the Womb

Design of an Artificial Womb to Foster Quietude and Inspire Social- and Self-Awareness

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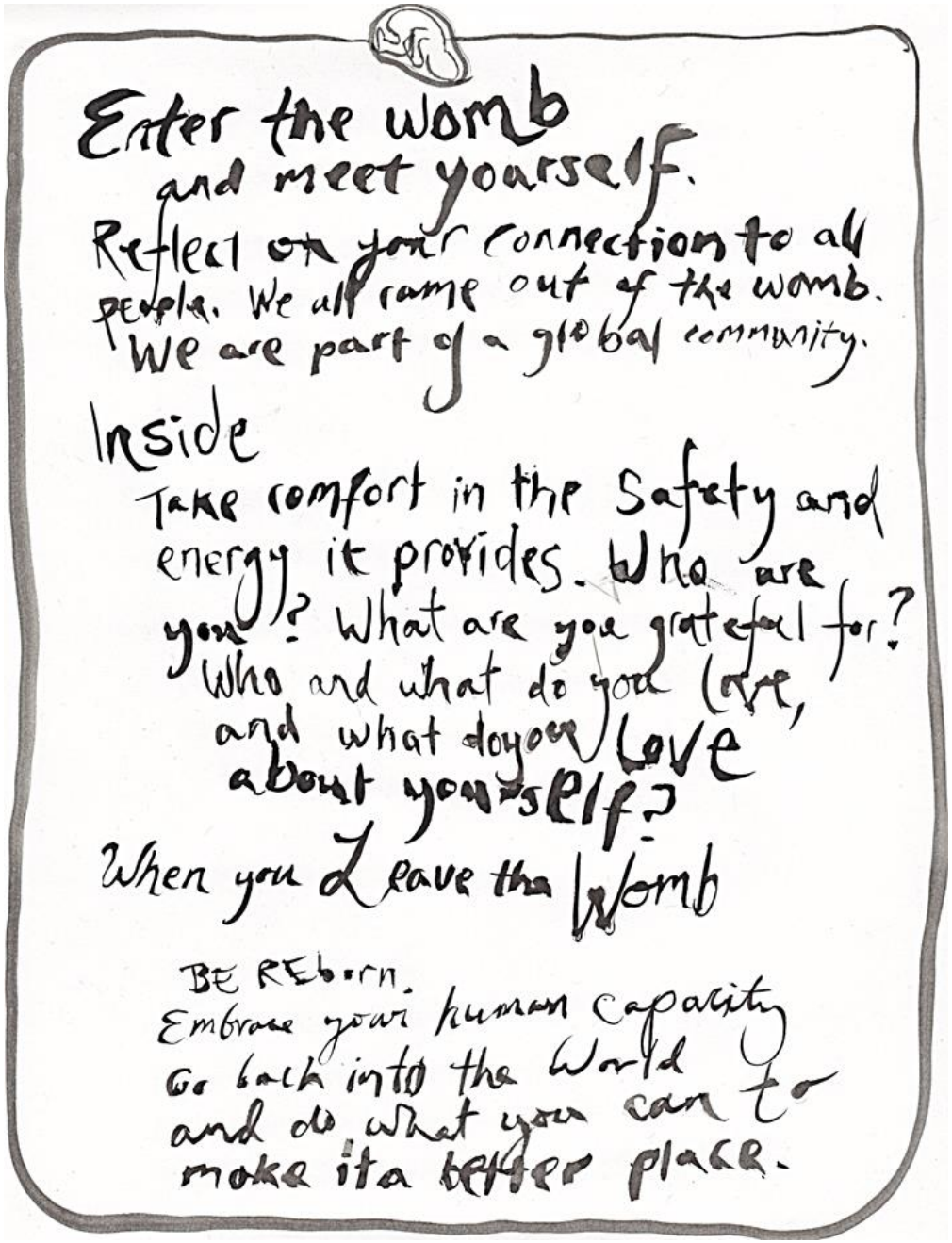

Enter the womb
and meet yourself.
Reflect on your connection to all
people. We all came out of the womb.
We are part of a global community.
Inside
Take comfort in the Safety and
energy it provides. Who are
you? What are you grateful for?
Who and what do you love,
and what do you love
about yourself?
When you Leave the Womb
BE REborn.
Embrace your human capacity
Go back into the World
and do what you can to
make it a better place.

Preface

This project describes my second failed attempt to save the world. All jokes aside, this has been a long and exciting ride with many unexpected dips, twists and turns, and I am extremely proud of the result. Robert, thanks for helping me to keep digging deeper and building higher when I think I've gone as far as I can, and surprising me by what I can get out of myself. Peter, thanks for your unwavering support and insights. Jac, thanks for believing in and connecting to this project before it was anything more than an idea. And thank you all for your friendship, which I appreciate a lot.

Abstract

This process report describes the design and development of the Womb- a conceptual and functional product that is intended to foster quietude and inspire social and self-awareness in users. The aim of this project was to design and create a low-stimuli environment that would allow users to reflect and recharge, and conceptually remind them of their human capacity and connection to the global community. This aim was formulated based on the results of extensive field research investigating what type of experience could be meaningful to participants and to society. This research also led to the development of the Womb concept.

Two prototypes of the Womb were constructed. The initial prototype was made to gather reactions to the concept and develop requirements for the second prototype. 26 people participated in usability testing of the second prototype. Participants spent ten minutes inside the womb, and then participated in a post-experience interview where they were informed of the vision behind the womb and asked about their individual experience and impressions of the Womb. An anonymous survey was conducted one week after usability testing. The majority of participants found the Womb comfortable, calming and relaxing, and had a positive reaction to the message. Four participants noted feeling motivated by the experience.

Out of the three main goals that it aimed to fulfill, the womb experience was most successful in fostering quietude in users. Social and Self-awareness were inspired in less participants, but these aspects of the experience do show potential, because of how strong the reactions of participants were who experience these aspects. There are a number of applications for which the Womb could feasibly be developed further.

Samenvatting

Dit verslag beschrijft het ontwerp proces en de ontwikkeling van “the Womb”- een conceptueel en functioneel product die bedoeld is om kalmte, sociaalbewustzijn en zelfbewustzijn in gebruikers te bevorderen. Het doel van dit project was om een omgeving met weinig stimuli te ontwerpen die gebruikers op een conceptuele manier zou herinneren aan hun menselijke capaciteit en verbintenis met de wereld gemeenschap. Dit doel is geformuleerd aan de hand van de resultaten van uitgebreid onderzoek naar wat voor een ervaring betekenisvol zou kunnen zijn voor zowel de deelnemers als de samenleving. Dit onderzoek heeft ook geleid tot de ontwikkeling van “the Womb” als concept.

Er zijn twee prototypes van “the Womb” ontwikkeld. Het eerste prototype was bedoeld om te testen hoe er op het concept gereageerd zou worden, en om eisen op te stellen voor het tweede prototype. Zesentwintig proefpersonen hebben deelgenomen aan een gebruikstest van het tweede prototype. Proefpersonen hebben tien minute in het prototype doorgebracht en hebben daarna hun ervaringen gedeeld in een interview. In dit interview werd tevens ook de visie achter “the Womb” uitgelegd. Een anonieme enquête is ongeveer een week na het uitvoeren van de gebruikstesten naar alle proefpersonen gestuurd. De meerderheid van de proefpersonen vond de ervaring comfortabel en kalmerend, en reageerde positief op het idee achter “the Womb”. Vier deelnemers gaven aan zich gemotiveerd te voelen na de ervaring.

Van de drie gestelde doelen, was “the Womb” het meest succesvol in het bevorderen van kalmte in deelnemers. Sociaalbewustzijn en zelfbewustzijn werden door minder deelnemers ervaren, maar deze aspecten schijnen alsnog potentie te hebben vanwege de krachtige reacties die deelnemers hierover uiten na hun ervering. Er zijn een aantal toepassingen waarvoor “the Womb” als concept mogelijkerwijze verder ontwikkeld zou kunnen worden.

Contents

Introduction

The Womb is a conceptual and functional experience that provides users a safe, quiet and comfortable environment for peaceful reflection, and aims to remind them of their own human capacity and membership to the global community. The experience fulfills a societal need for low-stimuli environments that allow people to recharge and regather themselves. The experience also draws attention to the importance of respect and acceptance for other people, and to the significance of the individual strength that each person possesses.

This process report describes the research that led to the Womb concept, the development of that concept into a working prototype, and finally the testing of that prototype and its evaluation.

Figure 1.0 : Final Prototype of “the Womb”

Empirical Research

Introduction

Orienting Field Research

Market Research

Field Research

Analysis of Research

Introduction

The originally formulated aim of this project was to design and create meaningful experiences in the public realm to facilitate connectivity and interaction between participants through collective and collaborative creative play. The aim of the facilitated collaboration was to design and experiment various modalities of interaction and co-creation (e.g. art, design, dance, music) to engage participants to connect, foster and strengthen their inter-connectedness within their social-cultural fabric and relations. This aim was based on the assertion that people do not have enough opportunities to express themselves creatively in the public realm, and that fostering such collaborative creativity would result in a connection between participants and sense of belonging to a community that they may benefit from.

The book *Between Sociology and Sociological Practice (1993)* states that it is important to "approximate the boundaries of ignorance" when making social policy, and that a common error in social policy making is solving the wrong problem because of assuming that the defined borders of a problem are the same as the actual borders of the problem [1]. The boundaries set in the original aim of this assignment were based on the hypothesis that there is a societal need for public, collective creative activity, and for the fostering of the feeling that one belongs to a community. The research objective of the first phase of this project was to test that hypothesis.

The research phase aimed to answer the following research questions:

1. What projects/initiatives that fulfill all or some of the aims of this project have already been carried out?
2. What research could be useful in directing the design of the experience that this project aims to create?
3. What are successful and less successful ways of approaching and engaging people in the public space?
4. What are various ways in which people experience and act on a sense of connection to community?

The framework of the research will consist of two overlapping components: field research and literature research. Literature research will aim to answer the first, second and fourth research questions. Within field research, broad and specific field research will be conducted to answer the third and fourth research questions. Broad field research will consist of open-minded observation of and conversation with people in the public realm. This part of the research aims to get acquainted with other people's experience of public space and connectivity to community, and learn how public space is occupied and used.

Specific field research will be aimed at applying information gathered in literature research to the public space, and seeing how various activities are received by participants. The results of the completed research phases is the informed adjustment of the aim of this project.

Orienting Field Research
Four Days in Edinburgh, Scotland

In my orienting research, looking for inspiration to give direction to this project, I came across Life Evolved. This event/exhibition was being put on by the organization The New Earth Works (NEW) and was about to start in Edinburgh when I learned of its existence. The description of Life Evolved resonated so strongly with my vision of this project that I felt inclined to contact NEW and ask for advice in setting up an event of this nature. This is how I came into contact with Jac Peeris, founder of NEW, who invited me to come to Edinburgh and experience Life Evolved for myself.

Life Evolved:

> *"LIFE evolved is an exhilarating, interactive adventure about humanity, global transformation and the meaning of life. Created by an international collective or young artists, activists and social entrepreneurs from over 12 countries, it began its journey at Summerhall, in Edinburgh, Scotland on 13th of June 2015. Combining design, artisanal craft, philosophy, live theatre, and experiential learning, LIFE evolved takes people on a journey towards a more connected, meaningful and sustainable future for all of us. LIFE evolved is 100% experiential – for audience members and contributors alike. In the course of making and attending the event we come together to expose fresh ideas, practice skills and re-connect to each other and that something more we are all looking for, that something bigger than all of us, to which we all belong" [2]*

I spent four days in Edinburgh taking in inspiration and experiencing as much as possible that could give direction to my own project. Most of my time was spent at the Life Evolved exhibit. Here, I helped out where I could, spent time interacting with visitors and talking to the Life Evolved crew about their experiences and their thoughts about my project. Experiencing Life Evolved first-hand gave me the chance to see what aspects of this exhibit worked well and less well in practice, and which aspects of the exhibit I might want to incorporate into my own experience design.

A more detailed review of the Life Evolved experience can be found in appendix 2.

Figures 1.1-1.3: Pictures of Life Evolved

I spent half a day helping the Edinburgh Food Sharers to put on an event at a community center in Oxgang, at the outskirts of Edinburgh. The Food Sharers were providing a free lunch at the Oxgang Community Center agriculture festival. Given my own background in campaigning against food waste, I found it interesting to see the Edinburgh Food Sharers at work. They are an energetic, well organized, motivated group of people who coordinate to collect and distribute food all over the city of Edinbugh. Figure 1.4 shows one of their events, aimed at drawing attention to their cause. Seeing the Oxgang community center was inspiring because it is run by and for members of the community, who combine their efforts to make a difference for each other. They organize activities for all age groups, such as child day care and afternoon walks with free soup for the elderly. The most inspiring part of their center was the garden, because it was a project that all age groups could contribute to and care for together.

One afternoon, I met with psychology professor Dr. Thusha Rajendran from Hariot-Watt University in Edinburgh to see his perspective on a project involving public creativity. Speaking from a background of extensive research on improving educational tools for children with autism, but also as someone who practices aikido and Latin dance, Thusha was able to provide a unique perspective on the project. Because the project was in such an early stage, and no clear aim had been formulated yet, the degree to which he could specifically advise me was limited. However, his enthusiasm about incorporating some form of dance into the project was encouraging, and his ideas about possible ways to implement the design (for example, as a tool against loneliness in the city) were also inspiring. From an academic perspective, he pointed me towards research on embodied cognition as a source of inspiration, and reminded me of the importance of good documentation of results, so that I would be able to prove the effectiveness of the designed experience.

Following my experiences in Edinburgh, I was able to develop a more concrete idea of what this project should focus on. Inspired by the dancing, music and painting sessions at Life Evolved, as well as Thusha's enthusiasm about the aspect of dance, I was convinced of the power of collective creativity to connect people and felt that this was an essential aspect of the project. An important requirement of the experience was that it would be meaningful to the participants. This was important because it clearly eliminated a number of possibilities, and laid the focus on the impact of the experience on the individual. The experience would take place within the public realm, because this opened the possibility of positive encounters between strangers, which might in turn, elicit a sense of connection and community between participants who otherwise never would have met each other.

With these ideas in mind, I formulated my original project goal, "Design and create meaningful experiences in the public realm to facilitate connectivity and interaction between participants through collective and collaborative creative play. The aim of the facilitated collaboration was to design and experiment various modalities of interaction and co-creation (e.g. art, design, dance, music) to engage participants to connect, foster and strengthen their inter-connectedness within their social-cultural fabric and relations "

Figure 1.4: Edinburg Food Sharers

Literature Research

Literature research was conducted to discover what has already been done on the topic of fostering connectedness through public collective creativity.

Design Trust for Public Space (1995-present) [4]: A New York City-based organization that designs projects for the betterment of the community, and involves community members in the design process to ensure the result is something they endorse and can be proud of. Focused on various levels of the livability of places the people who live there.

Metro Movies (2013,2014,2015)-Studio Meiboom [5]:. Metro Movies is a free film festival, designed and executed by Studio Meiboom, that takes place under an Amsterdam metro station situated in the middle of two areas that are separated by the metro tracks. The festival is aimed at connecting community members in the public realm who may otherwise not come together, and giving them a collective sense of place.

The Laundromat Project (2005-present) [3]: A New York City-based project that uses laundromats as platforms for local artists and community activities. The Laundromat Project organizes the space, and the artists and people from the community provide the experience.

Assignment #39
Take a picture of your parents kissing.
"Mick and Hilary"
Holly Jackson
Santa Cruz, California USA

Figure 1.5: Reaction to assignment #39 by Holly Jackson

Learning to Love you more (2002-2009)-Miranda July and Harrell Fletcher [6]: "Learning to Love You More is both a web site and series of non-web presentations comprised of work made by the general public in response to assignments given by artists Miranda July and Harrell Fletcher…over 8000 people participated in the project." [6]

This project engaged people from all over the world by inspiring them to create things, and endeared them to the project and the community of other participants. An example of an assignment entry can be seen in figure 1.5 Many respondents continued to take part in the assignments throughout the seven years that the project existed.

Before I Die-Candy Chang (2011-present) [7]: This project consists of a wall covered with black paint, and the text "Before I die…" with lots of blank lines and buckets of chalk so that people can fill in the blanks, shown in figure 1.6. It has been executed over 1000 times, in over 70 countries, in 35 languages.

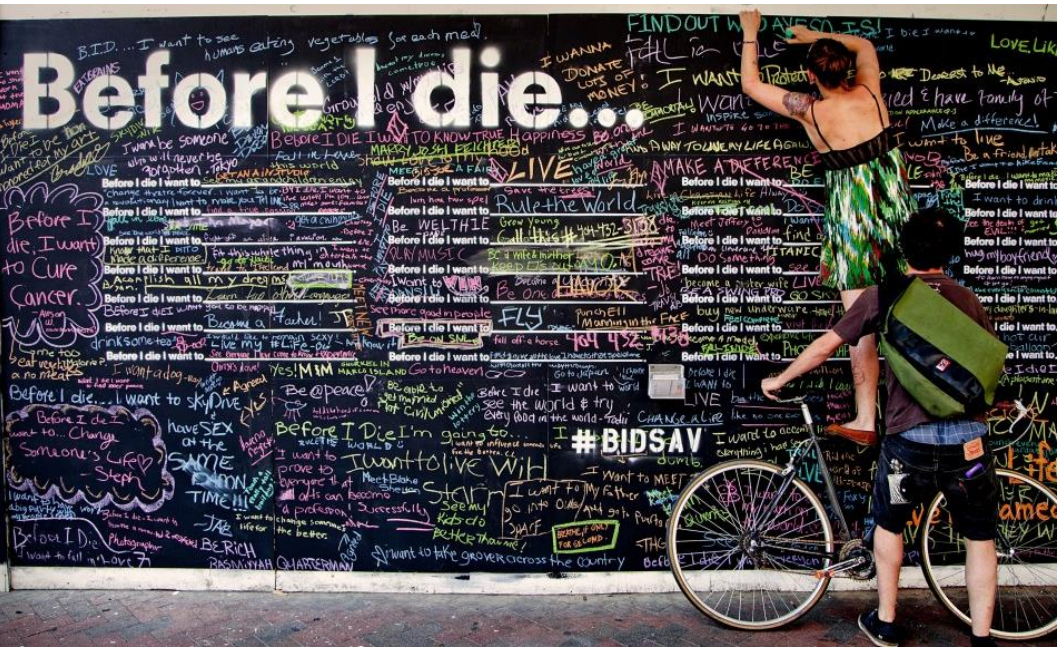


Figure 1.6: "Before I die" wall in Savannah, Georgia, USA.

Make Things (Happen)-Christine Wong Yap (2015) [8]: This project aims to show people that it does not have to be difficult to do something creative. The main component of the project are 45 A4 instruction sheets for doing or making something (like the one shown in figure 1.7),made by artists and collectives, which can be printed and completed by anyone. In a gallery in New York, which was the center of the project, Wong Yap had blank paper, markers and a photo copy machine available so that participants could make their own instruction sheet. What is interesting about this project and Candy Chang's *Before I Die…* is that they are not location specific and can be repeated anywhere. Christine's project is also a good display of the human capacity. It is created with input from the users and works through participation. Christine and Candy's work provides a catalyst that participants are inspired to act on.

Figure 1.7: Instruction sheet by Helen De Main

Field Research

Part of the field research was simply being open to conversations, spending time out and about observing people, talking to them, and sometimes asking them questions. Responses to some of the questions can be found in appendix 1. These interactions were a valuable part of field research because they made the target group more tangible, and served as a basis of comparison between my perception of the possibilities of public space, and the reality of how public space is occupied and used.

Four interactive “experiments”, were conducted in the public space to get a feeling for how different people would react to certain types of activities or questions. Inspiration for the experiments came from literature research and individual brainstorm sessions. Post-experiment videos of each experiment can be found in appendix 5.

Experiment 1: Tell Me About Your Shoe

OBJECTIVE

In my research, I discovered the Fluxus art movement of the 1960s and 70s and was inspired by its simplicity, versatility and humor. George Macunis, founder of the movement, states in his manifesto that Fluxus is,

> *Substitute art-amusement must be simple, amusing, concerned with insignificances, have no commodity or institutional value. Unlimited, obtainable by all, and produced by all [9].*

This vision ties in well with the idea of an accessible public, collaborative creative activity. Many Fluxus projects consist only of specific instructions that are to be carried out by participants. Yoko Ono's book *Grapefruit (1964)* is a collection of such "Instruction Art" pieces [10]. Artist Allison Knowles also has many such pieces, including *Shoes of your Choice [11]*, which inspired experiment one . The excerpt below, from Knowles's publication *by Alison Knowles,* is her description for the piece.

> *#6 __ Shoes of Your Choice (March, 1963)*
>
> *A member of the audience is invited to come forward to a microphone if one is available and describe a pair of shoes, the ones he is wearing or another pair. He is encouraged to tell where he got them, the size, color, why he likes them, etc.*
>
> *Premiered April 6th, 1963 at the Old Gymnasium of Douglass College, New Brunswick, New Jersey.*

Figure 1.8: Still from video of Experiment 1

Investigating the third research question, "What are successful and less successful ways of approaching and engaging people in the public space?" his experiment was meant to see how people would react to such a ludicrous, unusual request. Would it make them laugh? Would they consider it strange? Would they participate at all?

SETUP (N=13)

The experiment was conducted on the University of Twente campus (sports building, outside the supermarket, study areas and the arts building). I was carrying a chess board and a camera, and asked randomly chosen people whether they could help me with a joke, or with a project. If they consented, I asked them to take off one shoe, put it on the chess board, and tell me about it while I filmed them.

RESULTS

13 out of the 16 people I asked to participate in this experiment did so. (Figures 1.8 and 1.9 show two of the experiment respondents). Many participants seemed to enjoy talking about their shoes. Nine of them explicitly mentioned liking their shoes, and seven people talks about how they had gotten the shoes. One person made up a story especially for the experiment, based on the fact that he was presenting one shoe as opposed to two.

ANALYSIS

The response rate to this experiment was higher than expected. This could have been due to the demographic of the participants (all students, between the ages of 18 and 27). Students are generally open to participating in unusual activities, especially when those activities are organized by other students, on campus (a familiar setting).

The people who refrained from participating seemed to do so out of embarrassment or shyness of doing something unusual in front of their friends. People who I approached who were sitting alone were all more obliging than those sitting in groups. This is probably due to the dynamics at play: when I approached a single person, it was a level playing field and the roles were clear. I was the person asking, they could be the one to accept or reject me. When I approached a group, these dynamics were different. I was a single individual with a strange assignment, cutting into their group and changing the order of things. Each individual in the group had to go through the process of sizing me up, and wondering how their friends would respond, and perhaps having an inner conflict about not wanting to be singled out or put on display in front of the rest.

The fact that the majority of participants mentioned liking their shoes, and shared the stories of how they got them speaks to the level of attachment people can feel to their possessions, but also the emotional value of artefacts as reminders: many of the stories involved having bought the shoes with friends or family.

FINDINGS

This experiment was a recipe that yielded a different result for each participant. I provided the means, they provided the story. Shoes turned out to be an easy topic to talk about, and similar results could likely be achieved by asking people to talk about other possessions that people use frequently and rely on: their keys, jackets, eye-glasses etc. As far as answering the research question, “What are successful and less successful ways of approaching and engaging people in the public space?”, I can carefully say that, depending on the assignment, engaging a single individual in the public space may be easier than engaging a group of people, unless the group is made out of people who don’t know each other. Approaching people and allowing them to contribute something personal to the activity at hand also seems to work well.

Figure 1.9: Still from video of Experiment 1

Experiment 2: Gratitude

OBJECTIVE

An email exchange early on in this project with artist Christine Wong Yap inspired me to look into positive psychology as a source of inspiration. Wong Yap mentioned her own interest in this field, and how her own research on this topic has been inspiring her art for the past few years.

Positive psychology is "the scientific study of the strengths that enable individuals and communities to thrive" [12]. Positive psychology research has indicated a connection between experiencing positive emotions and affect and increased engagement in one's environment. According to Brenda Fredrickson's 'Broaden and Build Theory of Positive Emotions', specific positive emotions (including pride, love, joy and interest) are beneficial because of their ability to broaden our mindset, which makes us more adaptable and builds enduring resources [13]. For example, "social play, with its shared amusement, excitement, and smiles, builds lasting social bonds and attachments which can become the locus of subsequent social support" [13]. At the very least, positive psychology research indicates that getting people to enjoy themselves together could contribute to them feeling more connected to one another, and be more open to participating in community based activities in the future.

In this experiment, I chose to interview people about what they are grateful. Positive psychology research indicates that expressing and experiencing gratitude has positive effects on people's state of mind and relationships [14, 20]. The experiment aimed to investigate research questions three (*What are successful and less successful ways of approaching and engaging people in the public space?*) and four (*What are various ways in which people experience and act on a sense of connection to community?)* Asking about what people are grateful for is a way to see whether their connection to family, friends or communities are commonly named themes, which would indicate that these are factors that are important to them. I was also looking to see if engaging in this activity would make people visibly more cheerful. Finally, this experiment was a test to see how people would react to this question, which is more personal than talking about shoes.

SETUP

This experiment was carried out in the Enschede city center. I chose participants at random, and asked them to name three things that they are grateful for. I had my camera and audio recorder with me, and asked them of I could record their answer with video or audio.

RESULTS (N=7)

The responses to this experiment were very mixed. Seven people who I approached chose to respond, but about six or seven others seemed suspicious of me, particularly of my camera, and said things like “No, no, just no”, “I’m not interested” or “No filming!” Again, the students proved most open to participation, six out of the seven respondents were students (Figure 1.9 shows three of these students). The last respondent was older, perhaps in his sixties.

Answers varied from personal things (“*I’m glad my grandparents are still alive”*), to more generic things (“*I’m happy with the beautiful weather*”), and in groups, people’s answers tended to influence each other to some degree. One person mentioned that he was grateful for running water, and his friend, who responded after him, mentioned that too.

ANALYSIS

Although the responses to this experiment were somewhat discouraging, it is possible that it was not the topic of gratitude that made people skeptical, but rather the fact that I approached them with a camera in my hand and asked them if they would like to participate in a project. The public space is so full of people who are trying to get money from you that people condition themselves to be wary of any stranger who approaches them. I also observed a phenomenon of “generational camera shyness”. Where students generally seem to have no problem being filmed, older generations are very wary and skeptical of being filmed. The last participant in this experiment, the gentleman in his sixties, refrained from being filmed but agreed to having his answer recorded.

FINDINGS

In answer to the research question “*What are successful and less successful ways of approaching and engaging people in the public space?”*, it can be said that this approach was not very successful. This was probably a mix of the topic and of the recording medium. I discovered that older people generally do not appreciate being filmed, and that people are skeptical of being approached in the street. With regard to the fourth research question, “*What are various ways in which people experience and act on a sense of connection to community?”* four of the seven participants indicated being grateful for things that related to being part of a community (family, friends, safety). Of course, the simple act of standing in groups is also a way in which people create a sense of community.

Figure 1.9: Still from video of Experiment 2

Experiment 2.5: Food Questions

OBJECTIVE

Following the Gratitude experiment, I decided to ask people about a less personal topic, that most people enjoy discussing: food. This experiment was aimed at determining what specifically had made the gratitude experiment unsuccessful as far as the response rate. As such, this experiment was a continued research into the question "*What are successful and less successful ways of approaching and engaging people in the public space?*"

SETUP

This experiment was carried out in the Enschede city center. I chose participants at random, and asked them a question out of a series of food-related questions that I had formulated and written down at home. The questions varied from standard food questions: "What is the last meal you really enjoyed?" to more unusual questions like "how do you eat an apple?" I had my camera and audio recorder with me, but due to the negative responses I received to my camera in the gratitude experiment, I used my audio recorder for most of the questions (Figure 1.10 is a still of the interview with two respondents who did agree to be filmed).

RESULTS (N=9)

People were obviously uncertain about my intentions when I asked them food-related questions. The ease with which they responded was directly related to the normality of the questions.

Figure 1.10: Still from video of Experiment 2.5

For example, people found it very strange to be asked how they eat an apple or how they make a grilled cheese sandwich, but barely had to think about their answer when asked what the last meal was that they really enjoyed. People did not object to having their voices recorded.

ANALYSIS

What surprised me the most about the results of the Food Questions Experiment was that people did not really interact with me after I asked them questions. I had expected that questions like, "How do you eat an apple?" would lead to conversations with people, or make people laugh. On the contrary, people obliged to respond but that was about it. This is probably due to the fact that I had somehow intruded into their routine with unexpected and strange questions, and they didn't know who I was or why I was asking them a question related to food.

FINDINGS

Although this was an amusing experiment, it was not really successful in yielding much insight into how to engage people in the public space. In response to the research question, "*What are successful and less successful ways of approaching and engaging people in the public space?*" it can be concluded that approaching people directly with questions is a sure way to make them skeptical about your intentions without even having heard your question. It may be more effective to get people physically doing something as a means of engagement with each other.

Experiment 3: The Name Walk

OBJECTIVE

The format of this experiment was inspired by Christine Wong-Yap's project "Make Something (Happen)" (2015), where project participants are inspired to do or make something by following a simple instruction sheet [8], and by the Fluxus movement's "instruction art" pieces, that provide instructions for a specific act and leave the result up to the person/people carrying the instructions out [10,11]

The specific activity was inspired by the theory of embodied cognition. This theory does not have one clear definition, but the basic idea is that cognitive function is intrinsically connected to the body and its movement and senses [15, 26]. The idea in applying it to this experiment was that perhaps the act of remembering a name could be embodied, and thus be made more effective and more fun. To this end, the following assignment was formulated: "Meet someone new, exchange names, ask for spelling, and then walk/hop/dance the other person's name."

This experiment explores research question four, (*What are successful and less successful ways of approaching and engaging people in the public space?*) and aims to see how people react to being given an assignment that requires them to physically act out something in an unusual way. The experiment also aims to apply the embodied cognition theory, seeing if participants actually remember the name of someone they had no intention of meeting after carrying out the assignment.

Figure 1.11: Name Walk Poster

SETUP

The Name Walk is designed as a simple and ludicrous act that two unacquainted people can perform simultaneously (tracing the letters of the other person's first name). Figure 1.11 is a poster that explains the Name Walk. The goal of the activity is to break the ice, allowing two strangers to be silly together and get to know each other's names. To carry out this experiment, I approached two student-aged people who were sitting on the same ledge, and looked like they were waiting. I walked up to them and asked them at the same time if they could help me out with a project.

RESULTS (N=2)

Despite the fact that they both found it a bit strange, they did it and seemed to enjoy the activity. They were both unsure of how to carry out the assignment, and had to check the spelling of each other's names a few times (Figure 1.12 shows Megan and Nour at the start of their Name Walk). After the activity, the three of us talked for a bit, and when one of them had to leave, they each remembered and used each other's names in their goodbyes.

ANALYSIS

This is the first experiment that established a connection between two people, albeit a temporary one. Both participants were student-aged, and it would probably be more difficult to convince older people to do this. However, the theory of embodied cognition was tested effectively, and dancing or walking the name of someone you have just met would likely be an effective way to remember that name for many people.

Figure 1.12: Still from video of Experiment 3

A better way to implement the Name Walk could be to get a number of people to agree to do it with the next person they meet, and give them the instruction sheet. That way, they could pass the sheet on to the person they did the Name Walk with, and perhaps that person would do it with someone else, possibly creating a snowball effect of people doing Name Walks.

FINDINGS

The Name Walk was an effective activity to make people laugh and help them to remember the name of the person they just met. In response to the research question, "*What are successful and less successful ways of approaching and engaging people in the public space?*" it can be said that if the goal of an activity is to get people to move, a clear set of instructions could be an effective way to make people less self-conscious about what they are doing, because the responsibility for the type of action is placed in the hands of the activity designer; The participant did not think of it, they are simply going with the instructions. The instructions can be compared to an essay prompt or an art assignment which provides the student with a direction for their work.

This is a similar effect that I observed during the short dance lessons given at the "Life Evolved" exhibition in Edinburgh. Giving participants concrete, but loosely interpretable instructions (be like the wind, or be like water), creates a setting in which they do not have to completely improvise, but also cannot do anything wrong since the instructions don't say specifically *how* to be like wind, or *how* to walk the name, just to do so.

The Final Experiment

Experiment 4: Chalk Attack!

Going into Experiment 4, I knew that this would be a turning point in the project. As opposed to previous experiments, which tested people's reactions to being approached in various ways, the Chalk Attack was a trial run for a potential final product of this project. If the event had been effective at engaging participants with the activity and with each other, the design could have been refined and developed into an event blueprint that could be instigated anywhere.

I thought of the Chalk Attack as a simple but effective way to spark collective creativity and connect people in the public space. Chalk is relatively cheap, the goal (to cover a defined public area with chalk drawings) is simple and inclusive, and the product is ephemeral. This is an aspect of the Chalk Attack that was especially appealing, because it embodied the idea of acting within the existing space but not claiming it for one's own.

In practice, the Chalk Attack was not the exciting, bonding experience for participants that I had hoped it would be. At this point, it became necessary to reexamine my approach to the project.

OBJECTIVE

This experiment investigates research questions three (*What are successful and less successful ways of approaching and engaging people in the public space?*) by testing whether an engaging public event can be put into action spontaneously. Research question four (*What are various ways in which people experience and act on a sense of connection to community?)* is examined by testing whether participants who are given a common goal will feel connected to each other during the activity at hand.

Research at the University of Groningen has determined that groups of people can develop a sense of solidarity when acting together [16]. Furthermore, this research discovered that when a group carries out complementary action as opposed to uniform action (eg. A choir singing in harmony vs a choir singing in unison), group members also develop a sense of personal value to the group [16].

The Chalk Attack initiates a setting in which unacquainted people can work together to achieve a common goal, and do so by contributing their own chalk drawings to the city square; a collective, complementary-action activity.

A model of in-group identification proposed in 2008 lays out two main components of in-group identification with five sub-components. The two main components are Self-Investment (sub-components: solidarity, satisfaction, and centrality) and Self-Definition (sub-components: Individual self-stereotyping and In-group homogeneity) [17].

The components represent factors which, when experienced by an individual, can make that individual feel that he/she is part of an in-group. The Chalk Attack aims to connect participants by stimulating feelings of solidarity and satisfaction. These sub components will be stimulated by providing participants with a common goal that is fun to achieve.

Figure 1.13: Chalk Attack Poster Boxes

Figure 1.14: A brainstorm of initial ideas for the Chalk Attack

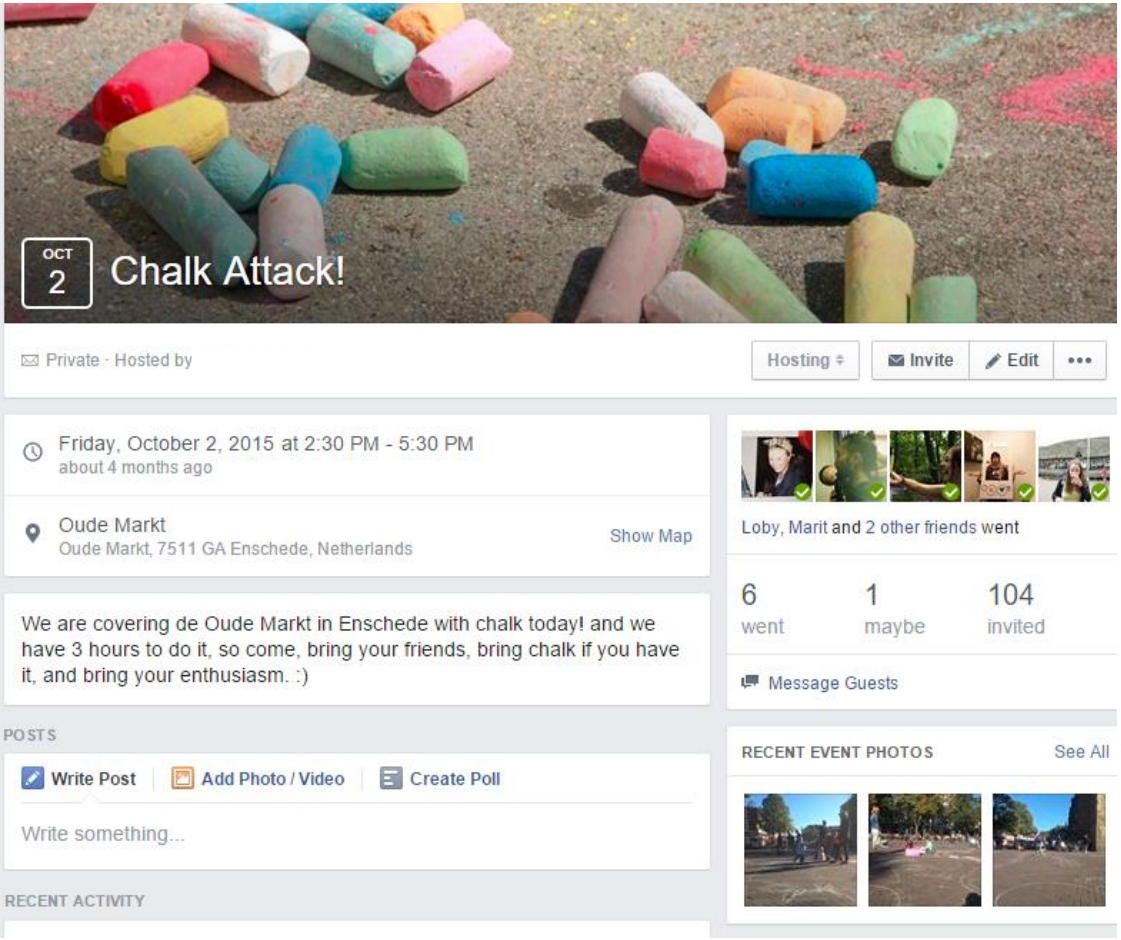


Figure 1.19: Chalk Attack! Event page on Facebook

SETUP

The Chalk Attack was initiated and executed in one day. The event was announced morning via social media, inviting people to come cover the main city square with chalk at 14:00 that afternoon. Surveys were printed, a poster was made, chalk was bought, and at two o'clock everything was set up on the main city square. Four friends were present to help get the event started. They took chalk, started drawing, and involved people who walked by, inviting them to join us in drawing by offering them pieces of chalk and explaining that we only had three hours to cover the whole square with chalk.

Figure 1.15: A mother watches as her kids pick out chalk to draw with

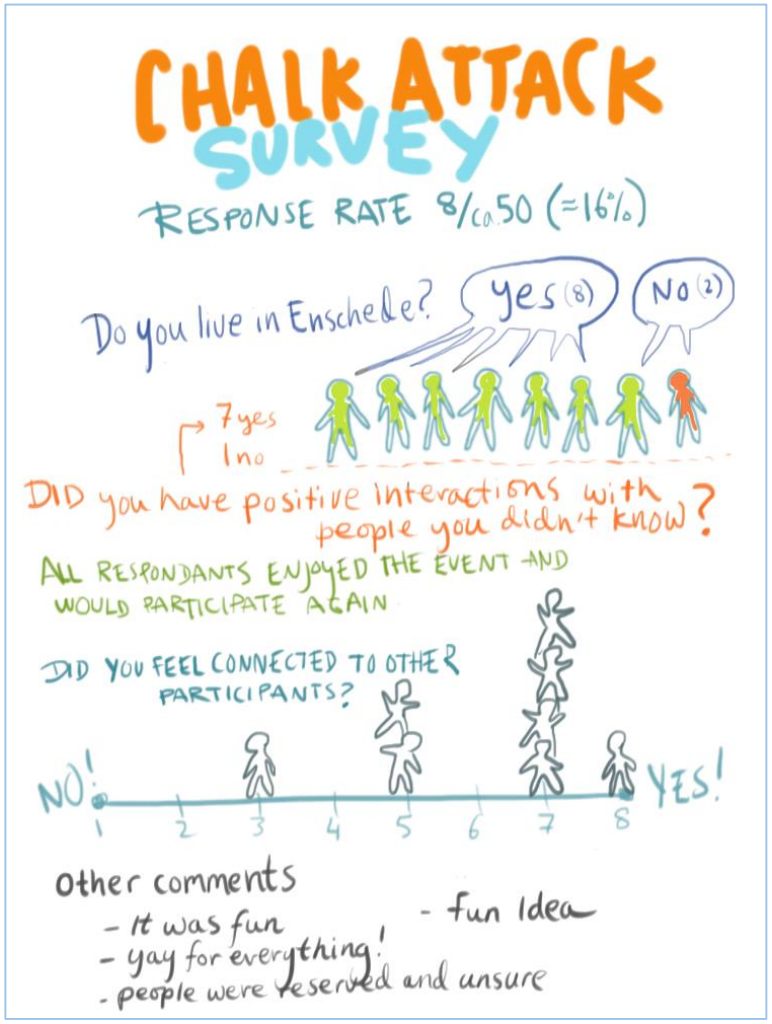


Figure 1.16: Responses to the Chalk Attack Survey

RESULTS (N=50)

The chalk attack lasted about three hours. Despite some skeptics, many people (adults and children alike) were enthusiastic about drawing with chalk in a public space. Numerous people came up to me and thanked me for organizing this, saying what a great idea it was and that they could not believe they had never thought to chalk in such a public space. Between five and twenty people were drawing at the same time, and duration of participation varied greatly. A core group of about seven people were drawing the whole time, and other participants came and went.

The ages of participants also varied greatly (from about age 3 to age 55), but the 'core' group, who spent most of the time chalking, was mostly student-aged. An interesting phenomenon was observed, where when mostly adults were chalking, few parents allowed their children to join in. However, when the amount of adult participants dwindled and children became the majority, parents sitting on café terraces allowed their children to join in unchaperoned, and adults stopped joining in, likely viewing it as a 'kids activity'.

ANALYSIS

Despite the fact that participants enjoyed the Chalk Attack, the impact was more limited than expected. The core participants were most impacted by the Chalk Attack . These were friends of mine who had come to help make the event possible by engaging passerbys and setting an example. This motivated and enthusiastic group did manage to get other people drawing and enjoying themselves, but the sense of connection in working towards a common goal was missing. This may have been caused by a number of factors. Firstly, the space was too spread out to facilitate interaction between people. Either the space should have been smaller, or there would have had to be more participants. More resources and organization could have increased the rate of participation by implementing more effective promotion, and giving the event more visibility so that participants would feel like part of something bigger. As it was, the mission of covering the market as a team was somewhat lost.

FINDINGS

In response to the research question, “What are various ways in which people experience and act on a sense of connection to community?”, the strategy of stimulating components of in-group identification between strangers was mostly unsuccessful in the Chalk Attack.

For the core group of participants, it did work; I sensed a strong feeling of connection between the people who stayed for the whole three hours to make the Chalk Attack a success.

In response to the research question, “What are successful and less successful ways of approaching and engaging people in the public space?”, this experiment showed that providing tools and letting people use them however they want can be an effective way of engaging people in creative activity, but collaboration between participants is unlikely unless the activity somehow requires participants to interact with one another.

STARTING TO RETHINK THE APPROACH

After seeing how most participants experienced the Chalk Attack (simply as a fun thing to do for a bit on a Friday afternoon with the friends you are walking through the city with), I realized that this event was missing the impact that I had envisioned. I realized that I needed to change my angle and reach people in a different way if I this experience was really going to reach them. With this realization, I returned to my originally formulated aim to see how it could be redirected, based on the information gathered during the research phase.

Figure 1.17: Participants work to cover the market with chalk

Figures 1.17-18: Chalk Attack Pictures 3 and 4

Synthesis of Field Research and Preliminary Conclusions

Analysis of the information collected in the field and literature research demands an adjustment of the aims set out at the start of this project. The original goal of this project was to design an experience in the public realm that would facilitate connectivity and interaction between participants through collective and collaborative creative play. This vision was based on an idea of what type of experience would be of value to society and to the individual. After two months of research, the answers to the following three research questions let to the conclusion that **in order to create a meaningful experience, the approach of the project would have to be shifted.**

- What projects/initiatives that fulfill all or some of the aims of this project have already been carried out?

A **lot has already been done** in the field of public creativity that serves to connect participants. Other artists and activists are also convinced of the power of and need for creative play in the public realm, and consequently many projects have been started with this idea at heart. That is not to say that there is public creativity available to anyone seeking it, or that there is no longer a need for such activities.

What it does illustrate is how local the impact of such projects often is. Many projects exist with the goal of instigating public creativity, and yet it is still not part of our normal public space.

If such an experience were to be designed for this project, it would be challenging to design a more impactful experience within four months, and the value of designing a new experience versus applying one that has already been designed and tested would have to be questioned.

- What are various ways in which people experience and act on a sense of connection to community?

There **are a plethora of ways in which people experience community**. Community can be found online or in the "real" world, it can be stretched over continents, it can be concentrated in tiny groups, grow out of a shared activity, a shared situation, commonalities between group members, etc. Despite the varied forms in which communities take shape, the sense of connection they inspire in their members seems to be, to some extent, universal. In turn, **this sense of connection and appreciation for the community can lead to impressive efforts on the part of community members** to make things better for their community, like building a new skate park for the skaters or putting in hours and hours of volunteer work to get a community business off the ground.

Something I realized during my field research, was **that I had not given people enough credit for their own creativity**. People are incredibly resourceful when they feel a drive to do something they care about, their community for example, and this type of creativity is *far more meaningful than any activity I could impose on them in the public space, simply because their own creativity is internally motivated.*

- What are successful and less successful ways of approaching and engaging people in the public space?

The four experiments were set up to test this research question. The main takeaway from these experiments is that they succeeded only temporarily in engaging participants, and had the most impact on me, the maker. I saw my goal of connection working for me, because I was able to observe the commonalities between a variety of people, and glace into their lives and become aware of their presence within my community. **For the people who participated, the experiments were just an incidental occurrence.** I don't think it had much impact on them because I was too present. They had little room to fill in the blanks, and contrary to initial assumptions*, the wide open public space of the city center seemed to be an unsuitable place to connect and engage participants when they were not expecting it.* **People on the go are generally not in the mood to stop and connect to people** they don't know. By approaching them and giving them an assignment or asking a question, I created clear roles: the person with the idea, and the one who acts that idea out. That kind of interaction does not line up with the goal of this project.

The chalk attack was an improvement, but also had its flaws. It did take on a life of its own because I provided the materials and people took them and used them however they liked. Participants obviously enjoyed themselves, but did not really interact with participants who they did not know. The space was so spread out that interaction was not necessary, and the action of drawing with chalk is so individual that interaction was not stimulated either.

Public space in the sense of open squares and parks, is perhaps not the appropriate environment to reach people in a meaningful way, because the routine, environment and mindset of people would have to be changed, in an environment that already carries many associations and functions with it (shopping! work! busy! stress! Friends time!). **Public space (physical and digital) is also full of stimuli**, *making each new stimuli part of a wave of input that individuals must filter. They filter information quickly, and are wary of thigs they do not know.*

The public realm must perhaps be targeted in a broader sense, meaning that the project is accessible to a variety of people, but that they choose to participate in it and come to the experience, rather than that it is imposed on them.

Finally, the question must be asked: why should individuals in the public space engage in this particular activity? What makes it different from all the other things they can choose to do? Despite the lack of public creativity**, there is certainly no shortage of thigs for people to do**, and no shortage of input demanding people to take action. From billboards, "*Buy this! Act Now!"* to smartphones, making it possible for people to fill idle time with games and messaging, to more subtle demands to act that people receive via media, setting the example for a normal life where people are always on the go, always stressed, and always pursuing the same path to success.

To summarize,

1. A lot of projects already exist in the realm of public creativity.

> *What is missing is space for rest. Stimuli free/low environments where people can recharge and reflect, but not have to do anything.*

2. People are already over-stimulated and are constantly being enticed to do things

3. People have a strong need be part of community and can be incredibly creative when they are driven to help their community.

> *Internally motivated creativity is far more meaningful than externally motivated creativity. Remind people of their human capacity, their individual capabilities.*
>
> *On the other hand, let people see that their community extends beyond their immediate community. At times, people seem to be so consumed by their identity as part of a community that they differentiate themselves from outsiders or develop hatred towards other groups, simply because they see those groups as different from themselves. It would be of value to society if people would have an awareness that we are all part of a global community.*

Figures 1.19-1.24 illustrate the thought process throughout the research phase that led to the shift in the project aim.

Figure 1.19: I started the research with the intention of creating a meaningful experience in the public realm where people would be creative together and connect to one annother as a result.

Figure 1.20: During my research, I realized that people have developed a weariness towards such projects since they recieve so many other stimuli. This also makes it hard to make an activity meaningful, since it will always have to compete against a plethora of other activities that people do or could do in a day.

Figure 1.21: A positive outcome of the field research was the realisation that people are, of their own accord, much more creative than I had realized, and that the catalyst for such creativity is often a community that they feel a strong connection to.

Figure 1.22: With all of this information, it did not make sense to continue the project with the same approach. Now what?

Figure 1.23: What If I flipped it over? I had been so focused on DOING something. But it seems that people have enough to do already. So what if I gave people the chance to do absolutely nothing, and reminded them of their own human strength, which I had seen in action during my field research? Maybe the aspect of connectivity could be a conceptual part of the experience, rather than an active goal?

Figure 1.24 41

THE NEW AIM OF THIS PROJECT WILL BE TO DESIGN AND CREATE A LOW-STIMULI ENVIRONMENT THAT ALLOWS USERS TO REFLECT AND RECHARGE, AND REMINDS THEM OF THEIR HUMAN CAPACITY AND CONNECTION TO THE GLOBAL COMMUNITY

Design

Vision

First Prototype

Final Prototype

Context and Logistics

Vision

The formulation of a new project goal required a concept to embody that goal. Considering the most effective way to conceptualize connectivity and human strength in a low-stimuli, quietude inspiring environment, the idea of the Womb crystalized.

The Womb is a physical structure that will provide a low-stimuli environment for users to reflect and recharge. The symbolism of the Womb will be used to remind users of their human capacity and their connection to all people. The Womb is a symbol of connection because it is the one place that everybody originates from. It can be seen as a representation of human capacity because it is the incubator that allows us to grow into fully functioning beings until we are ready to exit into the world. This exit is our first victory, a seemingly impossible feat that we accomplish with no knowledge except our human instincts. It is fitting that this would be a stimuli free environment to rest and reflect, because a baby in a Womb receives very few stimuli from the outside world and lives in isolation for nine months.

The concept of the artificial Womb is that people will once again enter a Womb, this time a Womb that has also been occupied by strangers. This act is symbolic in many respects. First of all, the through willful entering of a place of conception, people open themselves to the possibility of re-conception. The sharing of the Womb with strangers symbolizes the connection between all people, our common heritage of the Womb.

In a sense, it serves as a reminder that we are all intrinsically linked to humanity and each other and that we are all part of the global community. The Womb should serve as an incubator for ideas, a catalyst for people to feel their connection to the global community and feel that this is also a community worth acting on behalf of, worth projecting their human capacity onto. This global community can be truly global, but can also simply represent the people in their community, city, town, country, that they do not know but are still connected to. The Womb should also be a safe place of peace and quiet, where people can temporarily escape from the stress and stimuli in the outside world.

At the end of the experience, in perhaps the most symbolic act, people push themselves out of the Womb and into the world. They rebirth themselves, and with this rebirth comes the power to recreate themselves. To take on a new view on the world, to bundle their human capacity and apply it for the betterment of our shared world.

First Prototype

With the decision to develop the Womb concept came the need for a functional prototype so that the concept could be tangibly shared with others. Having a prototype would enable user tests to be carried out to gather initial reactions to the idea and the product.

LIST OF REQUIREMENTS FOR THE FIRST PROTOTYPE

- The prototype must envelope the user's body completely
- The prototype must be large enough for an average adult to fit into in a fetus position
- The prototype must be comfortable
- The prototype must convey the idea of a Womb
- Short production time (preferably less than five days)
- Low-cost production, preferably with reused or recycled materials

Designing and Building the First Prototype

Material costs: 15 euro Estimated time: 20 hours

"The magical transformation of ordinary materials such as beans or bread speaks to conceptualizations of time and to the transformative act that a playful repositioning of the everyday might accomplish. The way in which it restores time and labor to our experience of objects-be they shoes or beans and paper-is partly captured by Knowles's statement: "As we know, time spent on shoes is never wasted"; while simultaneously divesting the objects of their original function, it playfully transmigrates the object to its own magic circle".- Mary Flanagan [19]

To construct the Womb quickly and cheaply, it was necessary to use skills and materials that I already had, or that could be acquired quickly and cheaply. I am an able sewer, and decided to sew the Womb out of old jean material. I put out the message to everyone I could reach that I was in search of old jeans and quickly received a full bag of jeans, most of them discarded because they had ripped at the crotch. This provided the bulk of the material that would be required to sew the prototype. Figures 2.1-2.6 illustrate the cumbersome process of sewing the womb, starting with the transformation of the jeans into sheets of material large enough to wrap around an average adult (shown in figure 2.1).

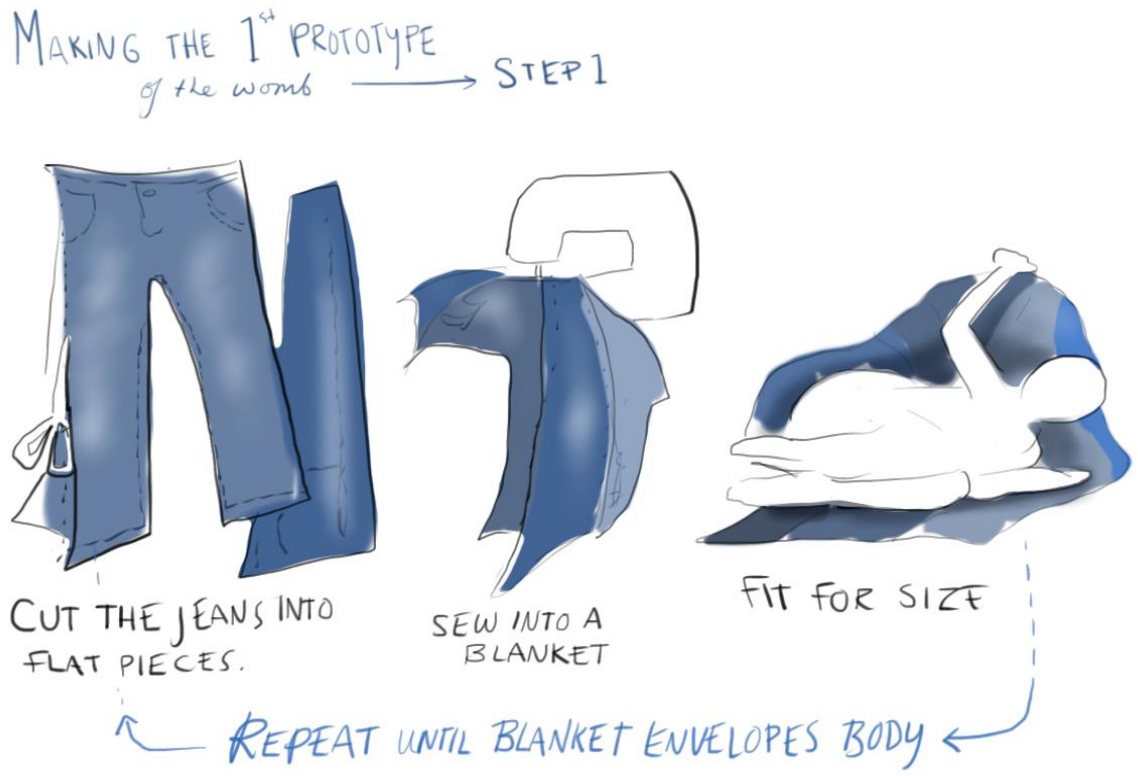


Figure 2.1: Making first prototype step 1

The average height of a Dutch adult is 174.0 cm (180.8 for men, 167.4 for women), [18]. At 183 cm, my height is slightly above average, so I used myself as a model for the prototype.

Figure 2.2-4: Making first prototype steps 2-4

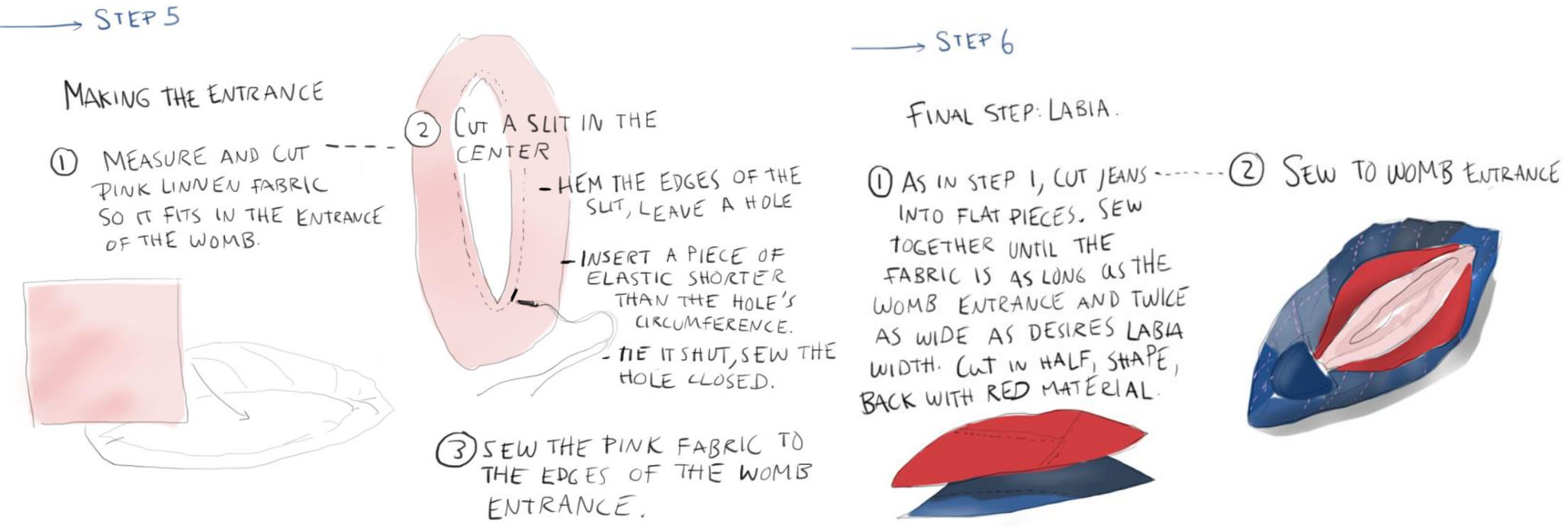


Figure 2.5-6: Making first prototype steps 5-6

the First Womb Prototype

The following images represent the first prototype of the womb, but also the story of the womb concept. Figures 2.7-2.17 chronologically show the enclosed, safe space provided by the womb, where the individual inside could by anybody, the recognition of individual human capacity, the exit of the womb, and finally the shedding of the womb, representing an embrace of the human capacity.

Figures 2.7-8: The womb as an enclosing structure, providing comfort, safety, peace and quiet.

Figure 2.9: Protected within the womb, a place for reflection and relaxation

Figure 2.10: Feel the womb's embrace



Figures 2.11-14: The struggle to emerge

Figure 2.15: Reaching out of the womb, into the world

Figure 2.16: Stretching out, claiming space. You deserve to be here, just like everyone else.

Figure 2.17: Standing and shedding the womb, thereby embracing oneself and one's own human capacity.

TESTING ROUND 1: ON THE UNIVERSITY CAMPUS

OBJECTIVE

Testing in one of the main university buildings was a way to gather initial reactions to the Womb as a product and concept. The goal of testing was to see how people would experience going into the Womb, to get an idea of the stronger and weaker aspects of the first prototype.

SETUP (N=11)

Testing was carried out in two locations on the university campus: in a faculty building, where six people tested the prototype, and in a student dormitory, where five people tested the prototype. Part of the test in the faculty building was to see how people would react to the Womb as an object. To this end, the Womb was displayed in the middle of a hallway with a sign that read, “Womb, climb in!”

People who tested the Womb were directly asked if they would like to do so. When they accepted, they were asked to take off their shoes and invited to crawl into the prototype. Afterwards, they were asked to comment on their experience.

Figures 2.18-2.20: Stills of on Campus testing videos

ANALYSIS

The disconnect between the reactions to the look of the Womb versus the reactions to the feel of the Womb indicate that the form of the Womb may need to be designed differently to make people more inclined to go inside.

The reactions of people who went inside the Womb provide useful points for how the design can be improved.

Factors that users appreciate	Factors that can be improved
The way the Womb envelops the users body	Laying on the ground is still quite hard
The opaque pink light cause by the entrance fabric	The Womb is a bit stifling
The cushiness of the Womb	The Womb does not have a shape of its own, and is thus not very appealing to crawl into
The way the Womb muffles sound from outside	

Table 2.1: Pros and Cons of Womb prototype

EVALUATION

This was an insightful first test of the Womb. The degree of unease apparently caused by the Womb itself, and the vagina entrance speaks to the persisting taboo on women's genitalia, even in a country as liberal as the Netherlands. Noticeably and unsurprisingly, men seemed to become much more uncomfortable when asked to step into the Womb than women.

The positive reactions from people who went into the Womb, as well as the positive reception of the explanation of the Womb concept shows that the concept has potential. The pros and cons of the design indicated by people who tested it will be used to design an improved prototype.

TESTING ROUND 2: AT THE DUTCH DESIGN WEEK 2015

OBJECTIVE

In October of 2015, I spent three days as part of the Ideation Lab team (representing Rawshaping Technology) at the Dutch Design Week 2015 (DDW 2015), in Eindhoven. I took the opportunity of being there to conduct a second round of testing with the womb prototype. The main objective of this round of testing was to gather reactions to the Womb concept in a space where a lot of different people would be present.

SETUP (N=45)

Due to the difficulty of getting people to go into the Womb prototype at the University of Twente, I decided that it was unlikely that many people at the DDW 2015 would be willing to try it out. Therefore, I decided to focus on spreading the message of the Womb and starting conversations about it with people to gather their reactions. To this end, I designed a way to "wear" the Womb by sewing straps onto it and sewing a dress in the same style, to turn it into a sort of Womb-costume. Part of the costume was a pouch full of little folded notes giving people an explanation of the concept and a circle of fabric, symbolizing a piece of the Womb.

Part of testing consisted of me walking around with the Womb on, talking to people about it and handing out the folded message. The other part of testing consisted of someone going into the Womb, as an example of how it is used, and me walking around to people watching and handing them the folded message. After one person had set the example, I invited bystanders to try the Womb out, but only three people did so.

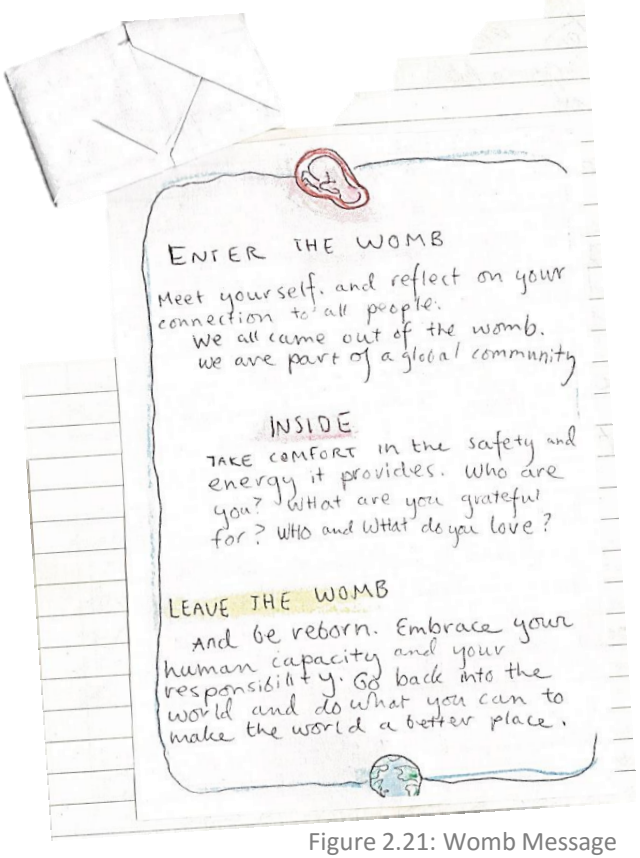


Figure 2.21: Womb Message

Figure 2.22: Handing a DDW 2015 visitor the folded womb message

RESULTS

The three people who tried out the Womb had similar reactions to the people who had tried it out on the university campus. They commented on the comfort of the structure, the coziness, that it was a bit warm and stifling, and that the sounds from outside became muffled.

The reactions to the message were very diverse. Some people found it beautiful, while others seemed a bit confused. Some people were very enthusiastic about the concept, and commented on how much they felt that people needed to be given a message like this.

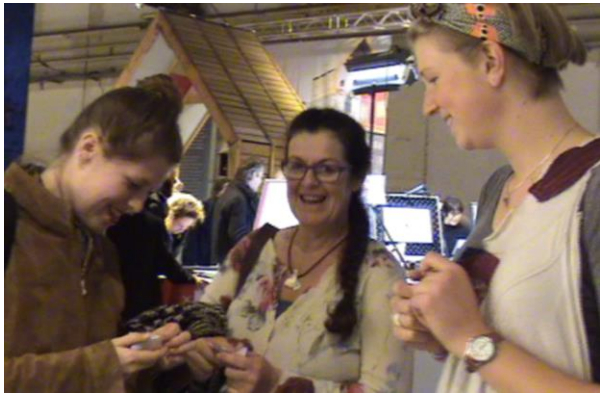
ANALYSIS

A possible reason why most people did not want to go into the Womb was self-consciousness. The DDW2015 was very crowded, and anyone who wanted to go into the Womb had to make themselves somehow vulnerable in front of the crowd: removing their shoes and crawling into a vagina-like structure on the floor.

The paper messages were an effective part of this test, because they were a means to convey the Womb concept to people without them going into the Womb. It was a means of handing them the message and leaving it up to each person whether they wanted to follow up on the message with a comment or a conversation or not.

EVALUATION

Looking back, the DDW 2015 was not an appropriate setting for the Womb concept. Visitors to this event were inundated with stimuli and the space where testing was conducted was very crowded and loud. The fact that some people did take the time to read the not, have a conversation about the Womb, or even to go inside it indicates that the concept moves people in some way.



Figures 2.23-2.25: Stills of DDW 2015 testing videos

Final Concept Design

Two rounds of testing the first prototype provided useful input for the design of a second, improved prototype. Prototyping the final concept quickly was essential so that user testing could be commenced as soon as possible.

HUMAN FACTORS REQUIREMENTS	TECHNICAL SPECIFICATIONS
Object must provide pressure to the user's body, as if the user is being hugged*	Must be large enough for an average adult to fit into in a fetus position
Must be comfortable	Short production lead time
Must convey the idea of a Womb	Low cost production, preferably using recycled materials
Must allow light to enter	Must be strong enough to hold at least 1200g if hung
Must envelope the user's body completely	If suspended, the supporting rope or cable must be able to hold a pull force of 1147N**
Object should be suspended and support the user	Must be portable by bike or car (preferably by bike)
The user should be able to enter without too much difficulty	Must be ventilated
	Dimensions of object may not exceed 1500x1000x1000mm

*see appendix 3 for an explanation of this requirement

**see appendix 4 for an explanation of this requirement

Ideation

Using the first prototype test results as inspiration, a rapid ideation and iteration session was held on the Loosely Fitted Design Synthesizer (LFDS) [27]. The goal of the session was to quickly explore possible designs, trying out different ways to fulfill the product requirements. Variables like having a free-standing structure or a hanging one, hanging method/context, size, method of entering and exiting and points of suspension were all explored. In total, the session yielded 35 iterations, which were subsequently sorted and narrowed down to a few concepts, based on feasibility and fulfillment of the product requirements, as seen in figure 3.2.

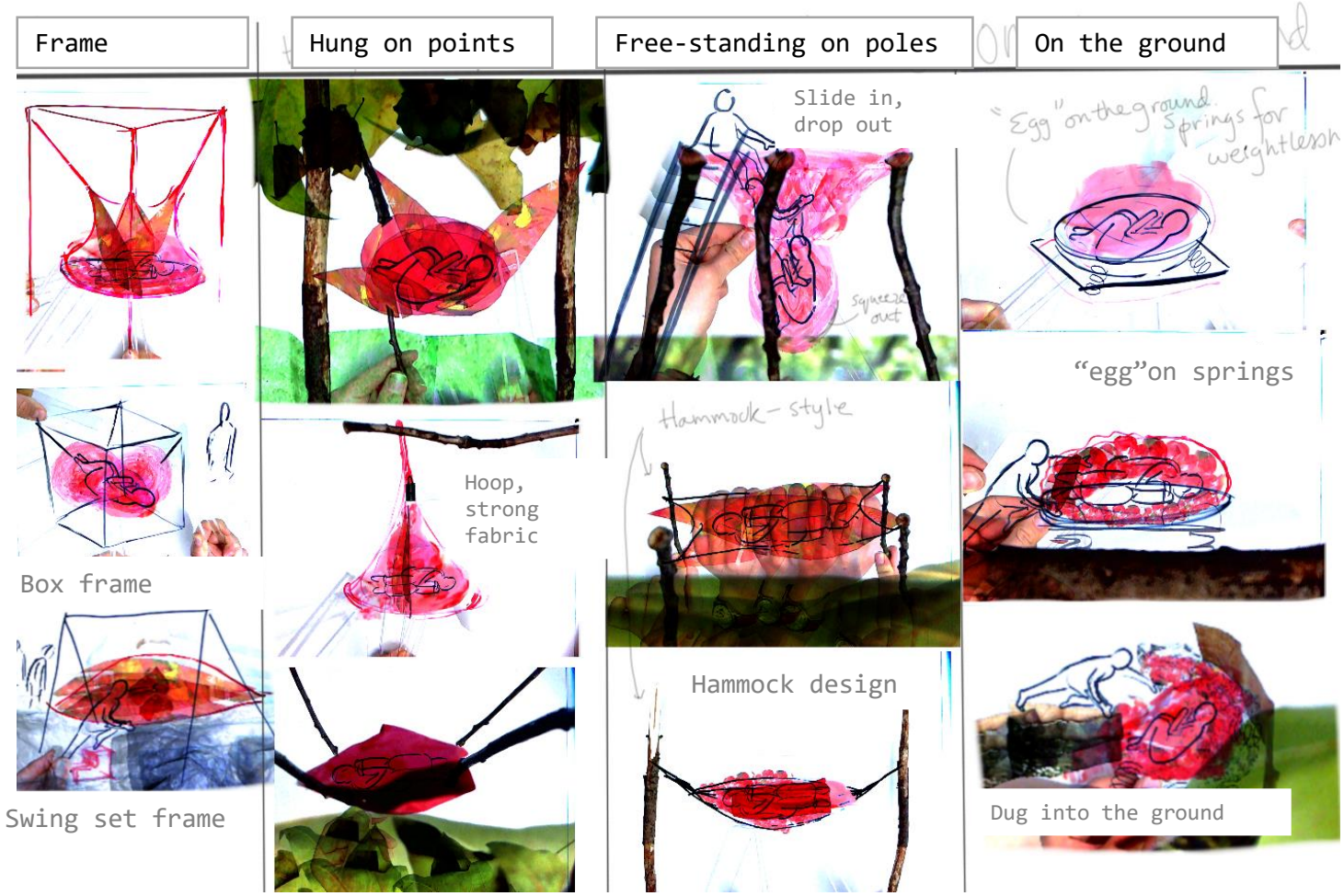


Figure 3.2: Ideas from the LFDS Session

To make the concepts more tangible, scale models were made of various concepts, and the possibilities of using existing structures was explored, specifically the bird nest swing often found on playgrounds. This swing is build and suspended in such a way that the user has a feeling of being calm and secure while swinging in it. The net that the user lays on is robust and attached to the frame by four points, which makes it swing consistently in the same path (instead of veering from side to side). A reason to use the bird's nest swing would be that it is a similar structure to the one envisioned for the Womb, and would only require an insert to be built to place on it, to make it feel soft and envelop the user. In the end, the arguments against using the swing are stronger than those for, because using it would require testing to be conducted outside, which would be unpractical in the winter time in the Netherlands.

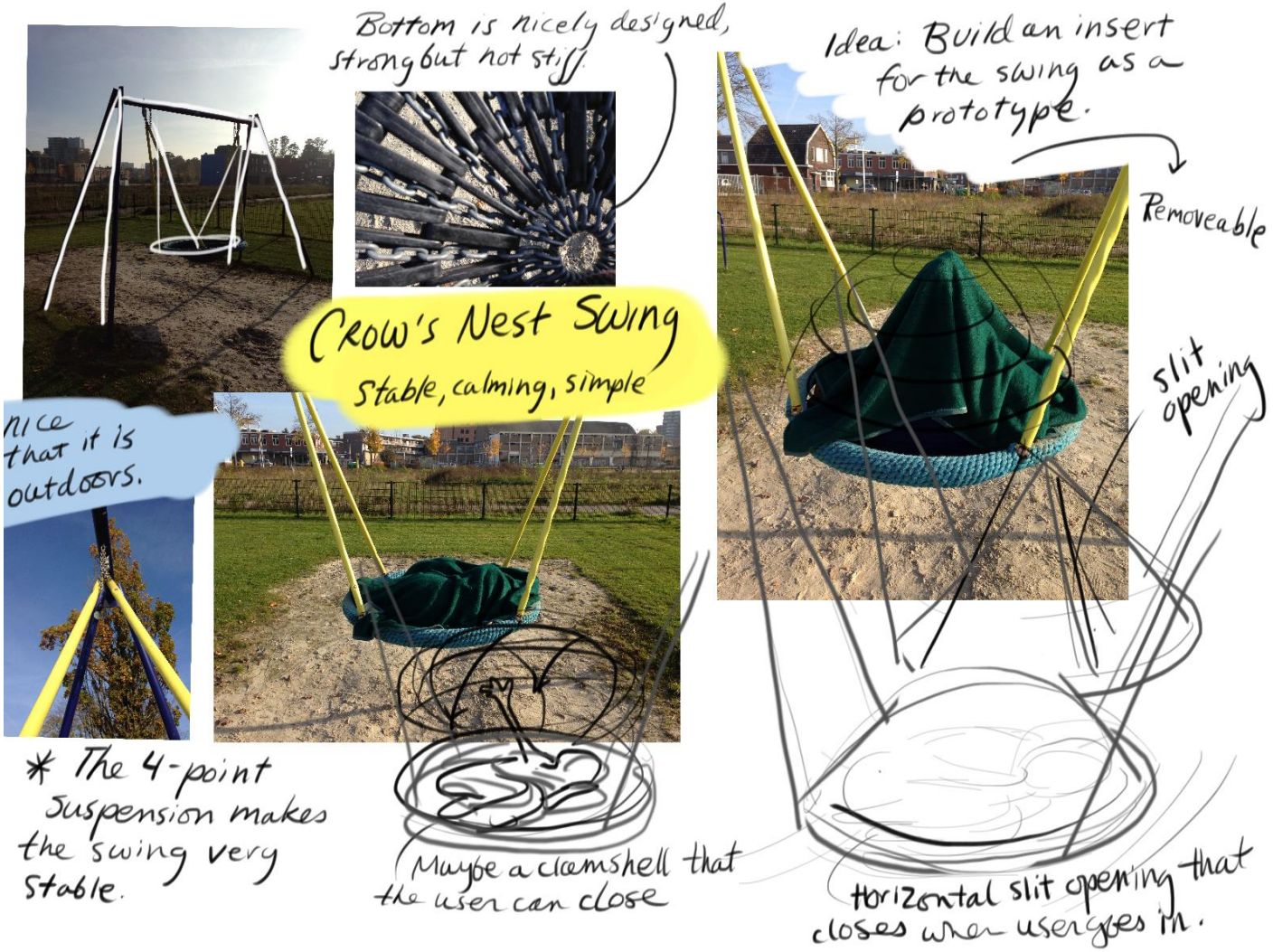


Figure 3.3: Crow's Nest Swing Exploration

Figure 3.4 shows the three concepts that the ideation process yielded. The basic scale models were constructed to make the LFDS iterations shown behind them tangible. These three concepts are the most feasible ideas that, if further developed, could fulfill the requirements of the Womb prototype. Other than the method of construction, concepts one and two are very similar. This type of construction will be further developed into the final concept, because hanging the structure fulfills the requirement of being elevated from the ground more efficiently than constructing a spring-carried structure. Also, concepts one and three will likely weigh less (and thus be more portable) than the second concept, because they will not require as many strong, heavy materials to be built, and will be flexible because the main body is textile and can be easily compressed.

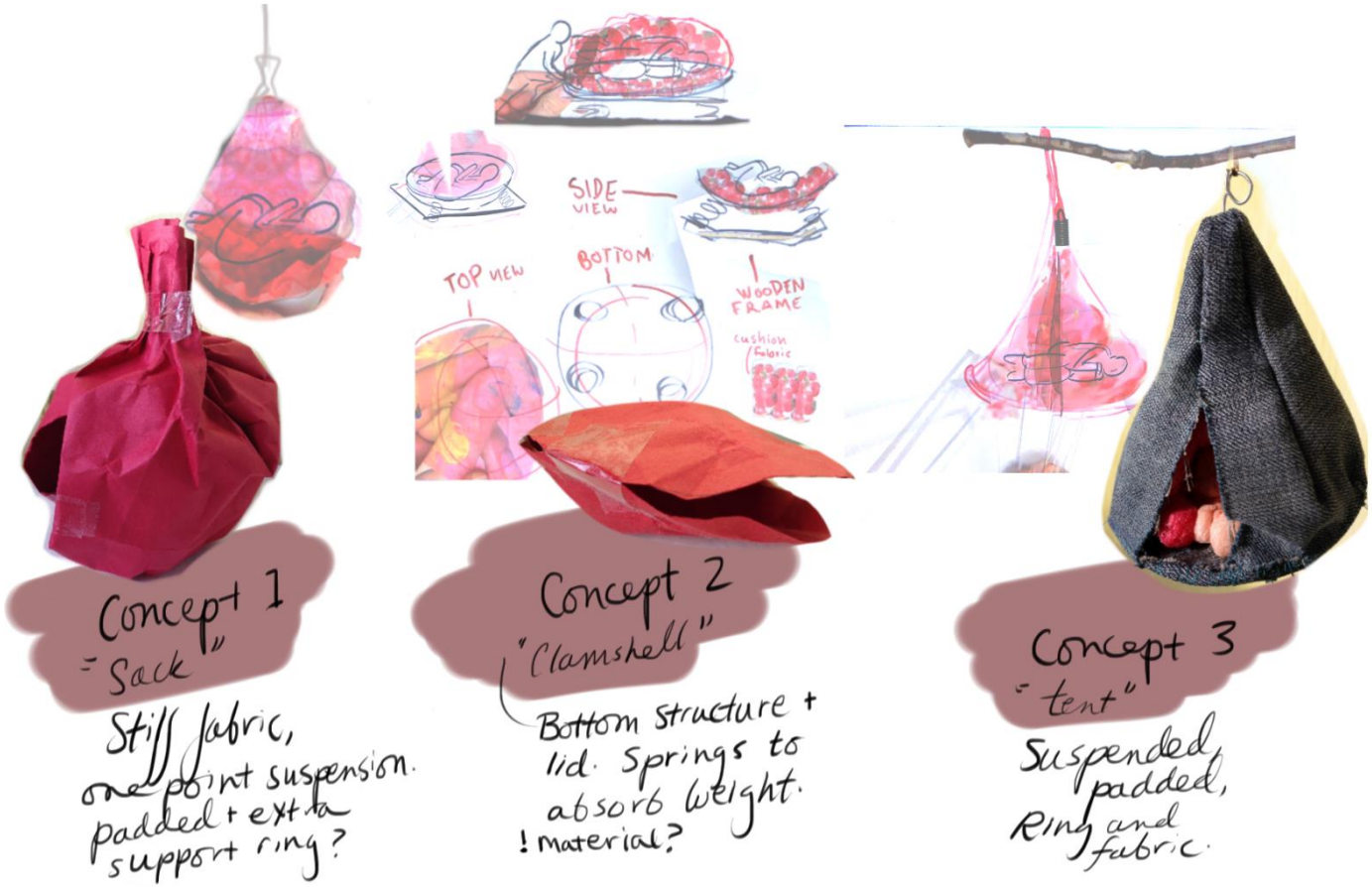


Figure 3.4: Concepts

Conceptualization

The ideation phase yielded a concept of a suspended Womb, made of textile, padded, just large enough for one person to lay in, while providing extra space above the user's head for movement and air flow. Figure 3.5 represents one possible embodiment of this concept.

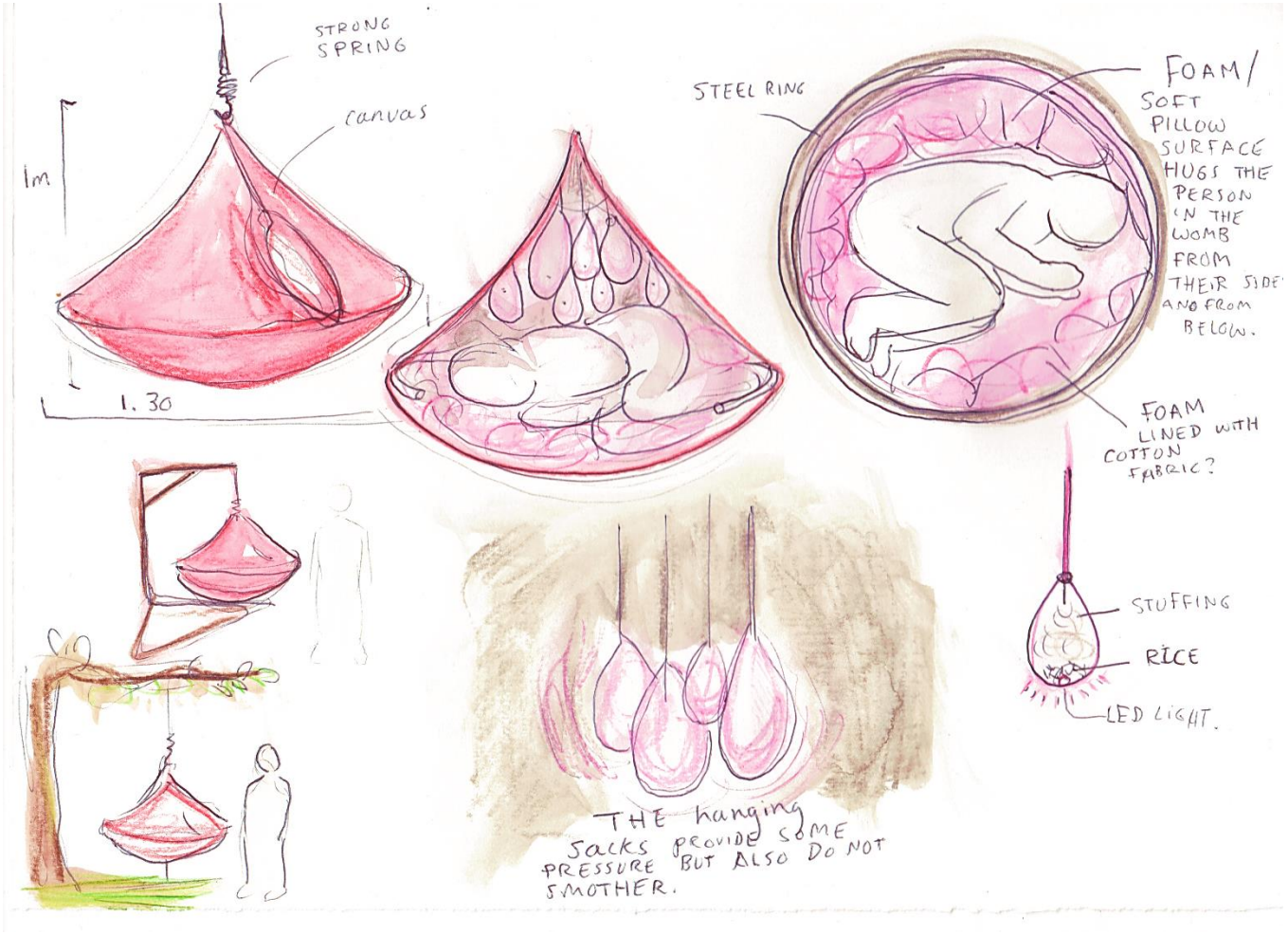


Figure 3.5: concept drawing

Paper Prototype

Figures 3.4-3.6 are photographs of a 1-1 scale paper prototype that was constructed to get an idea of the feel and size of such a structure. The prototype was constructed using wall paper, cardboard, staples and tape.

I used myself as a model for the prototype, and built it in such a way that I could just fit into it with my knees pulled up, but so that there was still space above me.

Using climbing rope, the prototype was suspended from a tree branch to get a sense of how a user would be able to enter the prototype, how high it would need to be hung, the feasibility of using a one point suspension, and to understand how such a construct might occupy space and fit into its environment.

Figures 3.6-8: 1-1 scale paper prototype

Materialization

With a concept of the second prototype in place, it was time to choose suitable materials to build it. The main material requirements were that it had to be strong, lightweight, affordable and quickly obtainable.

One day, while taking a walk and pondering the right material to use, considering materials like nylon netting (used to cover truck flatbeds) and sail material, an unexpected solution presented itself. I came across a team of gardeners working to transport large amounts of clippings and branches in a “big bag”(shown in figure 3.9).

Looking at the big bag, and taking note of its features (strong loops for suspension, carrying volume of about one cubic meter, lightweight but strong polypropylene mesh structure, industrially sewn together to hold up to 1500kg), I saw the womb take shape. Using a ready made, strong structure would dramatically reduce production time, and perhaps I would be able to acquire the bag for free, meaning low cost of production and use of recycled materials. The bemused gardeners kindly gave me a used (but clean) big bag, and so the main structure of the final womb prototype was determined.

Figure 3.9: Testing the big bag in a tree

Figure 3.10:Hanging the big bag in a two point suspension

Figures 3.11-12: Hanging the big bag in a three-point suspension.

A preliminary test was conducted to test the big bag and see what exactly would need to be adjusted to make it suitable for the Womb prototype. For the test, the bag was strung between trees using climbing rope, threaded through the big bag's suspension loops, and industrial tie wraps, to keep the loops from sliding down the rope.

Two and three point suspension were tested. A colleague and I took turns climbing into the bag via the top to test the hanging method, the big bag structure itself and the feeling of hanging inside the bag. In the mild fall weather, the feeling of swaying back and forth under the trees was calming and enjoyable, and comparable to laying inside a hammock.

What the big bag was lacking was a frame or skeleton at the base to keep the sides from squeezing the user. Also, a way to enter and exit was required.

The feel and smell of the plastic material were two elements that would need masking, because they were unpleasant and quite present inside the big bag.

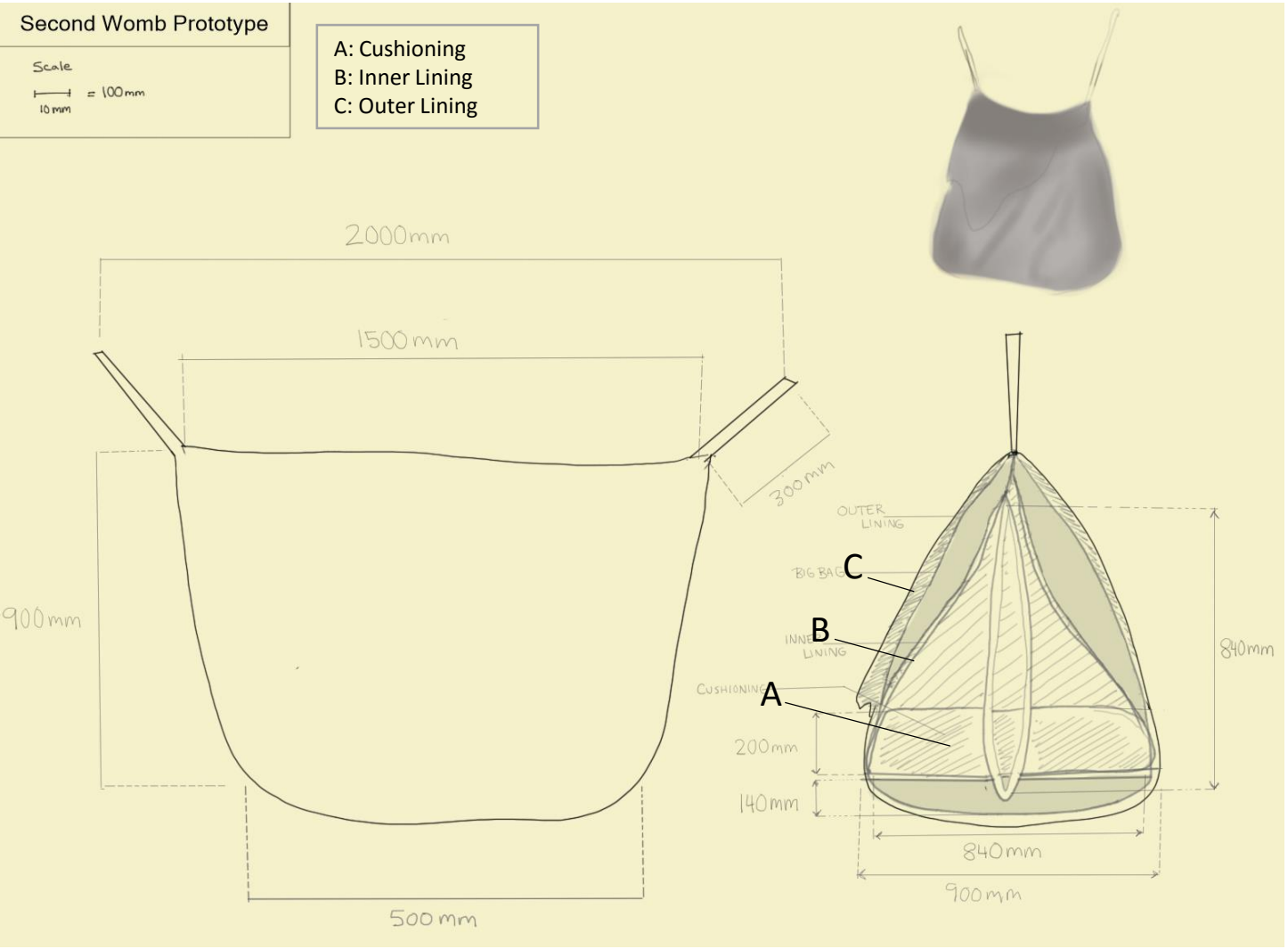


Figure 3.22: Dimensions of final prototype, with annotations

A two part cover was designed to transform the big bag into a Womb structure. The inside part of the cover (B in figure 3.21), includes the inner lining and cushioning(A). The outside part (C) masks the big bag and makes it look more like a Womb. Light pink was chosen as the most suitable color for the Womb, as it connotes the inside of the body and flesh while still being calming (as opposed to red). Another reason that pink was chosen was that in the first prototype, users appreciated the diffuse pink light caused by the pink fabric at the prototype's entrance.

Glossy, pink curtains were selected for the outside cover, because the striped pattern is reminiscent of muscle. A light pink cotton bed sheet was chosen for the cushioning and inner lining. The fabrics were acquired at a second-hand store.

Expanded polystyrene beads were chosen as the most suitable cushioning for the Womb. They are relatively lightweight and cheap, and bean bag chairs (which expanded polystyrene beads are used in) have the tendency to 'hug' the users, one requirement of the prototype. The filling was incorporated into the inside lining by sewing a cushion case the exact size of the press-board at the base of the Womb

Constructing the Final Prototype

Figures 3.13 and 3.14 illustrate the production process of the second prototype. Table 3.1 lays out the prototype's various sub-assembly parts and the production processes used to construct and assemble them. Once the materials had been selected and acquired, and the inner and outer linings had been designed, the rest of the production process was quite efficient. The second prototype was less cumbersome to build than the first because the lining material was far easier to manipulate than the jeans and filling, which became heavy, large and unwieldy towards the end of the process. The most challenging part of constructing the second Womb was filling the bottom of the inner lining with expanded polystyrene beads.

After this initial construction of the final prototype, it would undergo a few more adjustments as issues arose during testing. The entrance would later be widened, and the outside lining proved to be a bit too tight for the strain of a user hanging in the Womb, so an extra piece of fabric had to be added. The Womb would also have to undergo some minor reparations to small rips on the seams of the inner lining, caused by the wear and tear of repeated use.

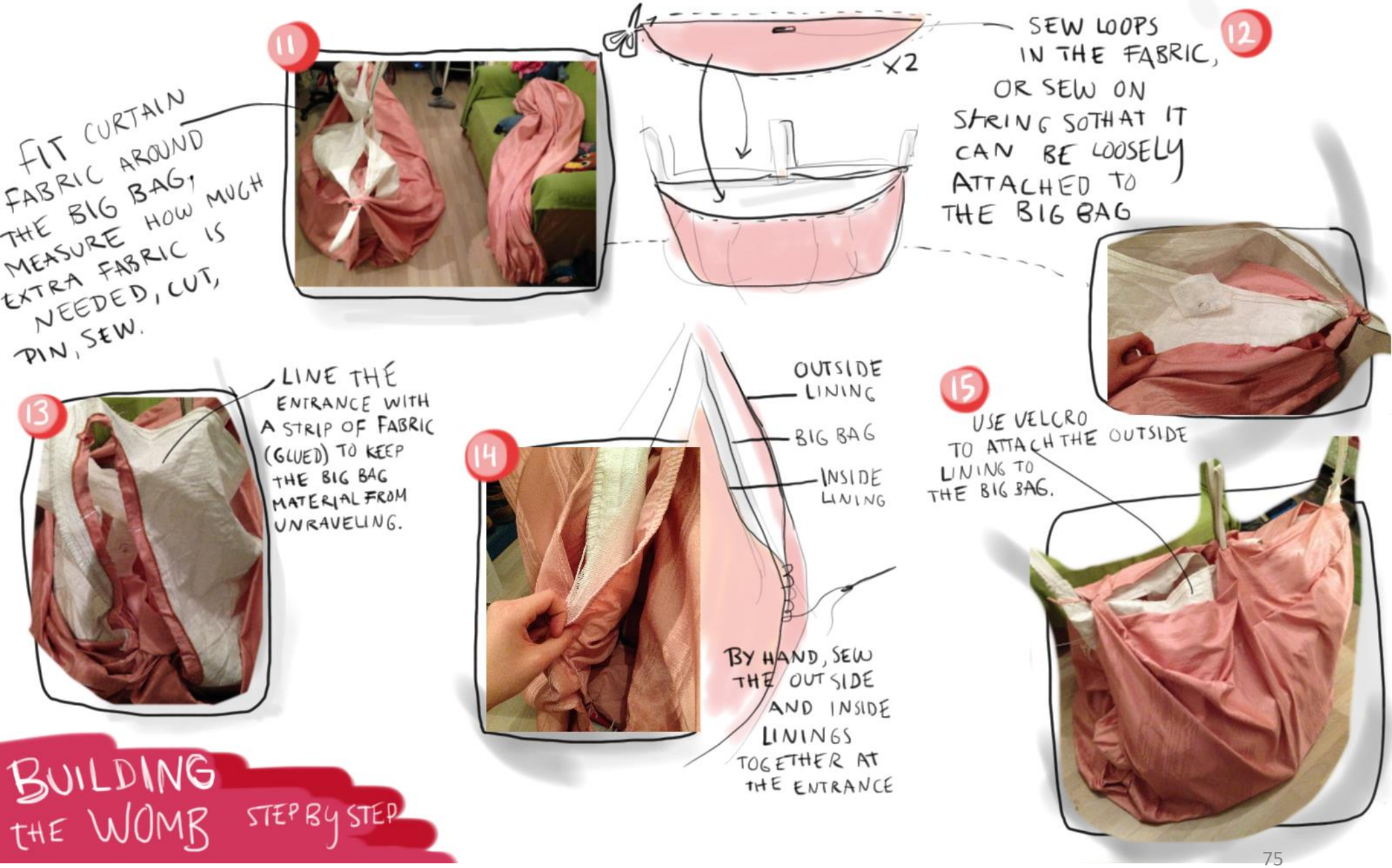
Production Time: 15 hours
Production Cost: 26 euro

Sub-assembly Parts	Production Processes Used
Outer lining for exterior	Sewing machine Hand stitching
Inner lining for interior	Sewing machine Hand stitching
Support platform for cushion	Cutting Tie wraps
Cushion (case)	Sewing machine Hand stitching
Final Assembly of Parts	**Production Processes Used**
Cushion support inserted into big bag	
Slit cut to create entrance	Cut with scissors
Inner lining attached to cushion case	Sewing machine
Cushion case filled with expanded polystyrene beads and closed	Hand stitching
Inner lining and cushion inserted into and attached to big bag	
Outer lining pulled over big bag	
Inner lining attached to outer lining at the womb entrance	Hand Stitching, gluing
Outer lining attached to big bag using velcro.	Gluing

Table 3.1: production and assembly of final prototype

Figure 3.13: Constructing the final prototype

Figure 3.14: Constructing the final prototype pt2



Initial Adjustments

Figure 3.15: using a crane to test prototype usability when suspended

Figure 3.16: initial testing

After the initial construction phase, the womb was subjected to a first round of testing. This initial testing phase aimed to test the structure and the inner and outer linings to see whether they would be strong enough to withstand the strain of an adult person crawling into and out of the womb.

To suspend the womb, a perforated steel beam was fitted with three eye bolts. Two outside bolts for the womb suspension loops, and one for the hook of a small hydraulic crane, seen in figure 3.15.

Three rounds of testing were conducted to get the structure ready for usability testing by testing persons. The initial testing was conducted by myself and my colleagues, and resulted in a number of adjustments to make the womb stronger and more user-friendly. The entrance to the womb was made larger, and the outside lining was loosened so that it could be put under more strain without tearing.

The inside lining of the womb proved to be large and sturdy enough and only needed to be better secured to the big bag.

Figure 3.18-20: stills from videos of initial testing

Figure 3.17: inside the womb

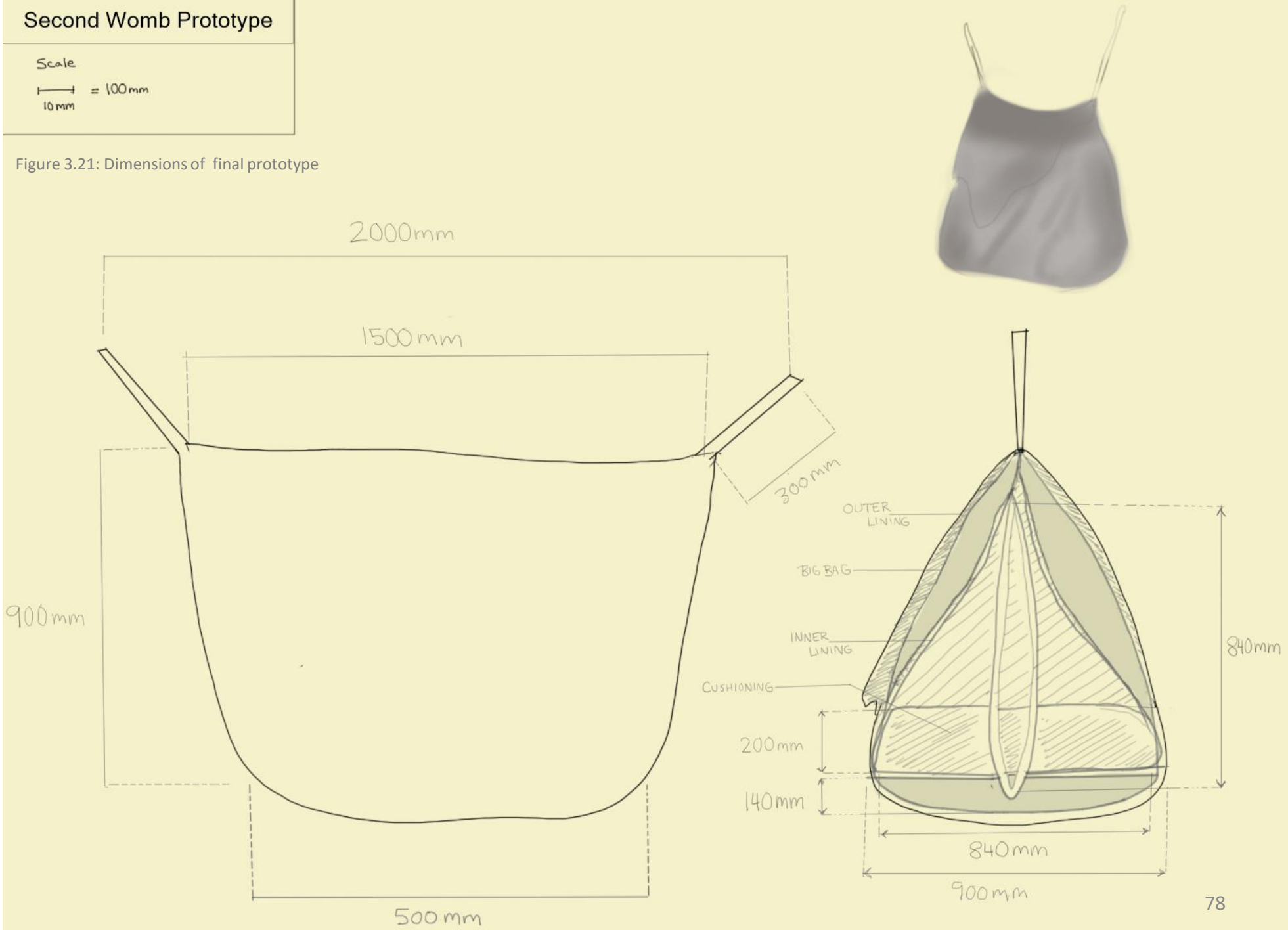


Figure 3.21: Dimensions of final prototype

Context and Logistics

With the Womb prototype constructed, only half of the experience was complete. The next step was choosing and designing the context in which to present the Womb to the user. The context in which it exists gives meaning to an artifact, which is why choosing the right context was a crucial decision in the process of designing the Womb experience.

To choose the right context, the vision behind the Womb concept was revisited and reevaluated to see what part of that vision was the most important to emphasize with the context. Questions asked were, “What do I want to achieve with this project? Where is the focus? And if I have to compromise, what is the most important aspect to keep?”

Figure 4.2 shows the reassessment of the Womb vision, used as a means to visualize the important aspects of the project. Figures 4.1 and 4.3 show sketches of different contexts that were considered for the Womb. Due to logistics and circumstances, not every context would be possible. The outdoors (portrayed in figure 4.1), which was a preferred context in which the Womb had already been tested, was not an option because testing took place in December in the Netherlands, and the weather would have hindered testing.

Figure 4.1: Impression of one possible context, hanging the Womb outdoors and hoisting users up with a pulley.

Figure 4.2: Reassessment of the womb vision.

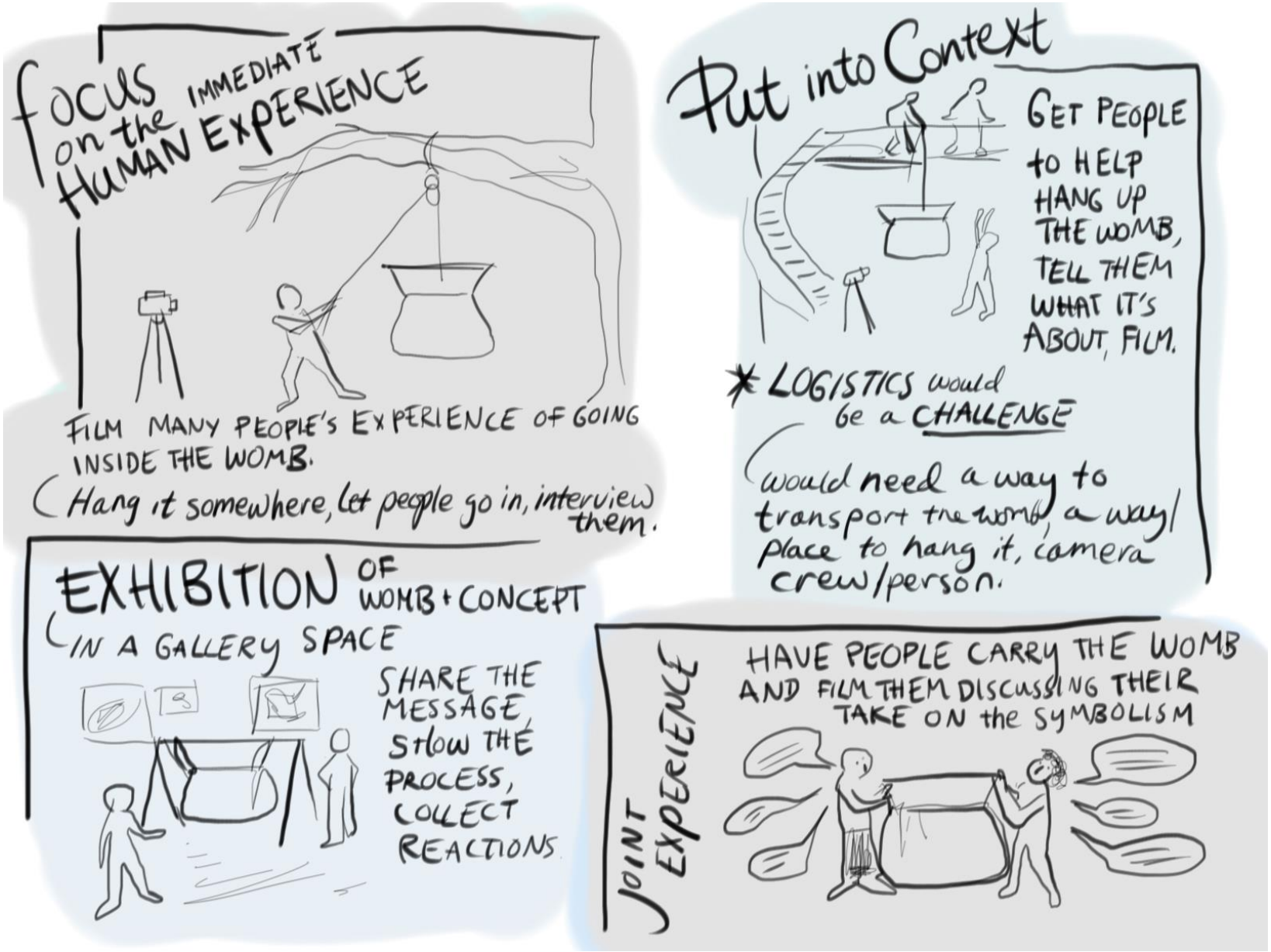


Figure 4.3: Possible contexts in which to place the Womb

The individual user experience is the most important part of the Womb experience, because it is the most tangible, powerful part of the design. Thus, I decided that the context should facilitate that experience by providing a quiet, neutral place, free of distraction, where the user can focus on the Womb and experience it fully.

In choosing a quiet context, the public space was somewhat left out of the equation. Despite the emphasis on the public space at the start of the project, I decided that the nature of public space as I had experienced it in my field research would not be a suitable context for the initial test of the Womb. First of all, since installing the Womb outdoors was not feasible, a public installation would have to be indoors. This would already limit the number of places where such an experience would be possible. Secondly, public space would also mean that people would not experience the Womb individually.

The concept of the Womb incorporates the public realm conceptually, rather than physically, by reminding users that they are part of the public realm and encouraging them to embrace their personal human capacity and apply it with an awareness of their membership to the global community in mind.

The Technohal (figures 4.4-5), a deserted building on the University of Twente campus that used to be home to the AKI ArtEZ &Design Academy Enschede, was chosen as a suitable context in which to install the Womb. Since the building is no longer used, and is stripped bare, it provided a raw, empty space in which the Womb would be able to hang undisturbed, and where testing persons could come and experience it without distractions or preconceived notions of what the space should be used for. None of the 26 testing persons that tested the Womb had been inside the building before.

Figures 4.4-5: Images of the Technohal

Final Womb Prototype

Figure 3.19: Final Prototype image 1




Figure 3.20-23: Final Prototype images 2-5

Figure 3.24-26: Final Prototype images 6-8

Testing

Research Questions:

1. What feelings does the Womb elicit in participants?

2. To what extent can users relate to the Womb concept?

3. Which unintended effects does the Womb have on users?

4. To what extent does the actual user experience match the user experience as it is intended?

5. Which possible applications do users see for the Womb?

THE TESTING GROUP

Test subjects for the Womb prototype user test were found via social media (an post on the University of Twente Marketplace Facebook page), and by word of mouth. The group of 26 testing persons was varied, ages ranging from 19 to 56 years (The average age was 28). The group comprised 11 men and 15 women. Most of the participants were Dutch, but participants from Germany, Greece, Curacao, India and Brazil also took part. 16 participants knew me and 10 did not, and 12 participants did not have any prior knowledge about the project.

Figure 5.1

Materials and Setup

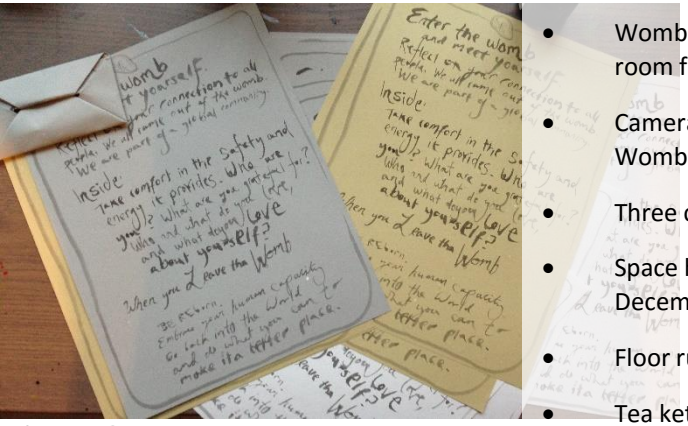


Figure 5.3

- Womb prototype: hung on sturdy climbing rope, in the middle of the room from a cross-beam, with a white paper circle under it (Figure 5.1)
- Camera and tripod to record interviews and people entering/exiting the Womb
- Three chairs (for the post-experience interviews) (Figure 5.2)
- Space heater (There was no heating in the building and it was December)
- Floor rugs to make the space more cozy
- Tea kettle and pot, water, tea cups, beschuit met muisjes (Dutch treat that is eaten to celebrate a birth) and plates to give people during the interview.
- Origami folded, hand painted notes to give people to take home, explaining the concept of the project. (figures 5.3-5.4)
- Notebook with survey to have people fill out after the interview (The survey asks for the test person's name, age, education, occupation, nationality and gender, and has a "leave a note" space, and a "something you love" space.)

Figures 5.3-5.4: The note given to participants

Figures 5.1, 5.2, 5.5: Pictures of the testing space

Figure 5.5

TESTING SESSION

1. Candidates are invited for a certain day and time. They are instructed where to go and are met at the entrance to the building

2. From the entrance, they are led to the testing room, welcomed, and told that this is the prototype and they may lay in it for ten minutes, but can also get out at any time. Some testing people are informed that the prototype represents a Womb, others are not. They are guided into the Womb.

3. For ten minutes, I am silent. After ten minutes, I turn on the camera and recorder, and inform them that ten minutes are over and they may exit the Womb.

4. They are offered tea and we sit down for a discussion. If they know it is a Womb, they are offered beschuit met muisjes,(figure 5.4) otherwise I wait a bit and then offer it to them if they don't know yet that it is a Womb.

5. Interviews vary between five minutes and an hour, depending on how much extra information test participants provide.

6. After the interview, test participants are asked to fill out the paper survey, thanked for participating, given the origami-folded message (figures 5.3 and 5.4) and guided to the exit.

FORMULATION OF QUESTIONS

The interview was purposely designed as a casual conversation, so that test participants would feel more comfortable to simply speak freely. The main questions asked were, "How do you feel?", "What did you think of/do/feel inside the Womb?" and "What do you think of the concept?" Supporting questions were asked where necessary. A large part of the interview was gauging how willing a person was to elaborate on their answers or how open to certain questions, based on their body language and speech.

Video and audio recordings were made of each test person leaving the Womb and their post-experience interview. These videos can be found in appendix 6, along with a compilation of excerpts from these videos in appendix 7. Each test person also completed a paper survey immediately after the experience, and a digital post-experience survey as sent to each participant approximately a week after the experience. The digital post-experience survey was completed by 22 out of 26 participants (85%).










Figures 5.5-5.15: Stills from video footage of usability testing sessions

Results

To view the results of the post-interview surveys, see the file “Analysis Charts” on the CD located on the first page of the report. This Excel file contains seven spreadsheets that provide an overview of the data collected and the way in which it was processed.

SPREADSHEET NAME	DESCRIPTION OF CONTENTS
Interview Analysis Raw	An overview of comments made during the post-experience interview. Comments sorted by name of participant, and by category of comment. Dutch comments have been translated to English.
Interview Analysis Refined	Themes sorted into six main themes and eighteen sub-themes.
People	An overview of the test participants and their responses to the paper survey, including age, gender, nationality, occupation and education.
Survey	Questions and responses to the digital post-experience survey, sent to participants approximately one week after participation
Themes Survey	Survey responses sorted into themes
Themes Interv.	Interview comments sorted based on responses per theme, and no longer with names of interview participants
Inventory Interv. Themes	An inventory of how often comments were made per sub-theme, divided into positive experience, negative experience and observation.

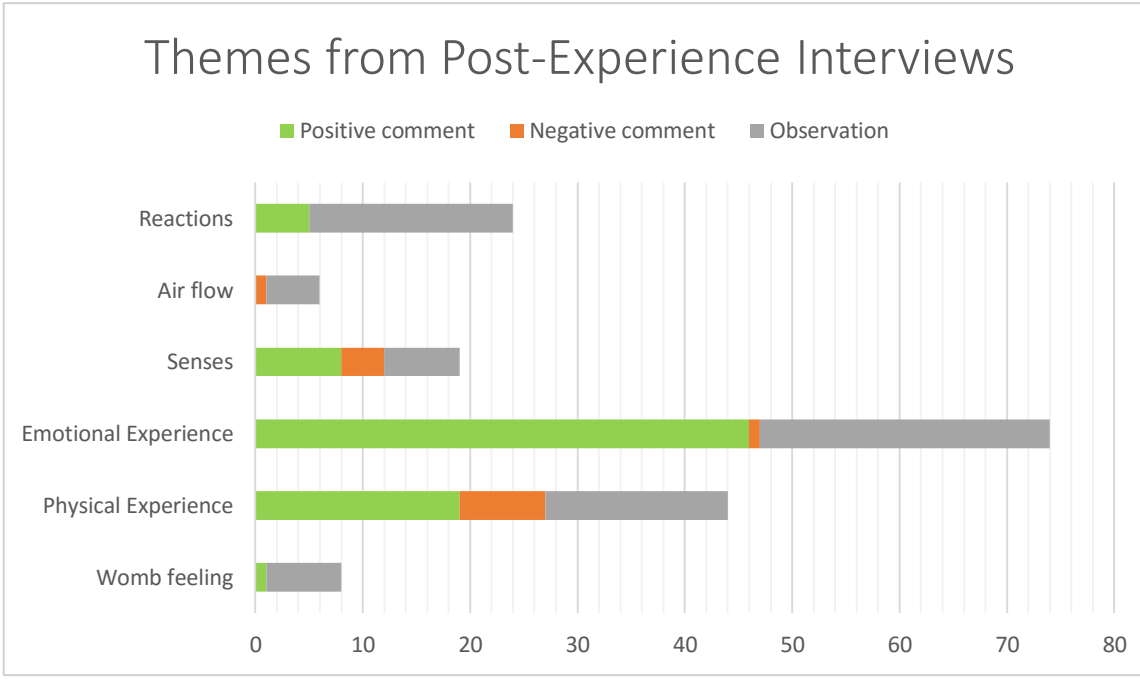
Analysis

Graph 5.1 represents a breakdown of the comments people made during their post-experience interviews. The interviews were filmed and recorded, and the comments of each participant were recorded and labeled as part of a theme. Six main themes were identified in user comments, and several themes have sub-themes. The breakdown of these themes and sub themes with the precise number of comments is presented by table 5.1. Positive comments are comments where the user specifically states that they found something pleasant or agreeable, observations are comments on a certain aspect of the experience without specifying it as positive or negative, and negative comments specifically indicate finding a certain aspect of the Womb experience unpleasant.

The six themes and the degree to which they are mentioned are significant because they say something about the way in which users experience the Womb. Noticeably, the emotional experiences were by far the most commented on, and the positive and neutral observations outweigh the negative 73:1. Most of the positive emotional comments (15) were about feeling relaxed. Many participants also talked about a positive physical experience, with most positive comments falling under the sub theme comfort (13)

The recurring negative comments were mostly about the difficulty of entering and exiting the Womb, although some people followed their comments up by saying that they found the effort fitting, considering the subject, and that they found the experience more meaningful because of it. There were also five comments about the lack of fresh air in the Womb, and how this made laying in the Womb a bit stifling after a while.

8 participants mentioned a “Womb” feeling, saying they could imagine that this was what it must have felt like in the Womb. 2 of these participants did not know that it was a Womb, and said they felt like they had been in a Womb when they came out.



Graph 5.1

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Table 5.1: Comments made in post-experience interviews, sorted by theme.

Theme	sub-theme	Positive experience	Negative experience	Observation	total
Womb	**womb feeling**	1		7	8
Physical Experience	**movement**	3		6	9
	getting in and out	3	7	7	17
	comfort	13	1	4	18
Emotional experience	**sleep**	1		9	10
	relaxed	15	1	1	17
	time	6		2	8
	safe	5		1	6
	Expression right after	7		1	8
	while I was inside	5		13	18
	experience	7			7
Senses	**look and feel of the womb**	8	2	3	13
	hearing			3	3
	smell		2	1	3
Air	**breathing**		1	5	6
Reactions	**other people**	1		3	4
	message	3		6	9
	advice and associations	1		10	11
	total	79	14	82	175

Tables 5.2-5.7 categorize comments from the digital post-experience surveys per question, the numbers indicating how many comments were made of the same nature. It is interesting to see that a number of categories in Tables 5.2 and 5.3 have counter-comments, where someone (or two people) experience the opposite of what others say. Where 17 people say they found the experience to be calming, relaxed or peaceful, one person found it simply claustrophobic. While 4 people mention finding it comfy and cozy, the person who found it claustrophobic, of course, experienced the Womb as uncomfortable. Three out of the eight counter-comments are from the same respondent. Apparently, there was something about this individual's experience that gave it a negative tinge. Perhaps a wrong position in the Womb, but of course the factor could have been external as well. This person did leave the comment "I would have felt different if I knew about (the message) going in" which could indicate that this person is someone who likes certainty, and could not appreciate going into an unknown object with no prior information.

Question 1 100% responded	Looking back, how would you describe your womb experience?		Table 5.2
17	calm-relaxed-sleepy-peace- pleasant	claustrophobic	1
11	Interesting/new/different/ a bit strange "habit-challenging"		
4	Safe		
4	Comfortable/cozy	uncomfortable	1
3	Time to think		
3	Hard to enter and leave		
3	Enjoyed the experience/great		
2	Confronted with myself		
2	Isolated, no stimuli from outside/quiet		
2	Invigorating/felt cheerful		
2	Would do it again		
2	Warm		
1	Curiously discovering		
1	Time went fast		

Question 2 100% responded	What did you think of the note you recieved to take home after the experience?		Table 5.3
5	Nicely folded-nice design-creative-fits with the experience-personal touch-super cute-nicely written and phrased		
5	Beautiful-powerful-great	couldn't identify with the idea	1
4	Saved the note		
4	Good to get it after the experience-helps to mull over the message afterwards	Would have felt different if I was told the idea before going in	1
3	Good guide-nice notice-nicely written		
2	Motivating-inspiring		
2	Made me reflect on my life		
2	Good to know what the idea is	couldn't open it-didn't read it	2
1	Considerate		
2	Agree with the message-some truth to it	didn't experience it that way	2
1	Unexpected		

Question 3 95% responded	Do you think there is a possible application for this experience? (if yes, what is it)
6	Use in therapy sessions/ in a medical setting
5	Moment of relaxation/time alone to reflect
4	Use in work spaces
3	At a festival
2	Use it to motivate people
1	Use when you have to make important decisions
1	Exhibit somewhere as an art project
1	Make available in public spaces
1	At home
1	At a market

Question 4 91% responded	Do you have any reccomendations to improve the experience?
4	Make it easier to get in
4	no
3	More fresh air
2	Adjust the design of the room to fit the experience
2	Music/sound
2	Make it bigger
1	Fill it with a different material so it doesn't crackle/feels more like water
1	Hang it higher
1	More darkness
1	Ear plugs
1	Longer time in the womb
1	Hang up images to convey connection to other people
1	Change the number of participants/environment
1	Make multiple sizes of wombs

Question 5 81% responded	Is there something else you would like to share about your experience?
4	Hope you achieve something awesome-good luck
5	Good experience-happy I was part of this
1	I like the tea
1	Nothing I can think of right now
1	Thanks
1	Really enjoyed our conversation afterwards
1	I think everybody should be remembered at once about all the qualities and personality they have and be reminded that being themselves is quite enough
1	Success!
1	Can I go in again?
1	Maybe it's better to interview people first and then tell them what your ideas are, so that you get their unbiased opinion.

Question 6 100% responded	How did you feel after the experience?
12	Relaxed/calm/peacefull
3	Ready to go to work/go out and face the world
3	Helped me think and reflect
2	Relieved
2	Attentive/focused
2	Normal
2	Great
1	Honest
1	Felt the need to cry something out of my breast
1	Enjoyed our conversation afterwards
1	Time went faster than expected
1	curious if there are similarities between people's experiences
1	It was a beautiful experience to be part of

Tables 5.4-5.7: Answers to questions posed in the anonymous post-experience survey.

The Womb is inevitably an individual experience, meaning that not everyone will experience it the same way. This is unavoidable, since every user comes in with their own baggage, experiences, cultural background, feelings and preconceived notions. This is the same reason that some people found the note to be beautiful, powerful and great while someone else said they couldn't identify with the idea.

Despite these differences, a "majority experience" can be identified for the Womb, based on the interviews and post experience surveys. The average participant found it different but comfortable, calming and relaxing, and had a positive reaction to the message. Within this "majority experience", there is still a scale from simply "liked it and relaxed" to a stronger emotional response as well as feeling relaxed and calm.

The fact that the most people mention experiencing a sense of relaxation and calm matches the post-survey interviews. Interesting comments that did not come out during the interviews are feelings of attention/focus, and the readiness to go out and face the world. This way of experiencing the Womb may have been created by the conversation after the experience, the note that was provided to take home, or both. Despite the few people who mentioned such experience, the comments are powerful and show that adding a message to the experience can transform it into something beyond the object. The object and the concept together can influence people's mindset.

"After the experience I felt relaxed, relieved and ready to go out there and face the world. Also especially after you explained to me what the whole Womb experience was about. And also after reading the note you gave away. It truly helped me think and reflect, since at that moment I was having real problems concentrating and staying motivated in class. So this experience has been a good eye opener for me.

""Relaxed, calm and ready to get back to work."

"I felt very attentive, honest and ... as if I needed to cry something out of my breast. Some kind of drive to liberation, I felt. I was having the thought to shout this out, shortly before I left the Womb. But I think my intention was not strong enough - probably the half unconscious social rules in me, hindered me of doing so."

"I really enjoyed our conversation afterwards. It motivated me to see that there are more people who have questions about our current system."

"I started thinking about what that really represented and looked back at my deeds and started thinking again about all the things I could really do as I am in a moment of life which I don't have much motivation to do things."

"I found it really motivating and it made me think about important things and life in general. It made me kind of think that I can do anything." (Comment on the note provided after the experience)

Evaluation

The aim of this project was to design and create a low-stimuli environment that allows users to reflect and recharge, and conceptually reminds them of their human capacity and connection to a global community.

To evaluate whether the aim was achieved, the research questions formulated at the start of the testing phase will be answered. Using these answers, the project goal will be evaluated to determine to what extent the goal was achieved.

What feelings does the Womb elicit in participants?
Relaxation and calm are the most mentioned feelings that users say they experienced inside the Womb. However, the Womb experience was different for each person and elicited a range of different emotions, including anxiety (mostly for people who were scared of going inside), relief, elation, protection, and curiosity.

To what extent can users relate to the womb concept?
14 test participants indicated some degree of identifying with the Womb concept, although one of them added that they did not experience the Womb in the way the message describes it. Three participants explicitly mentioned not being able to identify with the concept.

Which unintended effects does the Womb have on users?
Anxiety is certainly an unintended effect of the experience, which was caused for some participants by the difficulty of entering the Womb, or by the fact that the Womb was quite a small, relatively dark space. Luckily, all participants who were anxious about entering the Womb were able to become calm and relaxed once inside. However, the physical structure of the Womb would be adjusted to avoid this reaction as much as possible in a future model. Sleepiness was an unintended but interesting effect that the Womb seemed to have on ten participants. One test participant commented, “It was weird, because I thought that I would be very alert inside, like ‘I want to go out!’, but actually I felt very sleepy and had to watch myself not to fall asleep. ”Disorientation was another unintended effect. Some participants mentioned not being sure whether they had been swinging or whether they had imagined it, and many users mentioned that time seemed to pass more quickly while they were inside the Womb.

Which possible applications do users see for the Womb?
95% of users provided possible applications for the Womb. Most of the suggestions related to medical or therapy use, and the second most named use was personal, using the Womb for individuals to have a moment of rest for themselves.

To what extent does the actual user experience match the user experience as it is intended?
The complete intended user experience was to let the users experience a period of relaxation, and to inspire them to recognize their personal human capacity and their connection to all people. The first part of the intended experience was realized for most users. The second and third aspects were only experienced by a small group of users, for whom the recognition of human capacity and connection was inspired by the message provided with the Womb. Four users made comments indicating that they felt somehow empowered after the experience, and fourteen users indicated that they could identify with the message, liked the message, or that they thought about the message after the experience. This indicates some degree of social and self-awareness was inspired for about half of the participants, and only four participants (15%) fully experienced the Womb in the way it was intended.

Was the aim of the project achieved? The aim of the project is comprised of three main components:

1. Quietude (*Design and create a low-stimuli environment that allows users to reflect and recharge*)

Quietude was certainly achieved for participants. The majority of participants commented on feeling relaxed and calm after their Womb experience.

2. Self-Awareness *(Conceptually remind users of their human capacity)*

Self-reflection and embrace of individual human capacity was experienced by four out of twenty-six users. Despite the fact that only 15% of users experienced this aspect of the design, the comments made in this respect are encouraging because they are so powerful. Perhaps if the way this message is transmitted to the user were to be adjusted, more users could benefit from a boost to their self-esteem.

3. Social Awareness *(Conceptually remind users of their connection to the global community)*

This aspect of the Womb experienced at some level by about half of the users, as indicated by their reactions to the message about the Womb concept. Fourteen participants seemed to be able to relate to this message to some degree. However, despite the fact that twice as many people experienced social awareness, the comments on self-awareness were more powerful. This indicates that the message of connection to a global community may have had the least impact on users. This aspect of the design may require a multi-participant experience to emphasize connection to other people, or may have to be incorporated into the design in more ways than the symbol of the Womb and the message provided with it.

Recommendations

There are already products on the market that, like the womb, calm users by carrying and embracing them (specifically children with special needs). The Airwalker Swing and the Joki Crow's Nest are two such products from different manufacturers [21, 22]. The Joki product description reads,

> *Parents will appreciate the Joki hanging crow's nest ability to calm down and quiet overwhelmed tots on the verge of a tantrum. This cuddle swing will give children experience of being in a cocoon, it will provide a feeling of Womb-like safety and comfort*. *Swaying develops the sense of balance, and cuddle swings are often used in child therapy.*

The fact that such products are already on the market, and being manufactured by multiple companies, speaks to the effectiveness of this approach to calm users. Interestingly, six participants identified therapy as a possible application for the Womb. The concept could be developed in such a direction, and possibly make a difference by catering to adult patients.

What currently differentiates the Womb from existing products is the duality of the design: the functionality combined with the message enhances the user experience to more than a moment of quietude. The message reminds users of their own human capacity, and connection to all people, something of which people, particularly adults, are not often reminded. Two of the user test participants who were able to internalize this message after the Womb experience and felt motivated by it, commented on the fact that they felt in need of a boost.

Although two out of twenty-six is a fraction of the testing pool, their comments could indicate a particularly strong effect of the message of human capacity on people who have lost sight of their own human capacity. This would make sense, as research has indicated that people are particularly receptive to signs of social support when they have recently experienced social conflict [24]. To test this effect of the Womb experience, a follow-up user test could be done, with a larger test group and a wider range of participant ages, and participants could be asked about their levels of personal motivation and state of mind before participating in the test and afterwards.

An argument against applying the Womb exclusively for therapy purposes, is that the effects of the Womb may be generally beneficial to people who feel a need to rest and recharge themselves. Positive psychology has shown that adequate time to rest after periods of stress is essential for mental and physical health [20]. In our current society, the general population is under constant stress and is constantly inundated with stimuli. If the Womb were to be made accessible in areas such as airports, libraries, parks, schools and work spaces, and were to be generally accepted as a place where individuals can retreat to take a break, this could have a significant impact by stimulating general acknowledgement of the importance of rest, spreading awareness of the global community as a tangible entity. A lot would have to be changed about the design physically and strategically to make that happen.

The strongest impact during user tests came from the object itself, meaning the physical prototype was effective in inducing quietude in users. However, the prototype could be improved in a number ways to make it suitable to intensive and public use. The design is, for example, not weather proof. Constructing a frame that could carry the Womb independently would also be practical, because it would mean that the Womb could be set up anywhere, instead of being dependent on strong supporting structures.

Commonly noted irritations of users were the fact that it is so difficult to get into the Womb, and that there is not enough air circulation inside. These two points would require attention in a redesign. Perhaps more holes could be left open to enable airflow, and the opening could be widened to facilitate an easier entrance to the Womb. The current prototype is also a bit cumbersome to transport and could be made more mobile. This could be achieved by replacing the press-board with a detachable metal hoop as the element that enables the Womb to keep its shape while hanging.

The Womb experience was not as effective at inspiring users to see their own human capacity and connection to all people as hoped. This could be because the message was too separate from the Womb structure itself. There is nothing about the structure except its Womb-like aesthetic that tells people what the concept is about. Perhaps people could receive the message while they are inside the Womb, via an audio recording, or be more subtly reminded of the message through images placed in the vicinity of the Womb. Another idea might be to remind people of the other participants who went into the Womb by creating a wall of photographs of each person leaving the Womb, for users to see when they exit.

Conclusion

This project has come a long way from the original aim of wanting to meaningfully connect people through collective creative activity in the public realm. After the initial literature and field research phase, shifting the project aim was deemed necessary. The essence of the project, however, remained the same: design a meaningful experience that has real value to the user and to society. The shift in the project aim was simply a shift in perspective, from focusing on getting people to actively do something, to realizing that people are already over stimulated and would benefit from having the chance to relax and experience quiescence.

The aim of this project was to design and create a low-stimuli environment that allows users to reflect and recharge, and reminds them of their human capacity and connection to a global community. During usability testing, the Womb itself was the most impactful part of the experience. The majority of participants reacted well to being inside it, and it achieved its goal of inspiring quietude in users. The message of connection and human capacity was not communicated as effectively, indicating that this is something that would require attention in the further development of the Womb concept.

With room for improvement, the Womb experience is a strong concept with the potential to be developed further, this claim being supported by the fact that products with similar approaches are already on the market [21, 22]. Within the borders of this project, the Womb impacted 26 people by gifting them an unexpected moment of rest and reflection. Over the course of the project's execution by means of explaining the concept to at least a hundred people, the womb experience drew attention to the fact that, as humans, we all essentially come from the same place. And finally, to our individual human capacity. A capacity that is severely undervalued in our current society but which, when all our tools are stripped away, is all we have to draw and build on.

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Appendices

Appendix 1: Broad Field Research
Appendix 2: Review of Life Evolved
Appendix 3: Explanation of requirement 5
Appendix 4: Forces exerted on final prototype

Digital Appendices(found on attached CD):

Appendix 5: Post experiment videos (Folder Name)

Appendix 6: Usability testing videos (Folder Name)

Appendix 7: Compilation of Excerpts from Usability Testing)

Appendix 1: Broad Field Research

Reactions of people in the Enschede city center to questions about community, connection and technology**.**

Elderly Man: Always goes to the café, he doesn't like crowds, does feel like he needs people. At the café he reads the paper, meets people. He says he MIGHT participate in a group creative activity if the crowd wasn't too big. Says he's done lots of creative workshops.

Young man: Facebook and internet definitely connects people but it can also be deadly. We need to watch out how we use it.

TKKR LAB: Very interesting, a technology-focused group. Hacker and Maker society. They rent a space cheap, members pay membership fee and have access to the space 24 hours a day. The group has 20 members, and is five years old. Members are aged between 18 and 65+. They share knowledge, share skills, and collaborate. They keep having to move because they are forced to use anti-squat buildings so they have no certainty about how long they can use the building.

One of the members told me about the maker societies in the US that are widespread and very diverse. Really the human capacity at its best. People initiate the projects, get people to help them if they are lacking specialization. For them, their interest in technology binds the group, and makes them creative.

Maker spaces: Places where people work on projects (alone and together), share information, skills. Being incorporated in more and more public libraries. Maker spaces promote learning through play, the goal is CREATION, not consumption.

Woman-middle aged: Her job is guiding mentally handicapped young people. What she had to say about technology: the people who she guides are also constantly using their phones. Skype can be really good and connect people. But technology can also cause a lot of miscommunication. Whats App, for example. You can't transmit emotion in a message, and that can result in people not understanding that something is meant as a joke. She would really like to get people outside, off of their phones, doing something concrete.

Elderly Woman: No. I have no need for contact with people I don't know.

Group of four teenage boys: Connectivity? Yes, we have a lot of that. Give us two euros, the McDonalds and the Game Stop and we are all happy.

Group of elderly men on the van Heek Plein: We meet here every day, without arranging to do so. We used to go into the shopping center in the winter, but they kicked us out and now we can only get together here when the weather is nice. We discuss politics, soccer, life… One of the men (who seemed to be the leader of the group) said that he is very active. He bikes a lot, does projects around his house, and already has a few projects planned for the winter.

Appendix 2: Review of Life Evolved

In the words of the New Earth Works, “Our galleries are designed to engage, inspire, & provoke and above all to connect us to ourselves, our humanity and the better world we can create together for everyone” [2]

Life Evolved was set up as an exhibit and a live experience. Visitors walked through seven interconnected galleries, each with a different focus. Many of the galleries had interactive elements. The “What You Believe is What Happens” Gallery, for example, consisted of seven beach huts that users could enter to gather a specific kind of energy that they felt they needed more of. I really enjoyed this particular gallery because of the introspective, spiritual nature of the huts. I also spent time observing visitors as they went through this gallery, and noted that “Big Hug” was most people’s favorite hut. This hut (the green hut on the left side of Figure 6.1) was completely green inside and its main feature was a giant cushiony belly and two arms that users could lay into and pull around them, experiencing a giant hug. Visitors tended to come out of this hut smiling, and I often noticed people recommend it to each other.

Figure 6.1: Beach Huts in the “What You Believe is What Happens” gallery

http://thenewearthworks.com/Groups/258020/The_New_Earth/events/LIFE_evolved/LIFE_evolved.aspx

The last space that Life Evolved visitors reached was the US Gallery. In a sense, this was the eighth gallery, but it was also the opposite of a gallery, because it was all about the visitors themselves. The people in the space determined what happens there, and the space was simply the catalyst. The US gallery was a large, white, well-lit room with a makeshift living room setup at its center: complete with a mismatch of green sofas and armchairs, and a table that was always stocked with cookies and tea. There were also drums and instruments laying around, and visitors frequently picked them up and started impromptu jam and dance sessions. Despite how open it was, the US gallery also felt cozy and safe, and was a place where it was easy to strike up conversation.

On weekend evenings, live events were organized in the US gallery. These events included letter scribing, mural painting, and short dance lessons. These dance lessons were fun and effective Ruth-Elise, who gave the lessons, kept the lessons brief and her instructions simple. She would say something like, “be like the wind” and then left it up to the participants to interpret those instructions. This made the lessons inclusive and fun.

Life Evolved was free for everyone. I liked this aspect of the experience because it made sure that lack of money could not prevent people from being part of the exhibit. That being said, the location of the exhibit was still quite hidden and there may have been more visitors if this was not the case.

To me, the biggest takeaway from the experience was the power of collaborative involvement. The experience was most impactful to the people who helped to create it. They had put more of themselves into it, and therefore got more out of it. They also had a strong sense of connection to each other, because they had made the experience possible together.

Figure 6.2: Jamming in the US Gallery

Appendix 3:

Why must the womb be padded in such a way that the user's body is "hugged"?

At Life Evolved (see Orienting Field Research section and Appendix 2), the "Big Hug" beach hut (part of the gallery, "What You Believe is What Happens" was very popular with participants. This was a green hut the size of a telephone booth, with a big stuffed animal belly and arms in it. Users could enter the hut, shut the door, lay into the soft belly, and pull the arms around themselves to feel like they were being hugged by a gigantic frog-teddy. I spent some time observing the beach huts (there were seven of them in total) and I noticed that people came out of the Big Hug hut especially happy and smiley, and recommended it to their friends. It was the aspect of disappearing into a hug, like a when a parent hugs a child, that people got really excited about.

My womb-related research brought me into contact with Alie van de Wolfshaar, a retired midwife with many years of experience, for whom haptonomy was an integral part of her approach in mentoring and guiding pregnant women and their partners. Haptonomy views the individual as a whole, viewing body and mind, logic and emotion as intrinsically connected. Heightened stress or anxiety are examples of issues that haptotherapy can address [23]. Sessions are focused on restoring the balance between thinking, feeling and doing, and this balance is restored through conversations with the patients, exercises, and touch [23]. Touch is an extremely important part of haptonomy.

The positive impact of touch on an individual is supported by research. For example, a study done by Cohen et al. in the United States found that individuals who were hugged more often had less risk of being infected with a common cold [24]. Cohen et al. speculate that the effectiveness of caring touch in reducing stress may be due to the fact that it is non-verbal, therefore cannot be perceived as condescending, and is easy to do well [24].

Sensory affordances are aspects of a design that enable a user to feel something [25]. One aim of the womb is to instill a sense of calm in the user. Due to the many indications of the power of touch and embrace to calm individuals, a simulated embrace would function as a sensory affordance to allow the user to feel calm.

Appendix 4:

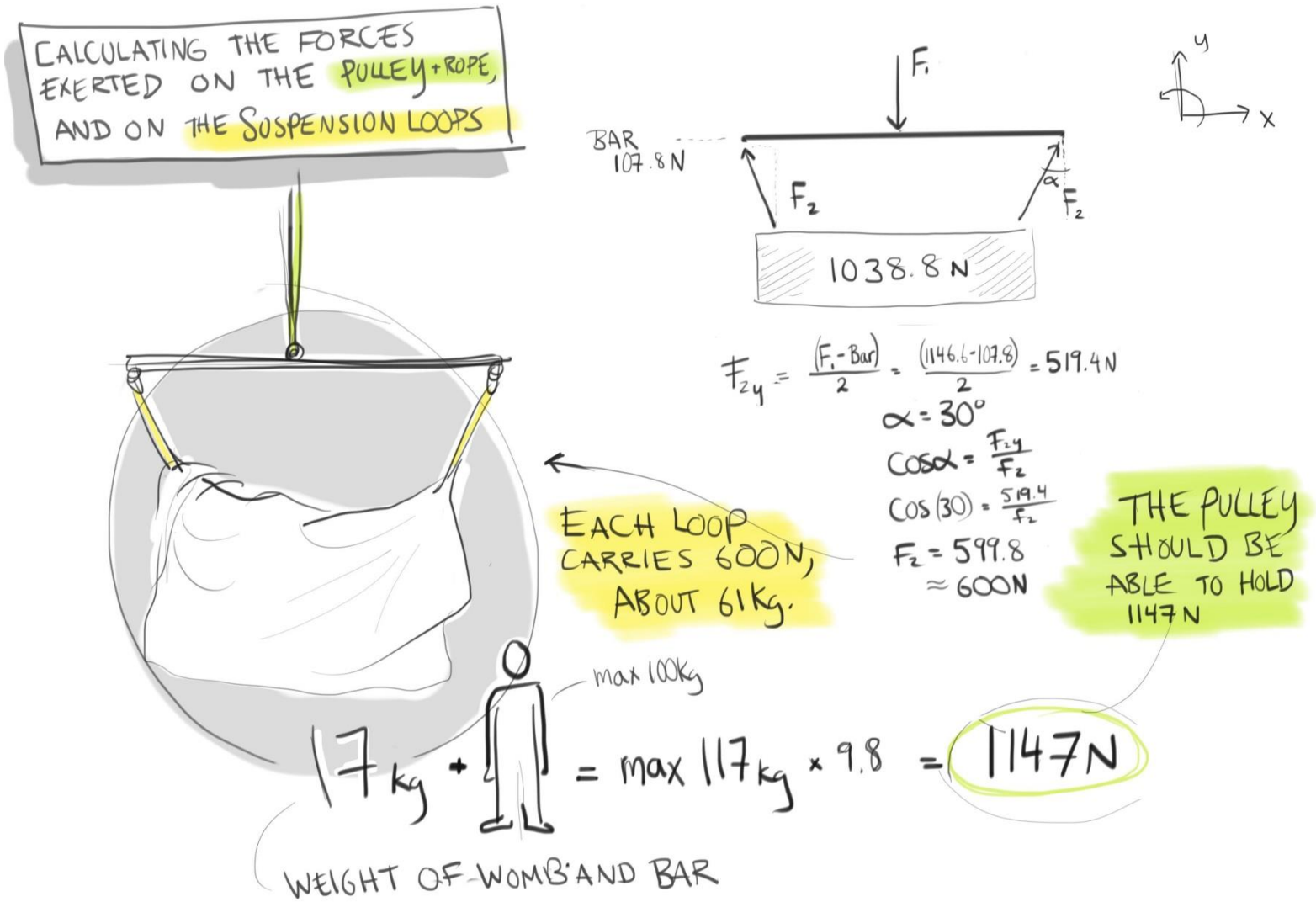

Figure 3.28: Calculating the force exerted on the Womb's suspension points