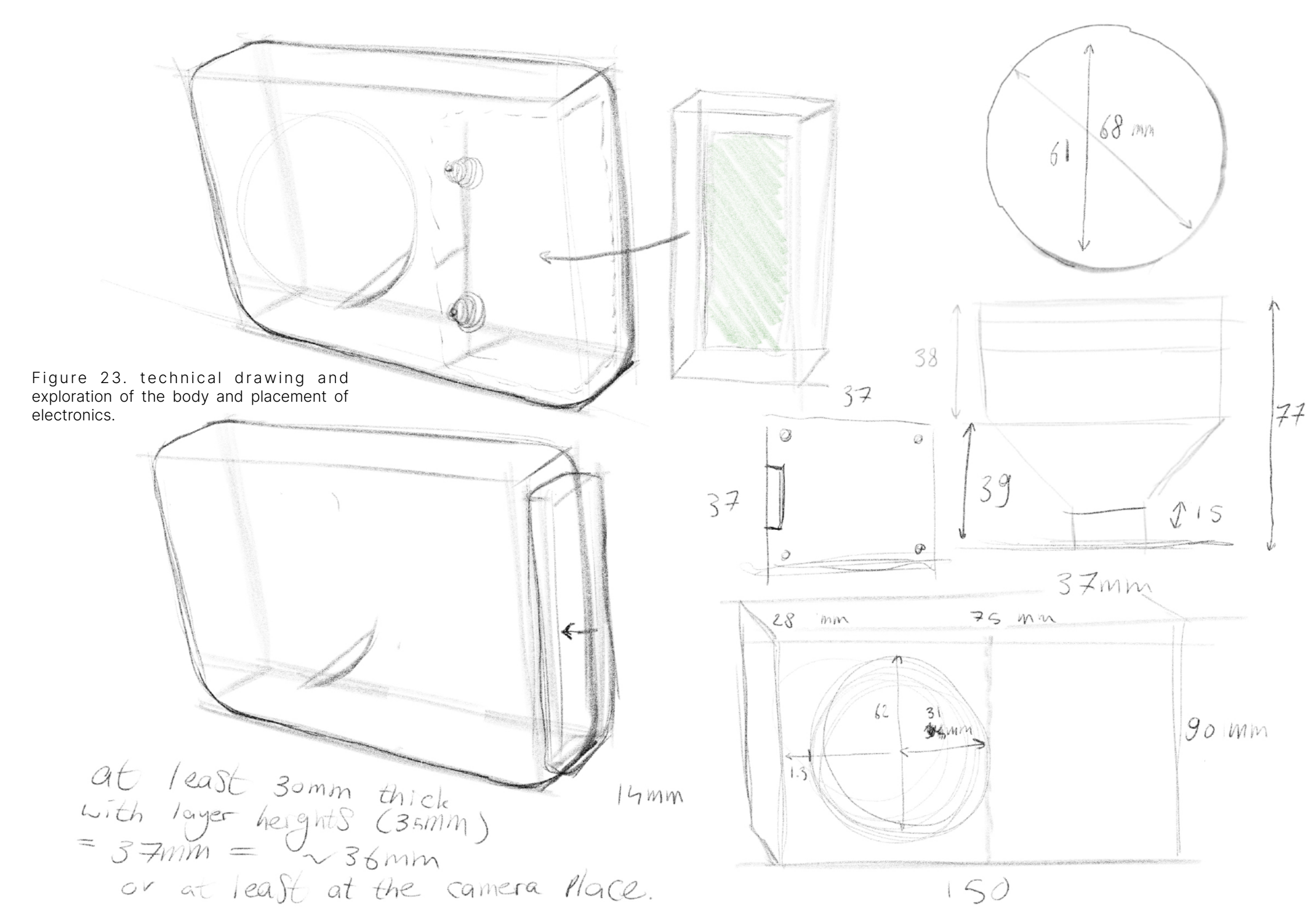


Figure 23. technical drawing and exploration of the body and placement of electronics.

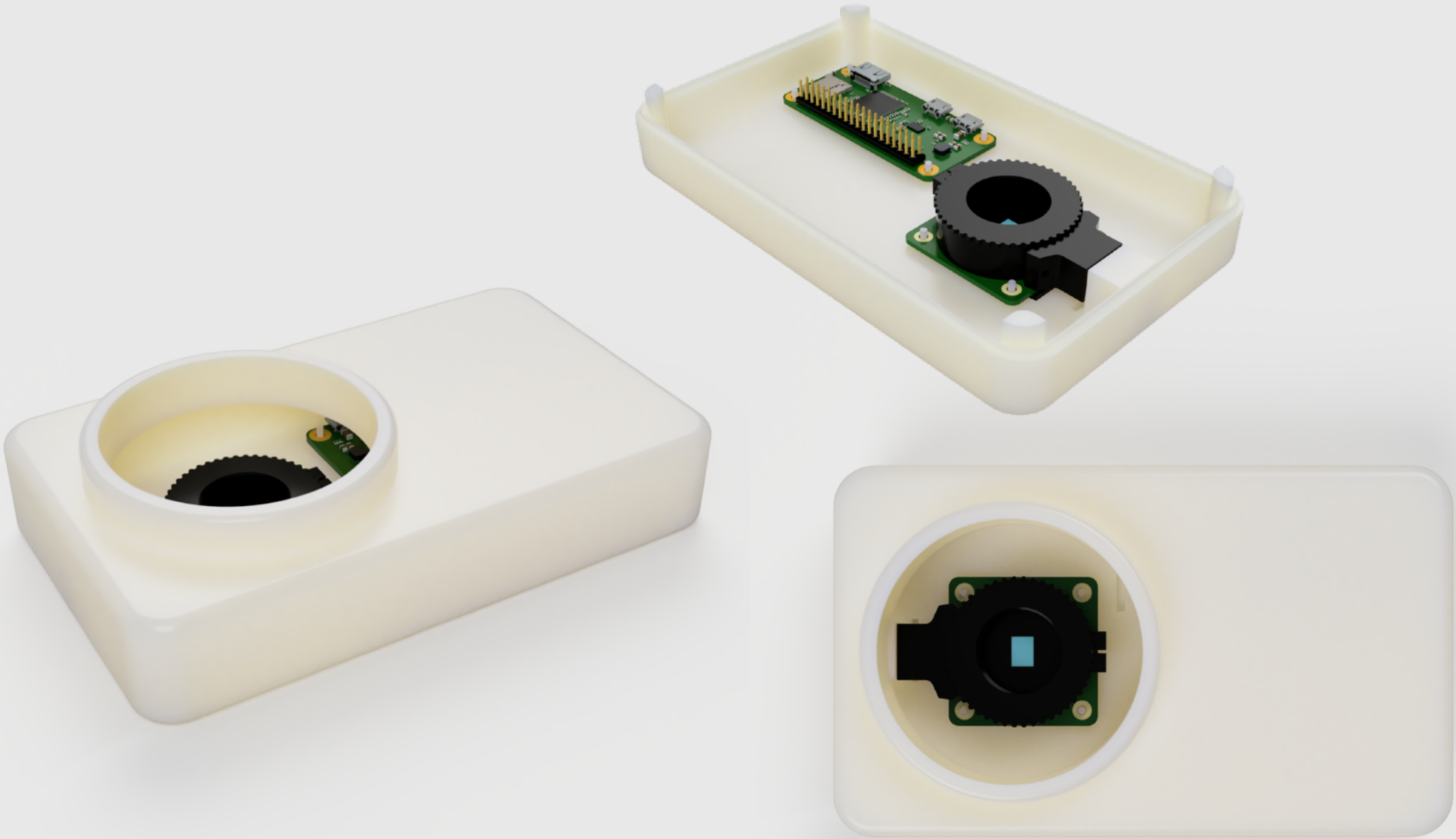


Figure 24. Renders of the CAD model of the mediator.

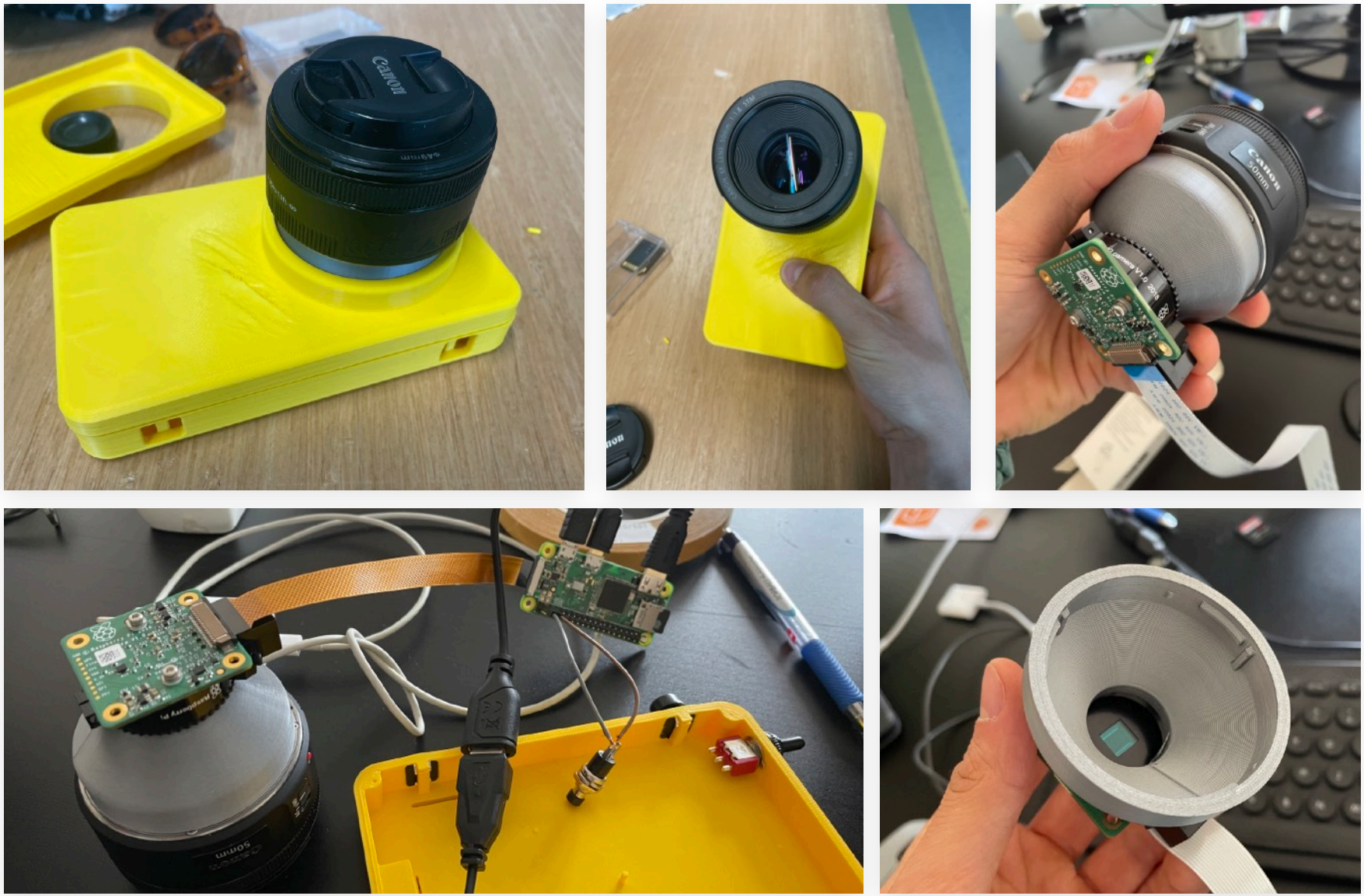


Figure 25. The 3D print of the mediator, the electronics, and the lens mount (bottom right).

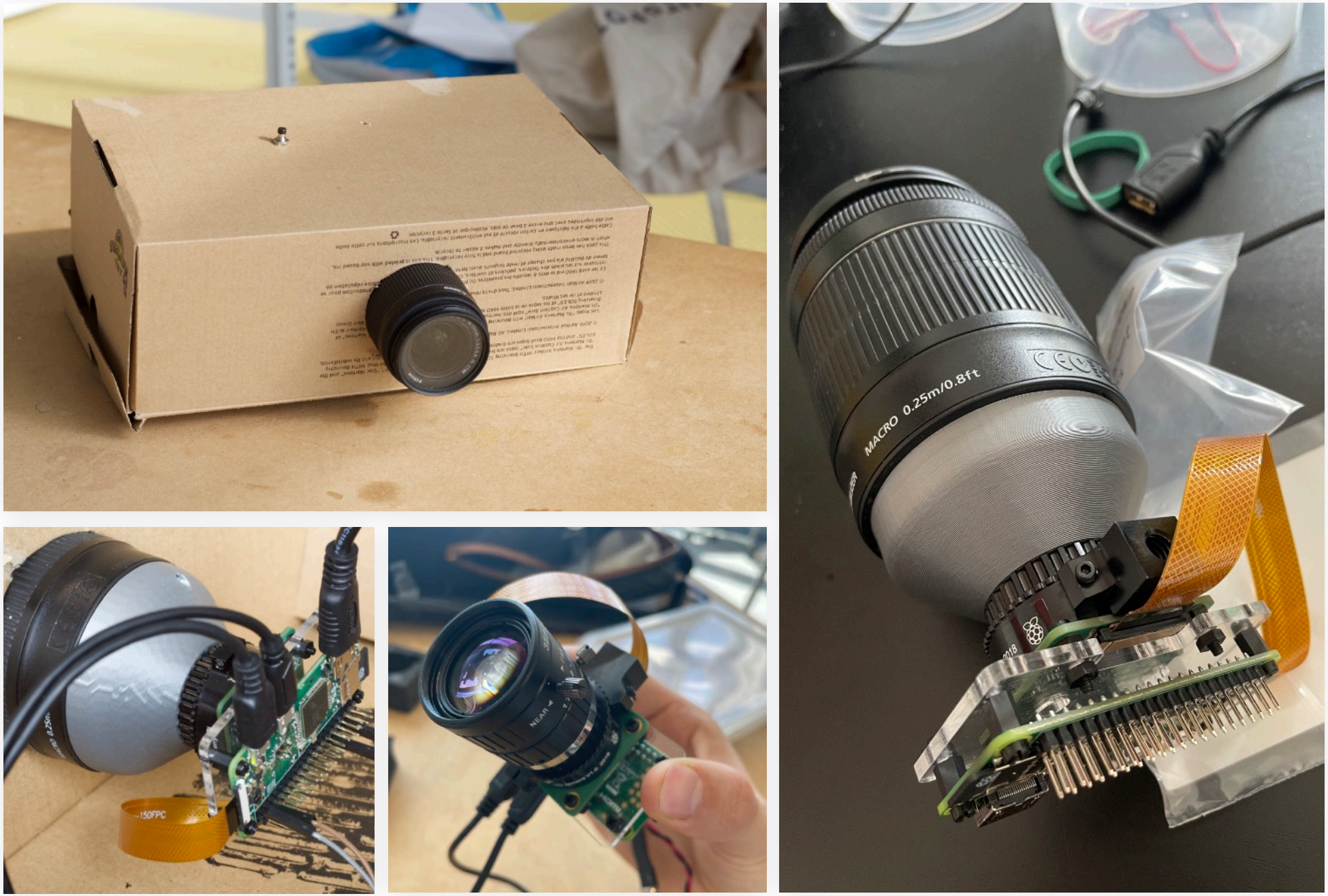


Figure 26. Final design: the electronics forming the probe kit, placed in a box as an example of a self ‘designed’ mediator.

4. Method

The explorative, qualitative research with means of understanding how an individual perceives reality when mediated by technology, was guided by the question: *"what is the influence of a self-designed form of the mediator on one's actions and perceptions?"*.

The probekit was shared with a total of nine participants, who would, instructed by a booklet, design their own camera, take photos and observe and reflect. Afterwards, participants were interviewed on their experience.

4.1 CAMERA MODULE

The probekit featured a programmed camera module (figure 26), built around a Raspberry Pi Zero mini computer, with connected HQ camera sensor (https://www.raspberrypi.com/products/raspberry-pi-high-quality-camera/) and Raspberry Pi 35mm 12mp lens. Soldered onto the Raspberry Pi were a clickable shutter button and feedback LED. All was held together by a transparent casing, making it into a compact and relatively invulnerable electronics probe (figure 26). The Raspberry Pi would run a Python script (appendix 5) which instructed the camera module to take a random photo in a timeframe of 40 seconds, while the shutter button would be pressed. During this timeframe, the LED would be on, starting to blink after the 40 seconds were done.

Participants would, because of the 40 seconds random shutter and lack of a viewfinder, not know what the camera had captured.

4.2 BOOKLET

The provided booklet (figure 27 and figure 28) contained detailed instructions on how to use the camera module and what steps to take in designing the camera casing. Participants would get a maximum of 20 minutes for the making part, using materials they could find.

After the making, the booklet instructed participants to go outside and take six photos, writing down a title and what they *thought* their camera had captured, after each photo. The combination of the 40 seconds shutter, invisible photo capture and having to write down a detailed description was intentionally designed in order to stimulate participants to stand still and carefully observe their surroundings. After six photos, the booklet featured a page on writing down observations, starting with the question on what was seen, followed by what was felt (introspective observations) and ended with associated values (with situatedness as the provided example).

4.3 INTERVIEW

The Material Aesthetics (van Dongen, 2019) (figure 29) has been used in order to interview the participants after the photo taking with the mediator, in order to gain insights into their experience on a more abstract level, specifically to understand how their action/engagement and perception/interpretation were influenced by the material aesthetics of the mediator. In the interview, five questions were asked which each corresponded to an element of the framework, starting with the elaboration on the material aesthetics of their camera as well as the process of making it.

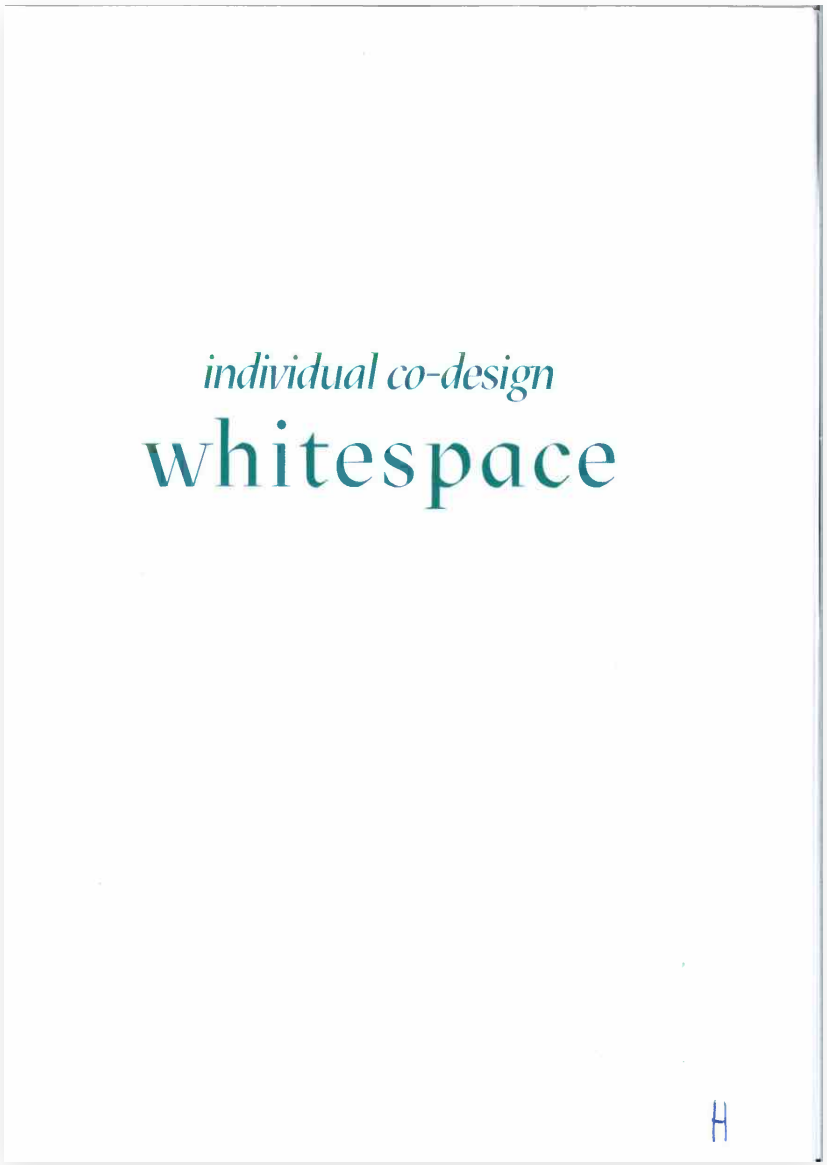


Figure 27. The booklet used in the final co-design

what did you notice around you?

A lot. On particular walks where I'm not (over)thinking about something, I'm naturally very observant of my surroundings. This was strengthened by this exercise.
I noticed how no one looks at you weird when you're pointing an egg carton camera to something for 1 minute straight.
The things I chose to capture were either stagnant or and inanimate.
I mentally made the decision if something was noteworthy enough to capture.
1 minute is long

13

write down some introspective observations: what did you feel?

I felt more outside of my head
I felt anxious when standing somewhere for 1 minute with the camera
Describing what had grabbed my attention turned me into a poet. It also caused that I wrote down the stories I had made up or associated with what I had observed.

13

Figure 28. The booklet used in the final co-design

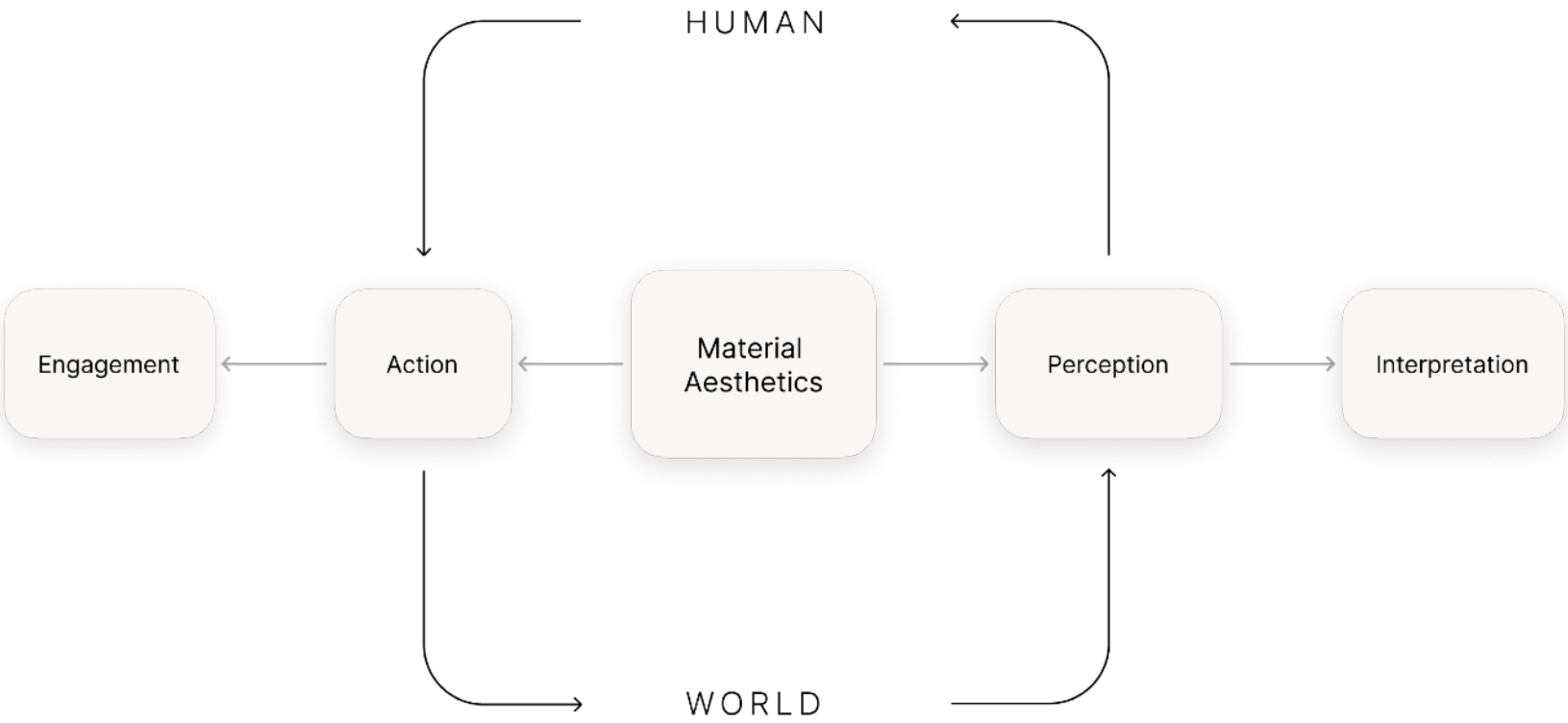


Figure 29. The Material Aesthetics framework

Van Dongen, 2019

Figure 30. The final demoday poster.

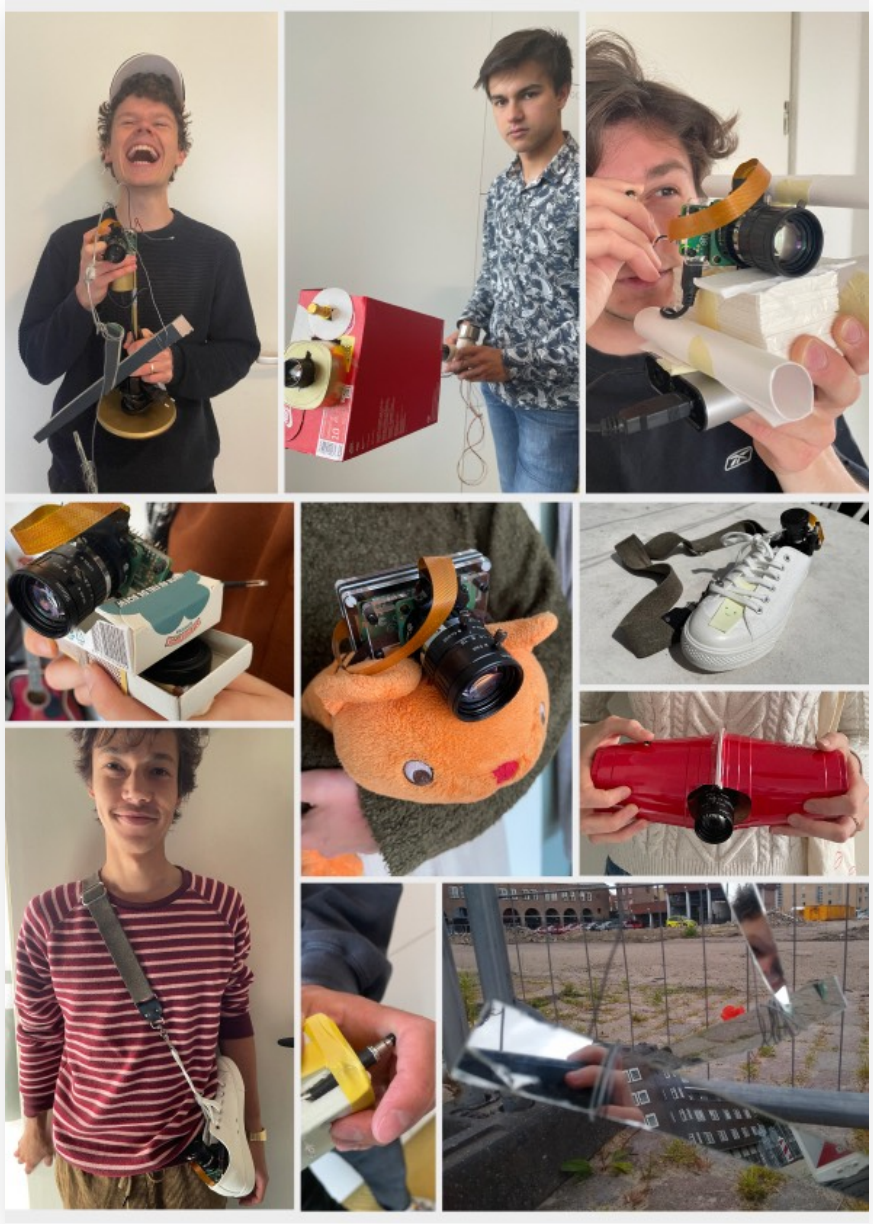


Figure 31. Results from the final co-design.

5. Findings

Written down data from the booklet and transcriptions from the interviews were combined and analyzed using an iterative thematic analysis, from which 5 general themes emerged, with one deductive theme (Awe), and four inductive. The themes are further elaborated in the sections below.

5.1 Mediating awe

Was the mediator effective in allowing participants to rediscover some form of awe?

Keywords for clustering and defining this theme are: mindful, attention, awareness, situatedness, awe, beauty, present.

Without it being a direct question in the booklet and interview, different participants stated that the mediation or the exercise allowed them to feel more 'connected' to their environment, to be made more mindful, to discover beauty around them and that their senses were activated.

"I felt more connected to my surroundings" (P2), "Influenced my situational awareness..." (P9), which could be related to standing still: "I think I did feel very present in my context, because I had to stay still for 40 seconds" (P2). One participant related the exercise to a mindful experience: "camera does make you more mindful" (P1), "The camera/exercise made me more mindful in the process of going for a walk, of my surroundings." (P1) although this experience was bound to the duration of the exercise: "I was less mindful compared to when using the camera, less engaged in the walk. (P1)" and "went back past something I saw along the way, was like hey, I'm back, noticed that I wasn't paying attention to my walking anymore." (P1). Besides mindfulness, the mediation allowed some users to find beauty in their surroundings, in nature, or in the details of both: "I guess the camera made me realise the world is a lot nicer than I thought, on a micro-scale. [...] even within myself, there's beauty all around but on different scales and it made me appreciate the small scale beauty more." (P3), "I noticed how the light fell through the trees and how the sky looked beautiful... the trees and the soft curve in this street give me a cozy feeling" (P4). Reflection on personal definition of awe occurred: "Awe for me means that you find a certain beauty in the smallest and most arbitrary things." (P7).

5.2 Reciprocity of actions and experience in mediation

The theme has been ‘obtained’ through the Material Aesthetics (van Dongen, 2019). Described is a reciprocity between the influence of the mediator on the participants’ actions/engagement and perception/interpretation.

In the interview, participants were questioned about the influence of the mediator on the change in actions, influencing their engagement, and the change in perception, influencing their interpretation, separately. This theme focuses on participants that combined the two ‘sides’, mentioning how there was a (sometimes instantaneous) mutual influence between both sides.

Multiple participants state that the Material Aesthetics, in this case the technological limitations of the camera, influenced their perception and interpretation of their surroundings. This can be attributed to either the random shutter of 40 seconds: “Forced to follow it for 40 seconds [the bird], made me perceive it differently [...] made me more aware of its flight behavior.” (P2), the self-made ‘lenses’: “When I used the detailed lens to find a crack in the roof, I would think: are my neighbors suffering from water damage?” (P2), or the vulnerability of the camera: “as I was more careful with the camera, and took less risks of where I went; I became more aware of my everyday surroundings” (P3).

One participant designed ‘floating’ mirrors (see section 5.2) which would move and rotate with every motion, resulting in change of perception: “to stabilize the bouncing and rotating, I put it down on the floor, got a completely different angle from the buildings.”, “pressing the button of the camera and the mirrors turned. Different view on ephemerality.” (P5) combined with self-awareness: “what’s interesting there is that you see yourself a certain way in the viewfinder, you move your camera to get a better view.”, “At first I was very aware of myself, I kept floating past in the mirror, so I tried to keep the camera still but instead moved my head.” “My self awareness was very tied to my surroundings. (P5)”. This participant also mentioned examples of how their physical relation to their environment influenced engagement and perception: “when I actually stood in the middle I saw different parts of the environment than what I expected. I engaged in a completely different way with the square.”, “for the last picture, I was in the middle of the bikes, squatting, I became aware that where the previous things were special, it felt very space-less.” (P5)

A place very well-known can still lead to discovering new details, as stated by a participant who conducted the exercise in their own room: “Because this time I was looking at [my room] as photos, I looked at different elements and its compositions in a different way.” – “What does this say about me, that these elements are in my room in this way?” “There is a life playing between those elements (P7). Standing still can in turn also lead to self-reflection: “It was hard to completely focus on the assignment because just when taking a rest you feel everything that demands your attention” – “Because I took the time to take it slow, sit down, I noticed that I’m very tired.” (P7).

5.3 The interaction between participant and the mediator

This theme features global observations and reflections on the interaction with the camera itself.

During the mediation, a common theme that participants reflected on was that they could not see what the camera was seeing, combined with the prolonged holding of the shutter, led to them not knowing what they would capture.

“How can I switch my viewpoint to kind of see what the camera is seeing?” – “However I wonder what my camera will think of it as I can’t check its view.”, “Didn’t understand how the camera would focus, which when I took a picture of cars I was wondering what car it would be focused on, what my camera would choose, in a way.” (P2).

For some, this phenomena led to the questioning of photography in general and the noticing of resemblance with film photography.

“Photography is about capturing quick things that might be gone in a moment. Might even miss what you wanted to take a picture of.” (P6). “You don’t know what you’re gonna capture, but you do know what you’re gonna capture” – “kinda makes you wonder why you would make a picture of it. Maybe the act of taking the picture helps to anchor it in your mind.”, “you need to focus on something but the longer period creates ambiguity within this focus” (P6). “Bit similar to the analog pictures, take photos, after development you start to re-experience all those moments.” (P2).

One participant saw the lack of a viewfinder or screen as an opportunity for their design, and created three different lenses which were placed on the camera (see section 5.2). “Lenses could only speculate what the camera could see.” – “Similar to looking without the lenses. Saw a lot of use with the detail lens.”, “The three lenses I added to the camera made me more aware of the possible perspective my camera may have on things” (P2).

5.4 The mediator and social relations

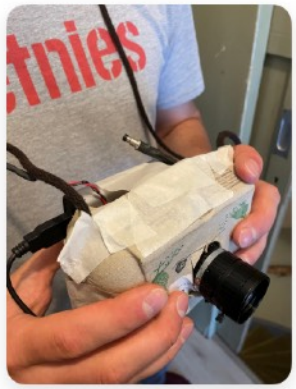
One could imagine how standing still for 40 seconds with an object in hand might feel weird or unusual, when others are present. Where for some their designed camera functioned as an alibi for standing still, other participants stated to have experienced feelings of social awkwardness, self-consciousness or other forms of unpleasantness during the capturing of a photo: “I didn’t want people to see that I was taking pictures of them.” (P4), “I found it a little awkward to hold a shoe against my face and hold it for a minute. I looked around as if I was doing something else” (P4), “Really awkward when pointed at a person, when taking a portrait for 40 seconds”, “people around you might think it’s weird” (P6). “[The camera was] bright red, I was aware that people might be wondering what I was holding, was pretty self-aware”. “But it also felt a bit awkward at times. Became more than just the interaction between me and the camera; passerbys (P8).

The social aspect is said to have influenced the decision making process in the designing of the camera: “one of my ideas was to use a t-shirt. But that would feel weird.” (P8). A participant mentioned other people having influenced their actions during the mediation: “In crowded areas I would prefer to put it down.”, “I tried to stay away from these routes, people were weirded out by the thing. (P9). Sometimes participants did not let the opinion of others bother them during the mediation. “Even if I felt absurd, I took solace in the idea that people would be confused at seeing a guy standing still for a minute with a shoe on his face.” “Comfort to feel okay to do something weird. in public.” (P4), “I was more connected to what he did, just doing it, not caring about it. Sometimes you had the feeling people were looking, but sometimes you didn’t care.” (P9)

5.2 Design workbook

Workbook

Results from the co-design and the interview are structured in a design workbook, structured according to the Material Aesthetics (figure 29) framework. The figures contain images of the camera and participant, as well as some elaboration on the process of the creation of their camera. Underneath, the influence of their mediator on the actions, engagement, perception and interpretation is explained. The results are shown below.



PARTICIPANT 1: THE EGG CARTON CAMERA

"We're seeing a combination of coincidences and intentions in the creation. Things in my house; i found the egg cartion and with it came the intentions: holes for the wires. When I finished the housing I had created an actual camera. Next, I added a strap so I could hang it around my neck like a tourist."

Material Aesthetics

Engagement

The exercise: what I noticed with the writing is that I made stories, I wrote it down, an imaginative piece that was added to what I saw.

Action

when I was walking... I was outside of my head. I stood still for longer, to look at something. I looked at the light as it was distracting.

The result of the camera was that I stood still for longer.

Perception

I don't think I noticed things differently. Sometimes I was really in my head.

Because of the one minute, I chose shots that were stable or stagnant. Different ways of observing.

Interpretation

Because I had to think of a description, think of words instead of just the observation. Made me interpret things differently.

I see a Red Bull can lying down, and make a connection of how humans are littering.

PARTICIPANT 2: THREE LENSES

"I started by holding the camera and inspecting the components. Lens, buttons, powerbank. First thing I thought of is that normally you can see what the camera is seeing. How can I switch my viewpoint to kind of see what the camera is seeing?

Didn't want to completely see the same, first I connected the three lenses to the powerbank and held the camera itself close to the powerbank. This gave me some different ways to view my surroundings, and I made three different lenses to change what I would perceive."

Material Aesthetics

Engagement

Definitely improved my engagement.
Became more aware of your surroundings, appreciate way things are built, take the time to consider how it was made, what is going on, what you're looking at, made me way more engaged. Why is the bird flying this way? Where does it wanna go? What is it doing?

Action

just holding the camera already made me more aware of my surroundings: suddenly looking becomes a very active activity.

Made me explore my neighborhood again.

Perception

Changed mainly because of the lenses. Depending on what lens I would use, change what I would see and what I would notice. When I used the detailed lens to find a crack in the roof, I would think: are my neighbors suffering from water damage?

Interpretation

It did make me really question what was going on around me.

If you know, with the crack (in the roof), I started looking negatively at the roof, changing my perception of the roof.

PARTICIPANT 3: VULNERABLE CAMERA

"I designed my camera with two parts, as I thought the power bank was inconvenient. Wanted to not touch it when taking the pictures. I did some knotting to make a holder for the powerbank. I thought the camera was vulnerable, I wanted to not touch more than needed, so I made the little boat. I also needed to take off the camera lens so I used a matchbook for carrying the lens cap."

Material Aesthetics

Engagement

As I was more careful with the camera, and took less risks of where I went; I became more aware of my everyday surroundings. I took a lot of thought when standing still and evaluating whether I wanted to take a picture.

Action

I was more careful of where I went and what I did. The camera directly influenced the surroundings I took my pictures in, as I was not taking any risk.

Perception

Because I was so aware of my surroundings I found more beauty compared to normal.

Interpretation

I guess the camera made me realize the world is a lot nicer than I thought, on a micro-scale. It helped me get to the realization that nicer is way more subjective than I thought it was, even within myself, there's beauty all around but in different scales and it made me appreciate the small scale beauty more.

PARTICIPANT 4: IT'S A SHOE

"It's a shoe. it's a very clean shoe and it hasn't been used yet before. There is a smiley on it to signify happiness. The camera strap on it so you can hold it by the strap. It has a camera inside.

I started looking around the room. What can I put the camera in? Ukulele, didn't fit. Don't want to use tape. Do something that doesn't have to be stuck together. That can be done mechanically. I looked at the shoe and thought yeah! let's do it."

Material Aesthetics

Engagement

I found it a little awkward to hold a shoe against my face and hold it for a minute. I looked around as if I was doing something else.

Action

It was nice that it had a strap, I could just hold it more easy. It also allowed me to hold the camera in an interesting way. I had to turn the shoe sort of sideways to make it point forward.

One time I held the shoe against my face cause I had to point it over a fence.

Perception

Because I was looking around more, I sometimes looked at things that I would not normally focus on. WHen taking a photo of advertisements, I started to look around the scene, saw things that I usually wouldn't see.

Interpretation

Something in the scene grabs your attention, by looking at the things around it I saw the whole scene. Made me more prone to realize the greater picture instead of just one part of it.

PARTICIPANT 5: FLOATING MIRRORS

"The camera is part of a camera stand. It basically has a rod, with three pieces of mirror hanging from it by steel wire. Steel wire can be easily re-adjusted and two pieces are horizontal, in different angles, one piece is upright. Part of the material thing is that the weight was very important. Certain weight every time I moved, it (mirrors) started turning. Different weights started turning in different ways. They bounced a little bit. There was the idea to hang something in front of the camera to show parts of the environment that were not directly in the lens."

Material Aesthetics

Engagement

The bodily position in surroundings, what I thought beforehand was that I could be quite selective. If I would be in the middle of the square, different viewpoints, now I was standing in the middle, and it kind of invited me to look in a different way. I engaged in a completely different way with the square.

Action

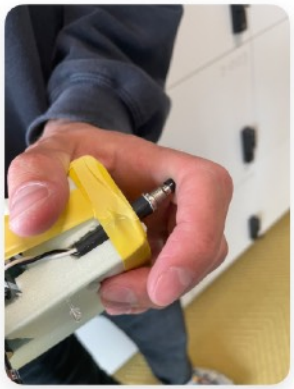
At first there was a lot of physical negotiation. Normally with a camera it's very much me, where I position myself is very much based on what I want to frame. Top-down. This was very bottom-up. Didn't have one part in my choice of what the camera was aimed at, there was the bouncing, the weather, the moving parts, I had less agency.

Perception

At some point, the colors, I became very aware of the colors, the color palette, everything was grey. I was focusing on something green, and everything around me was grey. Weather, cars in the background, buildings, everything surrounding me was grey. Changed my perception of the whole square.

Interpretation

The interpretation especially changed a lot for each picture. At first I was very aware of myself, I kept floating past in the mirror, so I tried to keep the camera still but instead moved my head.



PARTICIPANT 6: FOAM

"I mean its just a piece of foam with grip by squeezing of my hands.

Had the tools to embed the sensor and the rest in it. Still put the button in at the end. Rather worked from ease of building instead of aesthetically thinking out. Found the foam. Squeezed it for finger imprint, don't need to carve anything. Yeah. Just used what I could find. Added some yellow tape for fixation. Only had yellow tape."

Material Aesthetics

Engagement

Kinda makes you wonder why you would make a picture of it. Maybe the act of taking the picture helps to anchor it in your mental. When you're telling it to someone you're like, oh wait, i'm taking a picture.

Action

you don't know what you're gonna captrue, but you do know what you're gonna capture. Really awkward when pointed at a person, when taking a portrait for 40 seconds.

Acting like you're shooting a video.

Perception

It forces you to look at the thing longer compared to... forced you to contemplate, why am I taking this picture? Is this actually necessary?

People around you might think it's weird. Minute can feel very long. Changing your perception of time, picture is a very temporary thing.

Interpretation

The part of not knowing is of course part of this camera, but the notion of what you shot is even vaguer.

If it's an object, the object remains the same, the environment might change. The things around it are probably what grabs your attention more at some point.

PARTICIPANT 8: RED CUPS

"I took two red cups. I opened my box of tinkering supplies and saw what would be easy, given that I only had 20 minutes. Went with something easy. Maybe I could make a case out of two plastic red cups. Fit over the lens. Just had to cut a circle for the lens to go through. Material allowed me to put in the shutter button and the LED. Taped it together. Noticed that it needed some support so I added some foam on the inside."

Material Aesthetics

Engagement

bright red, I was aware that people might be wondering what I was holding, was pretty self-aware. Didn't influence the way it was taking photos, but was influencing the places where I went to take photos.
I tried to experiment with taking pictures of something that would move or something that was static.

Action

I held it: horizontal. Two hands. I don't know if that was due to the shape, but I also held it like mid-body height, in front of my stomach, wasn't a viewfinder. Meditative position. Then I rested it and counted in my head to 60.

Perception

I was now focusing on the surroundings itself, no control over the actual photo. I was being more aware of my potential movement of my subject.

I noticed "oh, this street is quite nice" had walked there before.

Interpretation

I don't really know if my interpretation of a goat or ceramic changed, because of the camera.

PARTICIPANT 9: MULTI DEPLOYABLE

"I designed a camera that is multiple deployable. Multiple ways of handling. It's front-heavy. It has a really bright area, attracting the eye of people around me. Enables me to stand further away from where I want. It enables me to make a 90 degree angle shot. Pointing up.

I had a small concept, then I added the multi deployable, was first the shoe box. From there I added the aesthetics extra parts, in the end it was more based on engagement."

Material Aesthetics

Engagement

I was way more sitting down, going up, moving with my body, even with the camera telescope.

Influenced my situational awareness. Was more aware of sound because I had to hold it for a long time.

Action

I think the possibilities influenced how I looked at the world around me. I started with a shot where I wanted to be further away, or looking up at the sky. After a while it translated more into the objects around me. Like a normal camera. I was looking at weird things around me.

Perception

I think sound is one of the biggest for me. I often put earphones or music on. Now I was really aware that there is no silence. People, vehicles, nature, animals. One of the biggest, perception of humans; how they move around in space.

Interpretation

Maybe everything became more vibrant. Colors were more green. Quite intense, calm, relaxing. My interpretation of scale changed. Sometimes I zoomed really in, at a trash can, and sometimes I was looking at the sky.

6. Conclusion

As stated in the introduction, the goal of Whitespace is to find and make explicit a link between value-sensitive design and postphenomenology, in which it makes such abstract, philosophical subjects tangible and easy to understand. The exploratory, qualitative research led to many insights and new concepts being generated regarding human values and technological mediation. Finally, a conclusion is made on the results from the difference in open-endedness in data gathering methods.

6.1 COMBINING VALUE-SENSITIVE DESIGN AND POSTPHENOMENOLOGY: UNDERSTANDING SUBJECTIVITY

The outcome of this project is an expanded understanding of the model of technological mediation, when combined with value-sensitive design. Based on the thorough exploration of the definition and use of values through making and thinking, as well as having made tangible the theory of postphenomenology, I propose three points where value-sensitive design and postphenomenology meet.

When comparing value-sensitive design and postphenomenology, it was found that both are about subjectivity. They describe an individual, making sense of the world. An individual makes their own, personal selection of values, based on their culture, which defines what they find important and how they respond to the world. What an individual finds important therefore changes what they pay attention to, as well as the choices they make; it shapes their actions and behavior.

Values mediate our experience, the same way a technological mediator would do. The three points where values meet technological mediation are:

1. designing
2. appropriating
3. interpreting

Note that this is not a complete model, I hope to offer insights in how designers can understand postphenomenology through the lens of value-sensitive design.

6.1.1 DESIGNING

The project was driven by my own personal values, of which the most noticeable was awe. These values formed the drive for the project and defined the scoping. My value of awe resulted in the informed design decision of the mediator allowing participants to stand still and observe. Even though it was not an explicit question in the booklet, multiple participants mentioned having discovered some form of awe through the mediation. In business, values of the corporation influence the designing of the product. An example of companies with values that diverge from their peers are Nextcloud (www.nextcloud.com) and PolyPoly (www.polypoly.org). The

products these companies produce are known for their emphasis on the value of privacy and control of your own data.

6.1.2.1 APPROPRIATING - PERSONAL VALUES

Appropriation indicates the product being modified or used in some other way than what the designers' intention. This happens all around us. We can use a newspaper as a flyswatter, or a wine bottle for rolling dough. In the co-design, participants' own values informed the way they appropriated the mediator. In this specific study, the aspect of appropriation was magnified with the creation of a camera casing, in order to study its effects. What was found was that an individuals' values influence the choices that were made in appropriating the mediator. A camera with extra support was created by someone who valued care or carefulness. A concept giving purpose to standing still was created by someone who valued always being on the go, always filling their attention.

6.1.2.1 APPROPRIATING - SOCIAL VALUES

The aspect of appropriation can be split into personal values and collective values, also seen as social standards. Social values influence our actions in all kinds of ways, inhibiting our behavior or inviting us to act a certain way, which is considered 'normal'. This was the focus of the first co-design, where participants were asked to stand still in a busy location, with a mediator, to find out if the mediator justified their standing still. In the final study, participants experienced cognitive dissonance when using their designed mediator around other people, as they were invited to behave a certain way. It was mentioned that certain behavior was inhibited as participants did not want to be seen with the mediator. Participants also mentioned the social values influencing the creation of the mediator, not making certain decisions as this would feel 'weird' in relation to other people. Besides inhibiting, the mediator also led to the justification of socially weird behavior.

6.1.3 INTERPRETING

As is stated before, human values guide actions and behavior. Our values influence how we perceive reality and make sense of the world, the people we connect with, the products we associate with. In daily situations, what we value defines the choices we make and what we pay attention to, therefore having an effect on how we interpret the world around us.

The three points of influence of values are visualized in the proposed model based on the frameworks of Postphenomenology and Material Aesthetics (figure 32).

6.2 COMPARING OPEN-ENDEDNESS

In the first co-design, participants first took the mediator outside and used the booklet for writing down observations and values. These insights were then used in the concept generation session, which provided rich results as the booklet stimulated deep introspection, which allowed the participants to form their entirely own ideas and meaning of quality, being turned into concepts in the co-design which allowed for creative stimulation and inspiration in the group. I noticed that the participants had strong, personal concepts of what the mediation meant to them, but also of their own values, providing a very varied amount of data.

In the second co-design, the booklet and interview provided a different amount of open-endedness in the gathering of data, allowing for a varying amount of room for interpretation. In the booklet, creative introspection was stimulated by deliberately keeping the questions quite open (“what do you feel? what values do you associate with your experience?”). In the interview, the questions were more concrete, more abstract, playing into their own findings from the booklet. This often resulted in participants diving deeper into concepts or phenomena they had found in the individual exercise.

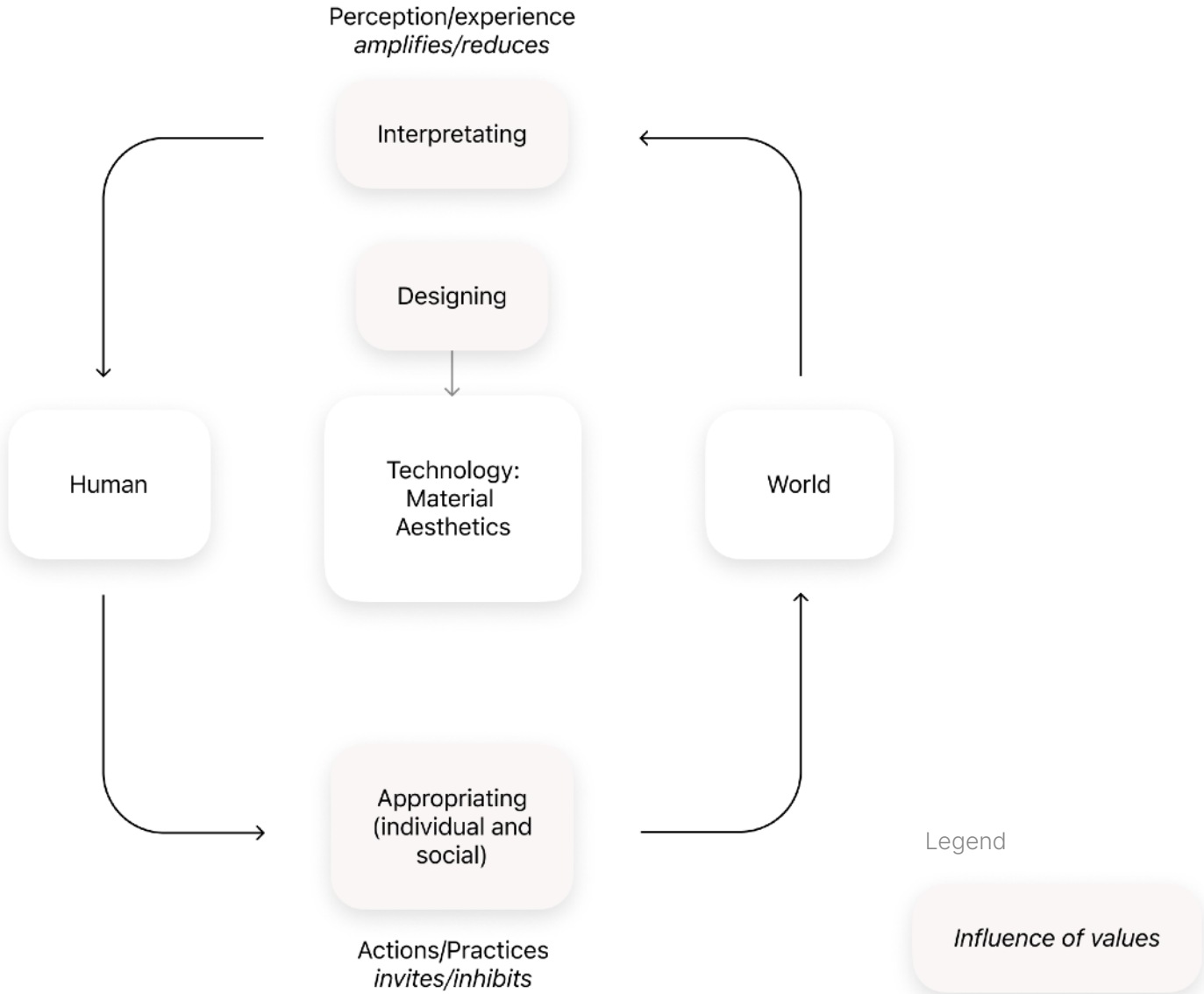


Figure 32. Proposed framework. Based on the models of technological mediation (Hauser et al, 2018) and material aesthetics (van Dongen, 2019)

7. Discussion

The discussion section is subdivided into three parts; contribution for the design community, research limitations and future work.

7.1 CONTRIBUTION FOR THE DESIGN COMMUNITY

Whitespace acts as an example in making a philosophical topic very tangible, making a concept such as technological mediation understandable, and giving someone concrete handles for using the theory in generating design concepts and using those for empirical research. The proposed pillars of expansion of the phenomenological framework can be used as input for designers aiming to understand and apply the role of human values in technological mediation.

The approach of using a co-design methodology for rapid, varied concept generation expanded on the methodology of design workbooks. This project provides a guide for applying such a method, where participants outside of the design- or research team are enabled in creating an exploratory design workbook. The results from the workbooks themselves can also be used for further concept generation, allowing the design proposals to develop over time, as is the purpose of a design workbook. The studies also experimented with a varied amount of open-endedness, which provided very personal and rich results. I wholeheartedly recommend mixing individual- and group based participatory design methods, as they allow participants to form their own opinion, their idea of quality, which is then shared in the group where participants are creatively stimulated by each other.

7.2 RESEARCH LIMITATIONS

This study contains multiple possible research limitations, most of which being attributed to the fact that Whitespace is an explorative, qualitative research conducted by one person, with a limited amount of time.

The conclusions pose a strong cause-effect relation, even though there is not enough evidence as well as many biases in the studies. When participants mention having experienced some form of awe through the mediation, this could just as well have been for the fact that mindfulness is a widely known topic, where standing still for 40 seconds could have led to associations, nudging interpretation of their experience and written down observations. The conclusions on the role of values in technological mediation is based on very little evidence, and is highly suggestive. Understanding human values is a very complicated task given their subjective nature, which researchers from many different fields over the years have attempted.

The studies themselves were conducted by mostly only Industrial Design students, from the researchers' own circles. Although the design workbooks methodology is based upon teams of designers generating concepts, the fact that the co-designs were the basis for the research makes it so that biases should be taken into account. These students are familiar with the designing of rapid prototypes, possibly influencing how they approached the appropriating of the mediator.

7.3 FUTURE WORK

In future projects, the explorative proposed suggestions for the expansion of the model can be used and validated to research to what extent they are useful. In doing so, a better understanding of human values and their role in technological mediation can be created. As stated before, I would like to stimulate other designers to experiment with the varying amount of open-endedness in participatory design and to share their findings. Does allowing participants to first individually gather observations with a probekit, later sharing this with the group always lead to richer results? This method should also be comparatively analyzed in order to understand its true benefit.

Values in business have interested me from the start of the project, and even though I made some short sidetracks to better understand their influence on the designing of products in larger organizations, this would have to be further researched to get a solid understanding. How do the values contribute to us making choices in buying products and using the products that we use? And what if there is a conflict of values? I feel that there is a certain thread running from employees to business, to design or product, to the user, linked by values, but what exactly the influence of values is should be looked into.

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Appendix

1. Reflection

Looking back at my development throughout my Final Bachelor Project, I can state with confidence that I have achieved the goals set up in my PDP.

The main, overarching goal for my FBP was that I wanted to be able to walk through the project with focus and structure. Subgoals connected were set up to make the main goal specific and concrete.

From past projects, I had become aware of the creative but chaotic nature of my process. I often was not consciously making iterations and reflecting upon those, there was little mental clarity and needed lots of help from people around me to give the process structure. This became especially clear in my internship, where after every step, I would ask for feedback and further guidance. I was not in charge of the process.

1.1 SELF-DIRECTEDNESS

In order to make the process more deliberate, I wanted to build structure by using specific design methods, clear documentation and critical reflection after each iteration.

I can now state that I have gone way beyond these initial handles of creating focus. I felt completely at ease in the process, the self-directedness came natural. I switched frequently between thinking and making, and between each switch, critically reflected on the progress made and next brief, validating using my vision and own definition of quality in context. I found that my way of structuring the process very much fit in the Reflective Transformative Design Process model (Hummels & Frens, 2009).

In bigger lines, I became aware that I was putting a lot of emphasis on abstraction, diving deep into theory and definitions on values and postphenomenology, without making them concrete. This lasted until about halfway through the project, where I consulted an expert to act as a fresh pair of eyes with an own idea of quality, leading to for the first time discovering the real strength of getting in the 'flow' of making and post-rationalization, giving me an explicit tool for making abstract theory tangible. After this step, I felt confident in being able to translate philosophical topics into something concrete.

1.2 WELL-BEING

The biggest challenge of the project was, as a result of making the scope too big, putting my work before my own well-being. When demoday was only six weeks away, I had to deal with a huge amount of stress, influencing my mental well-being, coming close to a 'burnout' which I had for a short period experienced during my internship. Looking back, even though it is too early to reflect on this properly, this is a combination of a couple factors. It mainly had to do with the fact that I made the scoping too big, due to the fact that I am a 'starter' that loves to dive very deep and wide into all sorts of theory and concepts and my attention to detail, or hints of perfectionism. I simply cared too much about my project to let any details go, and

wanted to maintain very high levels of quality. This led to me putting lots of pressure on myself.

My detail-orientedness and drive to achieve certain levels of quality is one of my strongest points as a designer. However, if I want to be able to have a consistent, reliable output when working as a designer later, and a constructive relationship to work, I will have to be very mindful of how big and ambitious I make the project in the starting phases, as letting go of achieving the level of quality often feels like an impossible task.

CONCLUSION

All in all, I am extremely happy with what I have achieved with Whitespace in the past five months. I have become aware of the outer edges of my mind and what it can achieve, as well as feeling confident in being able to self direct a design project from start to finish. Whitespace is a start in my career as a designer, and I feel that for myself, regardless of what the rubrics will tell, have gotten everything out of it. For future projects, I want to continue using the RTDP framework and specific methods in order to translate big, abstract, philosophical theory to something tangible, as is also described in my vision, in order to make this process second-nature. I also hope to find ways to cope with the combination of being a starter and detail-oriented-quality-pursuer.

Acknowledgements

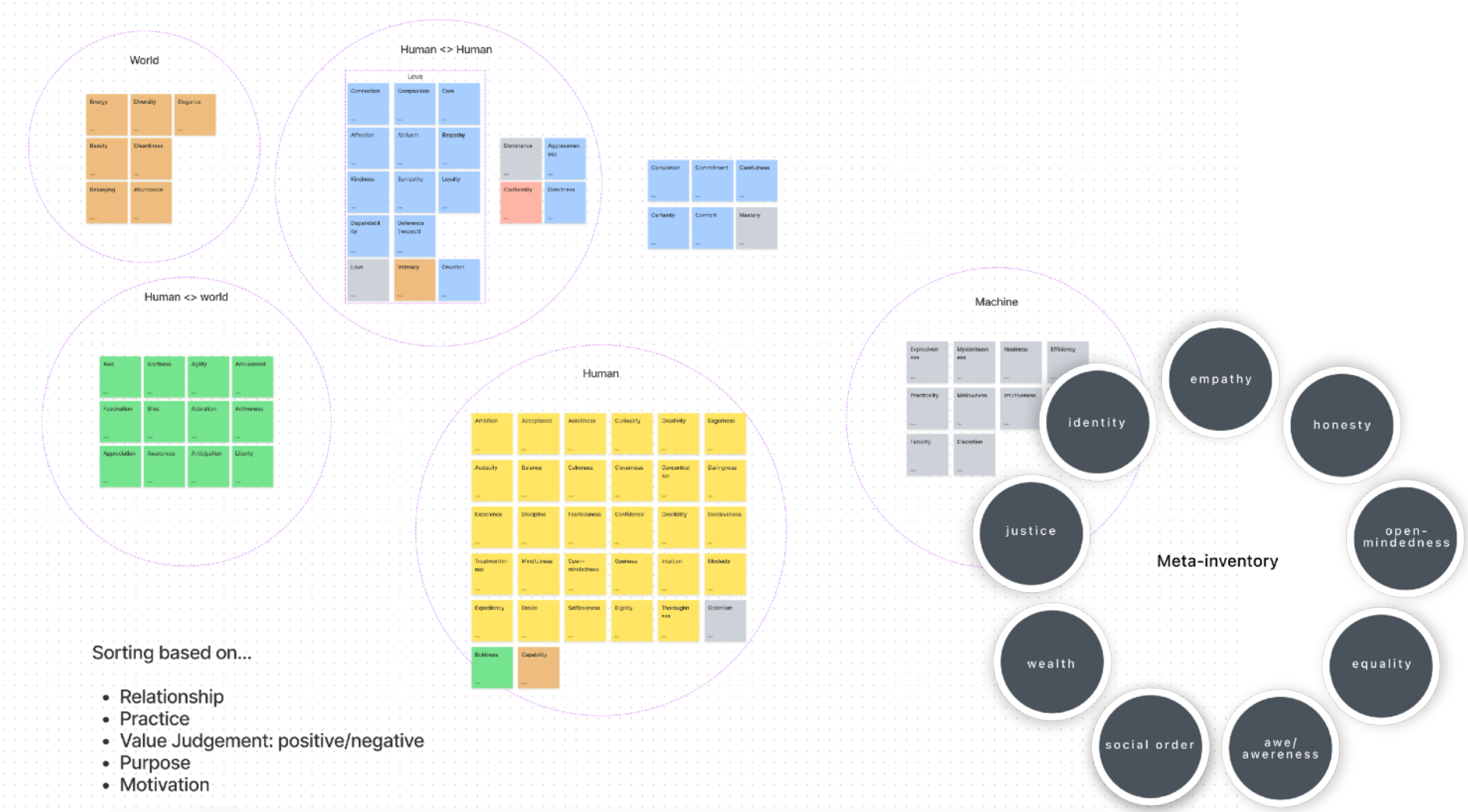
I would like to thank Minha Lee and Luke Noothout for the coaching, for always being in for engaging in an interesting discussion, for holding up the mirror and listening to me ramble about my mental state. I would like to thank Mats Erdkamp for all the jokes about certain materials and helping me out with the code. Finally, I would like to thank Filip van der Vegt and Wolter Rentes for being there, the support, the fun, the potjes ballie.

2. List of values

LIVING ★ MORE LIVE!

VALUES LIST

1. Abundance
2. Acceptance
3. Accessibility
4. Accomplishment
5. Accuracy
6. Achievement
7. Acknowledgement
8. Activeness
9. Adaptability
10. Adoration
11. Adroitness
12. Adventure
13. Affection
14. Affluence
15. Aggressiveness
16. Agility
17. Alertness
18. Altruism
19. Ambition
20. Amusement
21. Anticipation
22. Appreciation
23. Approachability
24. Articulacy
25. Assertiveness
26. Assurance
27. Attentiveness
28. Attractiveness
29. Audacity
30. Availability
31. Awareness
32. Awe
33. Balance
34. Beauty
35. Being the best
36. Belonging
37. Benevolence
38. Bliss
39. Boldness
40. Bravery
41. Brilliance
42. Buoyancy
43. Calmness
44. Camaraderie
45. Candor
46. Capability
47. Care
48. Carefulness
49. Celebrity
50. Certainty
51. Challenge
52. Charity
53. Charm
54. Chastity
55. Cheerfulness
56. Clarity
57. Cleanliness
58. Clear-mindedness
59. Cleverness
60. Closeness
61. Comfort
62. Commitment
63. Compassion
64. Completion
65. Composure
66. Concentration
67. Confidence
68. Conformity
69. Congruency
70. Connection
71. Consciousness
72. Consistency
73. Contentment
74. Continuity
75. Contribution
76. Control
77. Conviction
78. Conviviality
79. Coolness
80. Cooperation
81. Cordiality
82. Correctness
83. Courage
84. Courtesy
85. Craftiness
86. Creativity
87. Credibility
88. Cunning
89. Curiosity
90. Daring
91. Decisiveness
92. Decorum
93. Deference
94. Delight
95. Dependability
96. Depth
97. Desire
98. Determination
99. Devotion
100. Devoutness
101. Dexterity
102. Dignity
103. Diligence
104. Direction
105. Directness
106. Discipline
107. Discovery
108. Discretion
109. Diversity
110. Dominance
111. Dreaming
112. Drive
113. Duty
114. Dynamism
115. Eagerness
116. Economy
117. Ecstasy
118. Education
119. Effectiveness
120. Efficiency
121. Elation
122. Elegance
123. Empathy
124. Encouragement
125. Endurance
126. Energy
127. Enjoyment
128. Entertainment
129. Enthusiasm
130. Excellence
131. Excitement
132. Exhilaration
133. Expectancy
134. Expediency
135. Experience
136. Expertise
137. Exploration
138. Expressiveness
139. Extravagance
140. Extroversion
141. Exuberance
142. Fairness
143. Faith
144. Fame
145. Family
146. Fascination
147. Fashion
148. Fearlessness
149. Ferocity
150. Fidelity
151. Fierceness
152. Financial independence
153. Firmness
154. Fitness
155. Flexibility
156. Flow
157. Fluency
158. Focus
159. Fortitude
160. Frankness
161. Freedom
162. Friendliness
163. Frugality
164. Fun
165. Gallantry
166. Generosity
167. Gentility
168. Giving
169. Grace
170. Gratitude
171. Gregariousness
172. Growth
173. Guidance
174. Happiness
175. Harmony
176. Health
177. Heart
178. Helpfulness
179. Heroism
180. Holiness
181. Honesty
182. Honor
183. Hopefulness
184. Hospitality
185. Humility
186. Humor
187. Hygiene
188. Imagination
189. Impact
190. Impartiality
191. Independence
192. Industry
193. Ingenuity
194. Inquisitiveness
195. Insightfulness
196. Inspiration
197. Integrity
198. Intelligence
199. Intensity


World
Human <> Human
Love
Human <> world
Human
Machine
Sorting based on...
Relationship
Practice
Value Judgement: positive/negative
Purpose
Motivation
empathy
identity
honesty
justice
open-mindedness
Meta-inventory
wealth
equality
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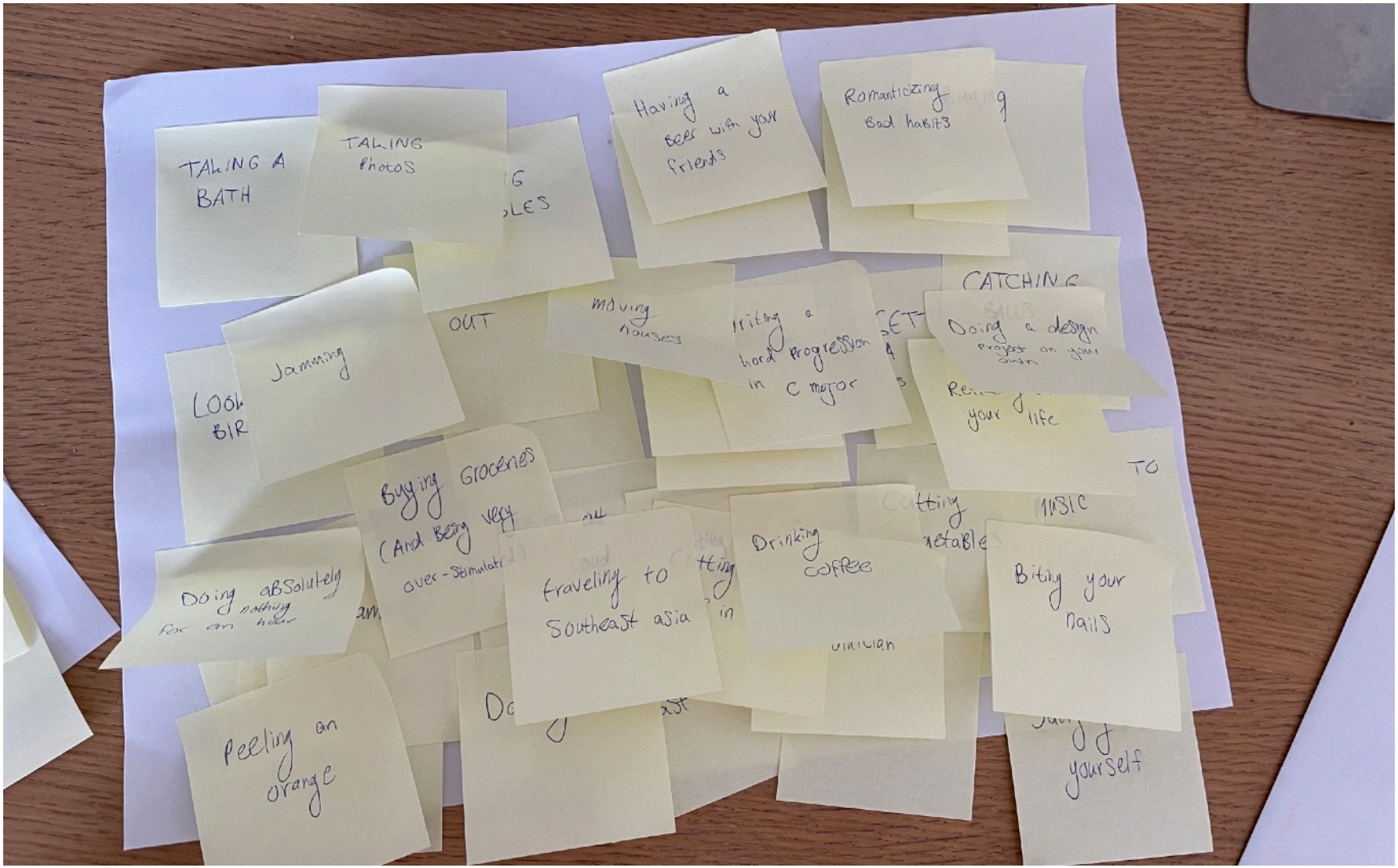
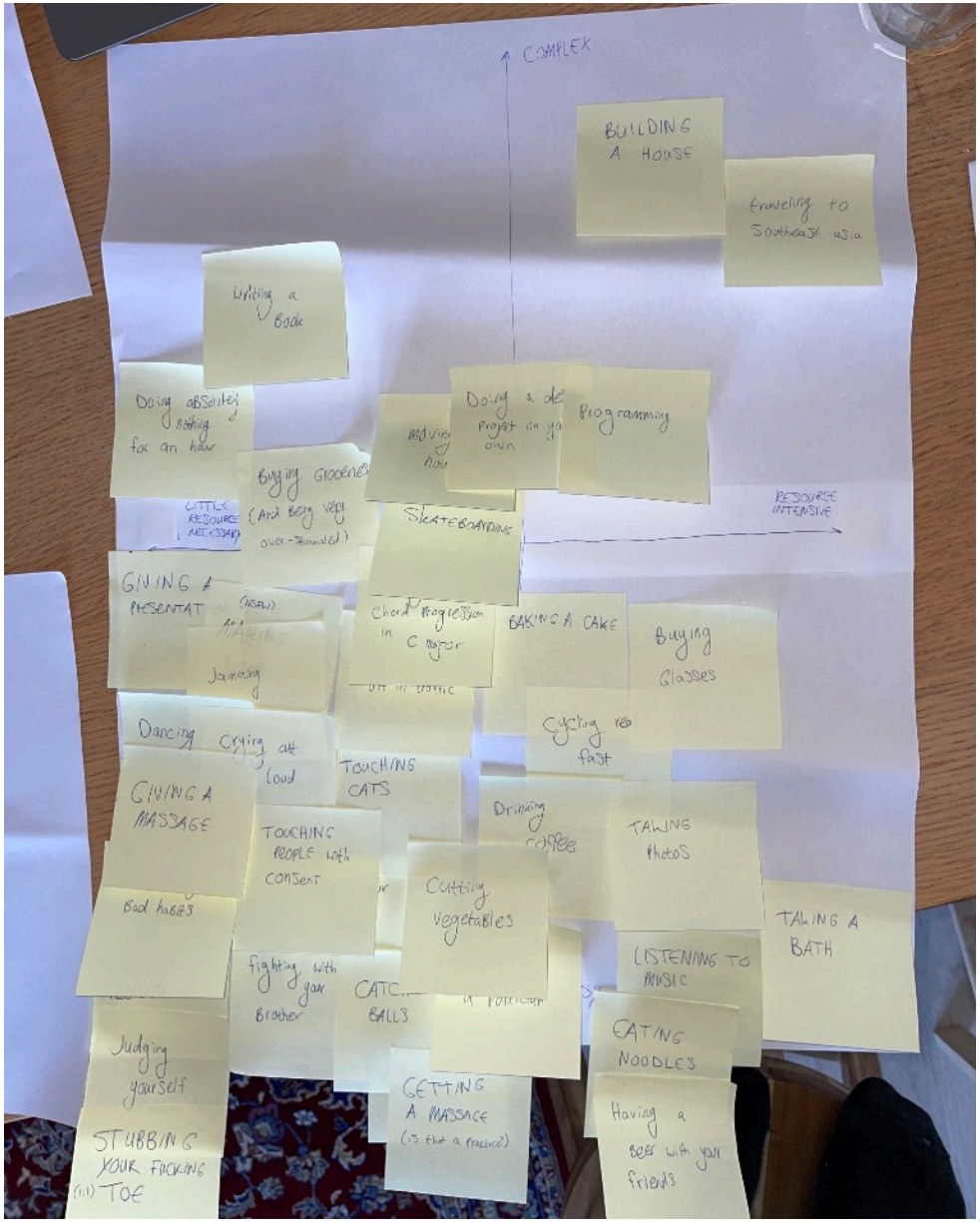
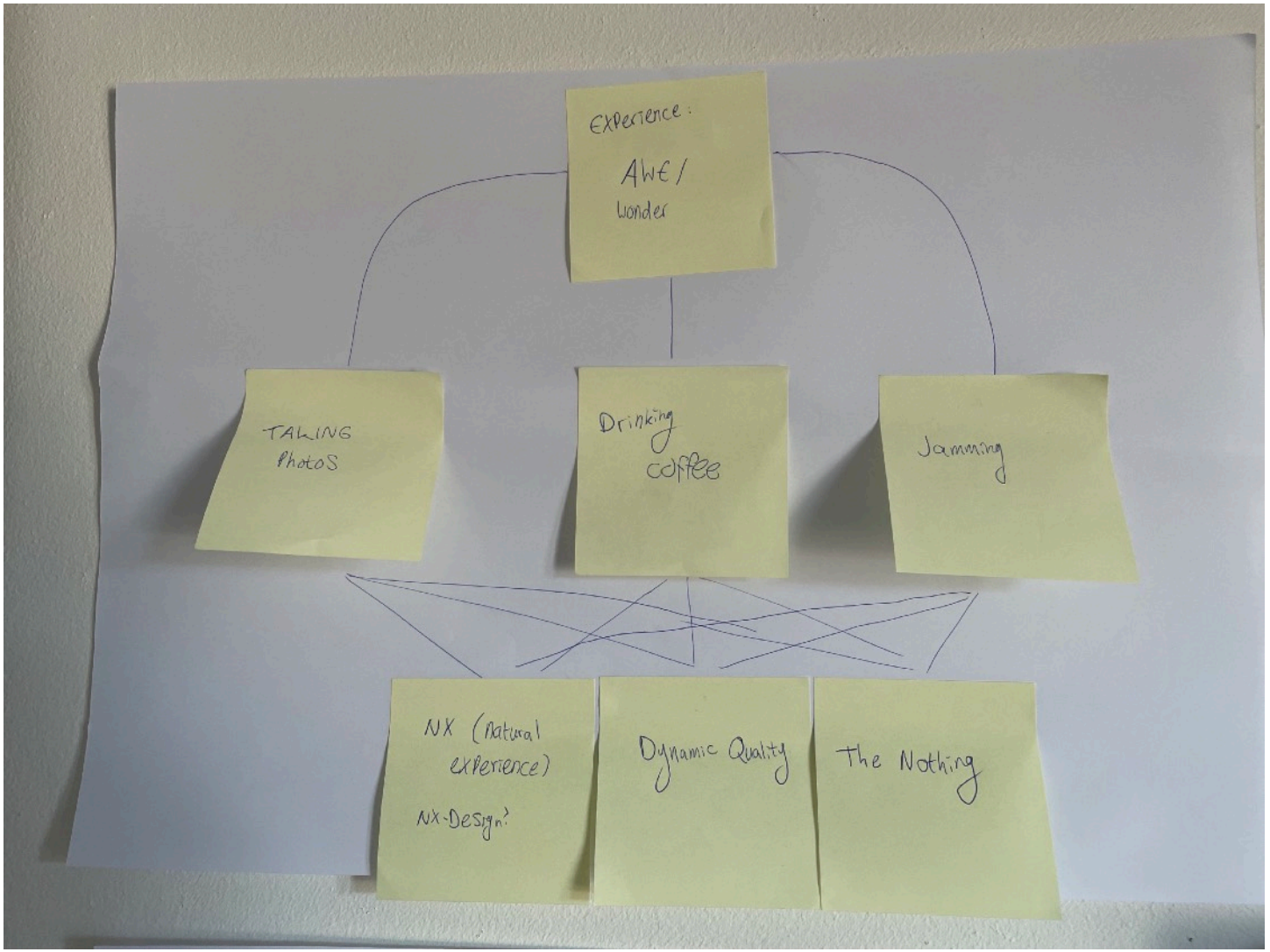


All the practices. Including taking a bath, biting your nails, doing absolutely nothing for an hour, romanticising bad ideas.



All the practices placed on the axis system (complicated/easy, low resource/resource intensive).



The three selected practices (middle row), combined with awe (top row), leading to experience (bottom row).

Business and consultation

In the process, multiple experts were consulted for envisioning and making the scoping concrete.

At the start of the process, a meeting with Oliver Szasz, one of the founders of the Symbioscene (https://symbioscene.com), kicked off the scoping and generated initial concepts. This expert was contacted as Whitespace aimed to design for the Symbioscene in the first phases. A transcript of the interview can be found in appendix 4.2.

Whitespace, with its focus on value-sensitive design combined with photography, had potential for creating a specific product that would question the 'problems' emerging from the free market. Halfway into the process, the owners of HeijltjesAkkaya (https://www.heijltjesakkaya.com) were consulted in order to develop a further direction for Whitespace, focusing on market value.

Speculations were made on the generation of a physical product that would be rooted in 'good' values, as was determined at the start of the project (section X). This product would need to reach the individual, the 'real' world, it would need to exist beyond the academic scope in order to have value.

To develop a product that has different values compared to current products, does it automatically result in market value? Does it create a product that has a need for a group of people?

If the product were to reach the market, for whom does it have potential?

Certain products right now are based on certain values that might work in specific cultures, but bring great resistance in other social-cultural contexts. For example, Flitsbezorgers (Gorillas, Flink), Big Tech (Facebook, Google), and some applications of AI result in great societal resistance, possibly due to a misalignment of values. These products are often designed and implemented based on values of the company: efficiency, convenience or comfort, and lack values such as transparency that we value here in the Netherlands. This results in conflict. New products, such as PolyPoly (https://

polypoly.org/en-gb/), NextCloud, are digital platforms based on the value of transparency and fairness and are therefore welcomed by individuals that share these values. But does that also result in greater market value?

And what if we created a camera that is designed based on different values, to align with specific values of an individual, to stimulate values and behaviour for improving one's life in the long-term? To teach the individual something.

Can it help designers to get a new perspective? Can it provoke reflection on their perspective now? Does it have value for the design community?

What is the market value of products with positive, human values?

Out came two possible directions;

1. Creating a new, ‘activist’ product that was based on good values to give companies an example of how to design their products. This would have to be a very strong concept, as the goal would be to make a statement, comparable to Shutterring (https://responsiblesensinglab.org/nl/projecten/shutterring).

2. To provide a framework of implementing values into a design or business for creating better products.

Symbioscene transcript

Bachelor ID, TUe, doing final bachelor project.

Interested in design philosophy, human well-being and taking a stance against the Big Tech.

Maybe talk about Shutterring?

Questions

- What is nature? What is natural?

Different stages in development of human beings. What is untouched nature? What stage? Re-naturate

- To what age do we go back to be natural?
- 100 years would be somewhat modified
- What is not nature?
    - Humans are part of nature. Is everything that we make nature?
- Are we separate from nature right now?

Currently working on a model that looks at certain stages of connection to nature. Levels that could happen simultaneously, a trajectory, starting with a lifestyle that is not connected to nature.

All the germs, viruses, bacteria, are quite useful. How impossibile to exist without bacteria. Connection to species.

Age of enlightenment. disconnection from god's will. Understand the world through science, disconnect themselves from nature. Disconnection brain and body. Rationalism? More important: thought rather than acting on emotions.

We are very much connected to nature, it influences all functions in our body and understanding of the world. Everything is guided by nature.

- What is ‘artificial’?

Designed world as the artificial world. Conscious world? Have to look at it very careful. Industrial revolution: material started to appear that is not a part of circulation on our globe. Here started artificiality. Recyclable, circular is maybe not artificial

Having something entirely artificially is hard to bring back into the circular.

Virtual worlds.

Emerse into an artificial world that *we* have created as an experience, does it actually exist? World that we only understand through our senses?

Do virtual worlds have a place in the Symbioscene?

Learning through virtual worlds is an enormous (use-case) for science communication. Engage with science, use scientific knowledge.

Just scientific? Gamified experience? Opportunity for learning. Engage people.

Thought: it's all about bringing people back to nature. Romanticizing nature. Getting back to certain stories from the past is not what we need.

Other people are moving into robotics. *Green like Robots: project*. Qualities in robots doing things better than us.

Physically into the world: everything is embodied. Use our senses and perceive our world, if we have a lack of physical experiences, using screens, certain lack of physical experiences. Creating different skills, problem with adjusting... children not exposed to sunlight get short-sighted. Lack of nature can influence it. Also much subconsciousness. Consciousness, feeling embodied in our own bodies, certain sciences using VR, seeing 3rd person view, disconnection to your embodiment. Out of body experience.

Working at Symbioscene: exposing people to materiality in all environments. Awareness of materiality around us. Certain environments to work with, but leads to material culture.

VR example: teaching people to be totally immersed. Totally exposing. Not bodily, but still emersed. Also see the possibility of being exposed to nature, but what if you can't? Explored the essence of natural experience? Ears, eyes, touch sense, stronger experience using technology. Combination maybe. Wonder, experiencing, appreciating nature. Disabling distractions, there's nothing else to look at. Forces you to allow yourself

Munich Creative Business Week https://www.mcbw.de/en/

14-22 May 2022.

Culture sphere exhibition.

- What do you think will be the role of AI in the Symbioscene?
- In your vision you talk about a mindset shift, spreading through all layers of society. How will you achieve this mindset shift? How will you make it reach beyond our 'intellectual' bubble?
    - How will we make *everyone* interested?
    - How do you motivate scientists, artists, designers to engage in the Symbioscene?

    - How would you engage me with the Symbioscene?

- Do you believe there can be a link between Quality and the approach of the Symbioscene?

    - Bridging the romantic and classical world

    - Craftsmanship

    - Knowing what is ‘best’ as an individual

Shortly pitch my concept and project plans

- Vision in product design.

    - Come up with a new societal context and design a product according to values found in that context

    - Redesign a product

- My project will feature the Symbioscene as a context but largely to extract values from to be embodied in a product.

    - More focus on the mindset of appreciating nature and extracting values from the framework and less about designing *with* nature.

- Do you believe we’ll be a fit? Will my project be of any use to the Symbioscene?

APPENDIX 5:
PYTHON CODE

```python
import RPi.GPIO as GPIO
from gpiozero import Button
GPIO.setmode(GPIO.BCM) #use physical pin numbering
GPIO.setup(18, GPIO.OUT) #output LED
GPIO.setwarning(False) #warnings off

import threading
from gpiozero import LED
import picamera
import random
import time
from datetime import datetime

dt = datetime.now()

takingPhoto = False #photo taking state as false
b=Button(26)
led = LED(18)
pc = picamera.PiCamera() #define picamera as pc

def takePhoto():
    print('shutter')
    pc.capture('img' + str(dt) + '.jpg') #capture command for the picamera

def buttonPress():
    GPIO.output(18, True)
    startTime = time.time()
    clickTime = random.randint(0,60)
    print('random int is: ' + str(clickTime))
    print('button pressed!')
```

```
31
32      while b.is_pressed:
33          timeElapsed = time.time() - startTime #timeElapsed is the current time minus the start time
34
35          if abs(timeElapsed - clickTime) < 0.2: #if the difference between the timeElapsed and the random integer is small enough
36              takePhoto() #take the photo
37              sleep(0.5) #make sure photo is only taken once
38
39          if timeElapsed > 60:
40              while b.is_pressed: #while loop for blinking the LED if the button is held when timer is done
41
42                  GPIO.output(18, False)
43                  time.sleep(0.4)
44                  GPIO.output(18, True)
45                  time.sleep(0.4)
46
47              else:   #when button is released, break out of the while loop
48                  break
49
50      else:
51          print('released')
52
53  def buttonRelease ():
54      GPIO.output(18, False) #when button is released, turn LED off
55      print('button released!')
56
57  #endlessly loop these statements
58  b.when_pressed=buttonPress #call the function buttonpress when button is pressed
59  b.when_released=buttonRelease #call the function buttonrelease when button is released
60
```

5. Data

AWE/WONDER

1. Camera does make you more mindful. (P1)
2. The camera/exercise made me more mindful in the process of going for a walk, of my surroundings. (P1)
3. I was less mindful compared to when using the camera, less engaged in the walk. (P1)
4. Yeah, went back past something I saw along the way, was like hey, I'm back, noticed that I wasn't paying attention to my walking anymore. (P1)
5. I think I did feel very present in my context, because I had to stay still for 40 seconds (P2)
6. I felt more connected to my surroundings. (P2)
7. I guess the camera made me realize the world is a lot nicer than I thought, on a micro-scale. It helped me get to the realization that nicer is way more subjective than I thought it was, even within myself, there's beauty all around but in different scales and it made me appreciate the small scale beauty more. (P3)
8. The trees and the soft curve in this street give me a cozy feeling (P4)
9. I noticed how the light fell through the trees and how the sky looked beautiful. (P4)
10. Awe for me means that you find a certain beauty in the smallest and most arbitrary things. (P7)
11. Influenced my situational awareness. Was more aware of sound because I had to hold it for a long time. Senses were activated with this camera. (P9)
12. So you became more aware of the objects around you? Yes. Situatedness? Yes. (P9)
13. I felt nervous as I wanted to deliver decent photos and felt some anxiety out of fear to destroy the camera. But once on the street I felt joy in re-discovering my neighborhood through a new lens (haha). (P3)

RECIPROCITY

1. Forced to follow it for 40 seconds [the bird], made me perceive it differently. (P2)
2. When I used the detailed lens to find a crack in the roof, I would think: are my neighbors suffering from water damage? (P2)
3. As I was more careful with the camera, and took less risks of where I went; I became more aware of my everyday surroundings (P3).
4. Because I was looking around more, I sometimes looked at things that I would not normally focus on. (P4)
5. now I was standing in the middle, and it kind of invited me to look in a different way.
6. when I actually stood in the middle I saw different parts of the environment than what I expected. I engaged in a completely different way with the square. (P5)
7. to stabilize the bouncing and rotating, I put it down on the floor, got a completely different angle from the buildings. (P5)
8. At first I was very aware of myself, I kept floating past in the mirror, so I tried to keep the camera still but instead moved my head. (P5)
9. you make micro-adjustments of what you see. (P5)
10. you move your camera to get a better view. (p5)
11. For the last picture, I was in the middle of the bikes, squatting, I became aware that where the previous things were special, it felt very space-less. (P5)
12. Pressing of the button of the camera and the mirrors turned. Different view on ephemerality. (P5)
13. Because this time I was looking at [my room] as photos, I looked at different elements and its compositions in a different way. (P7)
14. Because I took the time to take it slow, sit down, I noticed that I'm very tired. (P7)
15. I was looking at weird things around me. (P9)
16. The writing down part changed how I interpreted what I had seen, because I had to think of a description, think of words instead of just the observation. Made me interpret things differently. (P1)
17. just holding the camera already made me more aware of my surroundings: suddenly looking becomes a very active activity. (P2)
18. at the same time it did make me focus on things that I would otherwise not focus on. My detailed lens made me focus on a small part of an object. The very close view caused for serendipitous moments. (P2)
19. [filled in] camera made me look at a different way, therefore perceived things differently, therefore noticed other things.

RECIPROCITY

20. Taking a picture of a bird became a challenge as I had to follow it for 40 seconds. Made me more aware of its flight behavior

21. that made me realize that one person has several perspectives and these can influence the behavior of people in certain ways (P3)

22. WHen taking a photo of advertisements, I started to look around the scene, saw things that I usually wouldn't see. (P4)

23. SOmething in the scene grabs your attention, by looking at the things around it I saw the whole scene. Made me more prone to realize the greater picture instead of just one part of it. (P4)

24. What's interesting there is that you see yourself a certain way in the viewfinder, you move your camera to get a better view. (P5)

25. My self awareness was very tied to surroundings. (P5)

26. Inability to change the color perception (P5)

27. It was hard to completely focus on the assignment because just when taking rest you feel everything that *demands your attention* (P7)

28. I think the possibilities influenced how I looked at the world around me. (P9)

29. I was looking at weird things around me. (P9)

INTERACTION

1. Describing what had grabbed my attention turned me into a poet. (P1)

2. For me, I don't really don't mind the shape, I think writing is more interesting than audio, reflecting more. (P1)

3. And because the product itself is forcing you to do something. Makes you more aware of what you're doing. (P1)

4. First thing I thought of is that normally you can see what the camera is seeing. How can I switch my viewpoint to kind of see what the camera is seeing? (P2)

5. and I made three different lenses to change what I would perceive. (P2)

6. Lenses could only speculate what the camera could see. (P2)

7. From there on out I made a small adjustment to make sure the camera was aiming straight ahead. (P2)

8. Similar to looking without the lenses. Saw a lot of use with the detail lens. (P2)

9. Happened mainly because of the lenses (P2)

10. Didn't understand how the camera would focus, which when I took a picture of cars I was wondering what car it would be focused on, what my camera would choose, in a way. (P2)

11. If I would see the picture and see what the camera focused on, I could focus more on that detail. (P2)

12. Bit similar to the analog pictures, take photos, after development you start to re-experience all those moments. (P2)

13. Forced time made me perceive it differently. (P2)

14. Yes. They are helpful for serendipitous encounters. (P2)

15. However I wonder what my camera will think of it as I can't check its view. (P2)

16. Playing around with the camera made me more aware of my surroundings. (P2)

17. The three lenses I added to the camera made me more aware of the possible perspective my camera may have on things. (P2)

18. *What aspect of the camera made you realize this?* The process of spending a day with the camera, I would say the fact that it took 40 seconds to take a picture, and thus indirectly the lens of the camera? (P3)

19. Why put it in something? The electronics scared me. DIdn't want to break them by having them on the outside. (P4)

20. It was nice that it had a strap, I could just hold it more easy. It also allowed me to hold the camera in an interesting way. I had to turn the shoe sort of sideways to make it point forward. (P4)

INTERACTION

21. I enjoyed looking at other mundane things instead of advertisements. (P4)

22. Also the weather, environmental conditions, influenced how it turned and twisted. (P5)

23. adjusted the mirrors myself. Be more selective. Interesting extension of my own viewfinder, which was my head. And my hands as a viewfinder. (P5)

24. you don’t know what you’re gonna capture, but you do know what you’re gonna capture (P6)

25. You’re not really capturing the moment. (P6)

26. Photography is about capturing quick things that might be gone in a moment. Might even miss what you wanted to take a picture of. (P6)

27. Kinda makes you wonder why you would make a picture of it. Maybe the act of taking the picture helps to anchor it in your mental. (P6)

28. Making more of a mental picture. Actual picture is not what you want to capture. (P6)

29. I thought it was nice to do. (P6)

30. You need to focus on something but the longer period creates ambiguity within this focus. (P6)

31. was aware that I would have to go outside (should I wait?) when I was making the casing, (P8)

32. Two pictures where I put it down, others were handheld. (P9)

33. Handheld I was more aware that the artifact was a part of me, when putting it down I could distance myself. (P9)

34. When handheld, it was a bit awkward, sometimes it was very relaxing and calm. More emotions. (P9)

SOCIAL

1. I noticed how no-one looked at you weird when you're pointing an egg carton camera to something for one minute straight. (P1)

2. Self-aware? Not really. Maybe in some ways I did consider, as I was taking pictures of the neighborhood (P2)

3. I found it a little awkward to hold a shoe against my face and hold it for a minute. I looked around as if I was doing something else. (P4)

4. I didn't want people to see that i was taking pictures of them. (P4)

5. I felt a bit self-conscious yielding my shoe camera. (P4)

6. Even if I felt absurd, I took solace in the idea that people would be confused at seeing a guy standing still for a minute with a shoe on his face. (P4)

7. Comfort to feel okay to do something weird. in public. (P4)

8. Moments where you might become self-aware when other people become aware of you with your camera. (P5)

9. Really awkward when pointed at a person, when taking a portrait for 40 seconds (P6)

10. When you're telling it to someone you're like, oh wait, i'm taking a picture. (P6)

11. it made it awkward, quite aware when taking picture of someone. Pointing of something. People around you might think it's weird. (P6)

12. bright red, I was aware that people might be wondering what I was holding, was pretty self-aware (P8)

13. I think it was alright. But it also felt a bit awkward at times. Became more than just the interaction between me and the camera; passerbys. (P8)

14. One of my ideas was to use a t-shirt. But that would feel weird. (P8)

15. It has a really bright area, attracting the eye of people around me. (P9)

16. In crowded areas I would prefer to put it down. (P9)

17. I tried to stay away from these routes, people were weirded out by the thing. (P9)

18. I was more connected to what he did, just doing it, not caring about it. Sometimes you had the feeling people were looking, but sometimes you didn't care. (P9)

BOOKLET AND INTERVIEW

- Booklet P5
- Booklet P1
- Booklet P3

- Things turn and bounce through wind/my own movement: outside factors. (P5)
- Colours! Lots of greys and browns, green cope, weather (P5)
- Details: welded together, clump of bike parts. (P5)
- Changing the angles of mirrors to choose; weld the image from parts. (P5)
- Viewfinder head: taking poier (?) through mirrors (P5)
- Spy glasses/mechanized/surveillance (P5)
- Red Bull litter, littering literally everywhere. (P1)
- Description: 2 butterflies flying together in a place with many flowers trying to find each other? Felt like it failed : ((P3)
- Description: where our paths crossed again I felt lucky and tried to capture them under an arc of flowers (P3)

6. Consent form

Subject Consent Form

Research ‘Whitespace’

- I have been given information and I understand what this research is about. I was also able to ask questions. My questions have been answered to my satisfaction. I had enough time to decide whether to participate.
- I know that participation is voluntary. I know that I may decide at any time not to participate after all or to withdraw from the study. I do not need to give a reason for this.
- I know that some people can access my data. This is just Daan Rozinga.
- I consent to photos being taken of this usertest and to these images being used to aid the research.
- I consent to the gathering and usage of my data for scientific publication and additional research on my data.
- I consent to my data being stored at the research location for another 5 years after this study.

I want to participate in this study.

Name of study subject:
Signature: Date: __ / __ / __

I hereby declare that I have fully informed this study subject about this study.

If information comes to light during the course of the study that could affect the study subject's consent, I will inform him/her of this in a timely fashion.

Name of investigator (or his/her representative):
Signature: Date:__ / __ / __

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he study subject will receive a copy of the signed consent form.