CHALMERS
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From storage to circulation

Understanding the process of engaging with and recirculating unused, stored products

Master's thesis in Industrial Design Engineering

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CHALMERS UNIVERSITY OF TECHNOLOGY
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MASTER'S THESIS 2024

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Abstract

Many products are retained by households without being used. Instead, these products are kept in storage spaces without serving any direct purpose. When a product has fulfilled its intended purpose at its first owner, it is of essence that it gets back into circulation and not stuck in storage. This is important to make sure resources are used more efficiently, and in turn to create a more resource efficient way of living.

As a complement to the research project “Mining garage gold”, this master thesis aims to investigate which factors trigger, motivate, and prevent households from engaging with, and recirculating, their unused, stored products as well as how these factors are manifested in the process of engagement and recirculation. In addition, the project aims to explore how design can aid and influence households to engage with and recirculate their unused, stored products.

The thesis resulted in an extensive mapping of different triggers, motivators and barriers that exist in the process of engaging with and recirculating unused, stored products. A process flowchart, showcasing how the different factors are manifested in the households’ process of engagement and recirculation of unused, stored products, was also created. This process flowchart includes the choices households make where triggers, motivators and barriers have great influence over the decision-making process. To give examples of how design can influence and aid households in the process of engaging with and recirculating their unused, stored products, a design portfolio was created. This design portfolio consists of eight different high levelled design concepts, targeting different parts of the process. This thesis provides a new, more holistic perspective of what triggers, motivates, and prevents households from engaging with and recirculating their unused, stored products.

Acknowledgements

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Lastly, we want to thank our friends and family for your support and encouragement throughout this thesis project.

Thank you for making this thesis possible!

Emma Asker

Tea Emilsson

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INTRODUCTION

In this chapter, the master's thesis is introduced. The background of the project, as well as its aim, research questions and objectives are presented alongside the demarcations.

1.

1.1 Background

Goal 12 of the United Nations Sustainable Behaviour Goals: Responsible consumption and production, focuses on consumption patterns in relation to sustainability. According to the United Nations (n.d.), there is a need to urgently change our production and consumption patterns to reduce our ecological footprint (United Nations Development Program, 2023). One aspect of sustainable consumption is to use resources more efficiently (Government Offices of Sweden, 2015). This could be to recirculate existing products instead of purchasing new ones. In this thesis, recirculation is defined as the act of something being circulated again. More specifically, it refers to products being reused either by the own household, or by someone outside the household.

When a product has fulfilled its intended purpose at its first owner, it is of essence that the product re-enters the system instead of becoming an unused, stored product. This is an important factor to consider to make sure resources are used more efficiently. To avoid products getting stuck in storage, it is important to consider different factors related to consumer behaviour in relation to usage and storage of products. Today, 72% of Swedish households use less than half of the products they have stored in their cupboards and drawers (Myrorna, 2018). This indicates that there are a lot of usable products stored away that could be recirculated and used again.

For recirculation of unused, stored products to happen, households first need to interact with these products in one way or another. In this thesis the term engagement is used to define the act of being involved with, and paying attention to, one's products. This could entail sorting through or doing inventory of the unused, stored products.

This master thesis is carried out in connection to the research project "Mining garage gold", carried out at Chalmers University of Technology, at the division of Design and Human factors. The research project "Mining garage gold" is a four-year research project that explores the potential of unused resources that exist in Swedish households, and if these households can be enabled to release these products to be used by others (Chalmers research, 2022).

1.2 Aim

As a complement to the research project “Mining garage gold”, this master thesis aims to investigate which factors trigger, motivate, and prevent households from engaging with and recirculating their unused, stored products as well as how these factors are manifested in the process of engagement and recirculation. The idea is that increased engagement with unused, stored products and the storage space is the first step to enabling households to recirculate these products rather than retaining them. In addition, the project aims to explore how design can aid and influence households to engage with and recirculate their unused, stored products. By understanding underlying triggers, motivators and barriers, this project aims to contribute with valuable insights regarding the behaviour of engaging with, and recirculating, unused, stored products.

1.3 Objectives

The objectives of this master’s thesis are:

- Explore various factors that trigger, motivate, and prevent households from engaging with and recirculating their unused, stored products.
- Define triggers, motivators and barriers related to the process of engagement with, and recirculation of unused, stored products.
- Create designs that exemplify how design can be used to influence and aid households in the process of engaging with and recirculating their unused, stored products.

1.4 Research questions

1. Which factors trigger, motivate, and prevent households from engaging with and recirculating their unused, stored products?
2. How are triggers, motivators and barriers manifested in the households’ process of engaging with and recirculating their unused, stored products?
3. How can design play a part in influencing as well as aiding households in the process of engaging with and recirculating their unused, stored products?

1.5 Demarcations

Every product that enters a household has a life cycle that can be divided into different stages, from when it is acquired, until it is disposed of. In this thesis, focus will be on investigating the stages after the household has stored the product either permanently or temporarily (see Figure 1). The previous stages of the product life cycle will solely be investigated for further understanding and knowledge.

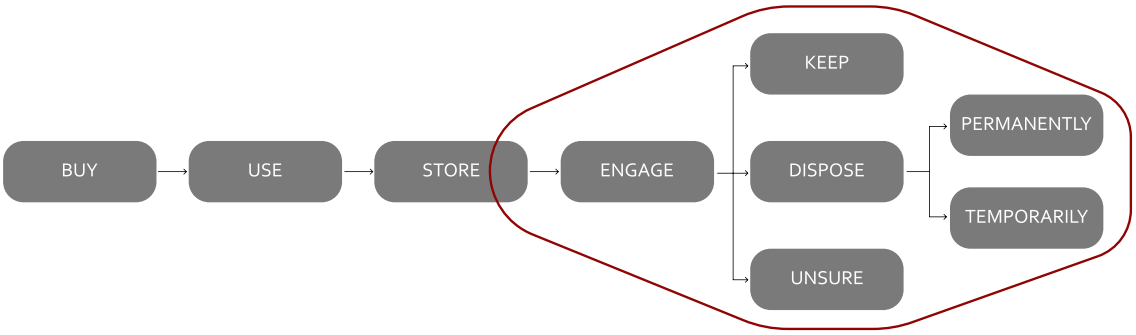

Figure 1: Product lifecycle in household. Adaptation of models created by Boyd and McConocha (1996) and Jacoby et al. (1977).

This thesis will focus solely on products located in the inner cycles of the circular economy systems diagram, see Figure 2. The inner cycles of the diagram include *maintain/prolong* and *reuse/redistribute* (Ellen MacArthur Foundation, 2019). This can include products that, when recirculated, are used for its original purpose or a new purpose while remaining in large the same product. Products that can be recirculated only for their material and/or parts will not be in focus in this thesis, including sanitary products as well as products that are broken.

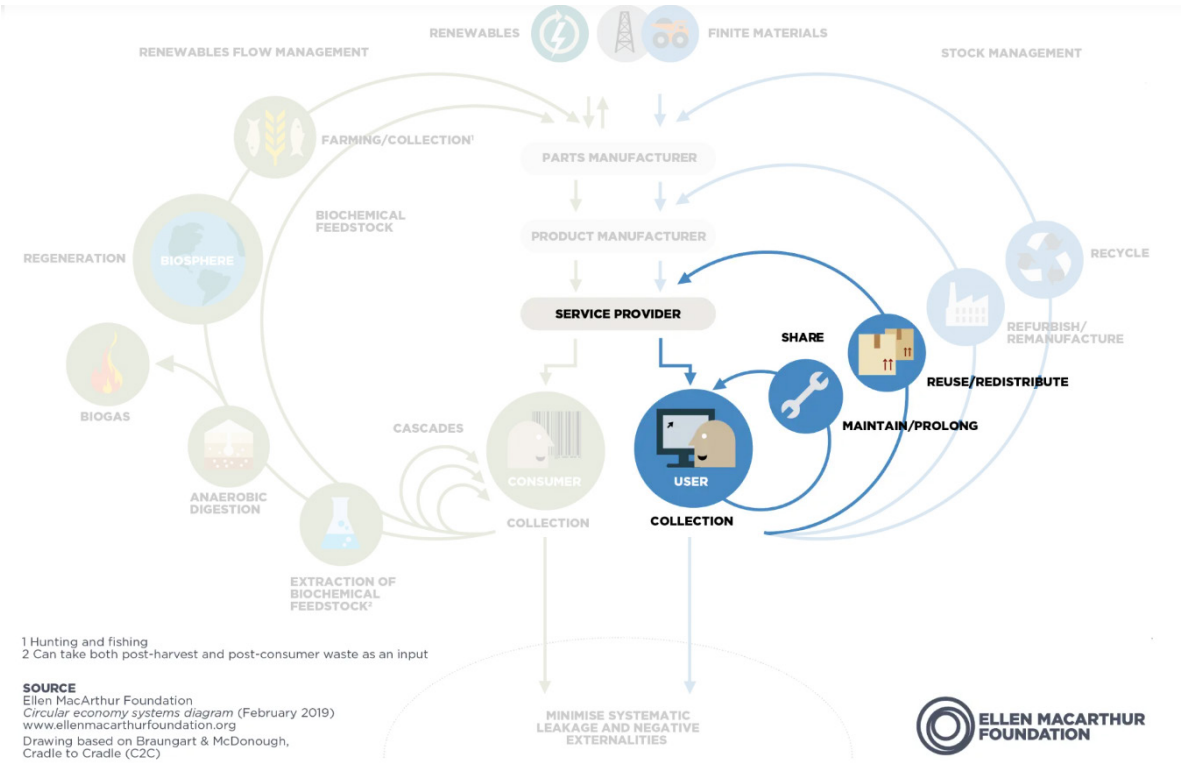

Figure 2: The Butterfly Diagram where areas in focus are highlighted. This model is produced by Ellen MacArthur Foundation (2019).

RELATED WORK

In this chapter, relevant information that is required to understand the thesis is presented such as information about product disposition, product attachment and triggers.

2.

2.1 Product disposition

Boyd and McConocha (1996) describe a model of consumer management of products. This model includes the stages of *pre-acquisition*, *acquisition*, *physical possession*, and *disposition*. The pre-acquisition phase includes the consumer gathering information and deciding whether to purchase or commit to a certain product. Once a decision has been made, the consumer acquires the product, and thereby enters the stage of acquisition. When owning the product, the household can either use it, or store it. When the product is used or stored, it is in the stage of physical possession. The last stage of the model includes the disposal of the product. According to Jacoby et al. (1977) the household faces different options once in the disposition process. These options include: to keep the product, permanently dispose of it or to temporarily dispose of it. If the household keeps the product, it could be used for the same purpose or be reused for a different purpose. Keeping the product also includes the alternative of storing said product. The choice of permanently disposing of a product could mean to throw the product away, give it away, sell it or trade it (Jacoby et al., 1977). Paden and Stell (2005) discusses the redistribution of products as one way of disposition. Their definition of redistribution includes the actions of giving a product away, selling it or trading it, as mentioned by Jacoby et al. (1977). Whilst Jacoby et al. (1977) categorise giving away products as one and the same, Harrell and McConocha (1992) and Paden and Stell (2005) choose to separate between donating products and passing them along. Regardless of how a product is redistributed, it enters a circular flow where the first household is not the end point for the product, as would have been the case if the product would have been stored or thrown away.

2.2 Product attachment and detachment

Schifferstein et al. (2004) define product attachment as a person-product relationship where different factors evoke certain emotion causing an attachment to the product. This attachment is an emotionally positive person-product relationship that causes the individual to see the product as something more than just a product, and more as an extended part of themselves. This is also described by Belk (1988), who talks about the product as a part of the extended self, meaning that we regard our possessions as part of ourselves rather than just as a product, in the same way Schifferstein et al. (2004) describes it. A person gives a product a meaning that can be influenced by aspects such as the person's interest, experiences, goals, values, ideas, or culture to name a few (Belk, 1988). The emotions that arise based on this meaning

can lead to product attachment (Savaş, 2004). Schifferstein et al. (2004) mean that feelings of attachment often relate to memories related to the product, or the enjoyment that has been felt when using the product. According to Dommer and Winterich (2021), attachment to a product is likely to lead to product retention, even though the product may no longer be used. Though these products are more likely to be retained, Dommer and Winterich (2021) discuss how once they are disposed of, the owner is more likely to choose a more sustainable disposal method such as recirculating the product. The method may require more effort but will reward the owner with the knowledge that the product's life cycle will remain with continued use by someone else (Dommer & Winterich, 2021).

Product detachment is a part of the product disposition process, where the owner detaches the product from their own self (Roster, 2001). According to Roster (2001) there are three factors that indicate that there is an emotional detachment process ongoing between an owner of a product, and the product itself. The three factors described are *distancing behaviour, critical events* and *ongoing value and performance assessments*. One example of a distancing behaviour is to store products away for longer periods of time (Roster, 2001). When it comes to the act of disposing of products, one strategy used by households to ensure what Roster (2001) refers to as "safe passage" is the act of storytelling. By telling stories related to the product and reliving memories strongly attached to the product, the households were helped in the emotional process of disposing of products with a sentimental value. The potential new owner could in turn tell their plans for the product, to further reassure the previous owners that the product would be passed over in a safe way (Roster, 2001). According to Dommer and Winterich (2021), another way for product owners to depart from products they feel strongly attached to more easily, is to take a picture of said product. This will help the product owner retain the associations and memories linked with the product, without having to keep the product itself.

2.3 Triggers

According to Fogg (2009) a trigger, or a prompt as it can be called, can take many forms and is something that is required for a behaviour to occur. For the trigger to have effect, the individual triggered needs to have a high enough degree of motivation to conduct the triggered behaviour. As well as being motivated, they also need to have the ability to act on the triggered behaviour (Fogg, 2009). A trigger can be external or internal. External triggers are cues from the environment surrounding the individual and could be cues that prompt the

different senses. Internal triggers come from within the individual and could be emotions to give one example (Eyal & Vengoechea, 2015). To be successful, Fogg (2009) claims that a trigger needs to have three specific characteristics: it needs to be noticed, be associated with the target behaviour, and needs to happen when the ability and motivation to perform the behaviour exist. If a trigger happens when motivation and ability is lacking, it can lead to frustration or distraction instead of the wanted behaviour (Fogg, 2009).

PROCESS & METHODOLOGY

In this chapter, the project process as well as used methodology is presented in chronological order.

3.

3.1 Process overview

The process of this thesis was designed to gain an overview of different triggers, motivators and barriers, as well as understanding them more in depth, to answer the defined research questions. The idea was that quantitative data could help give an overview of different factors and attitudes, and for qualitative data to help gain in depth knowledge on how the factors are manifested in the process of engagement and recirculation. This resulted in a research heavy project, where the households were playing a highly central part. To get an overview of the thesis process, an illustration has been created and is presented in Figure 3.

Figure 3: An illustration of the thesis process.

3.2 A study of prior research

The thesis project started off with a comprehensive literature review. A literature review is a method where one studies previously conducted research in the same or related areas. According to Snyder (2019) can be used to help build knowledge during research. It can also be used to cover a wide range of topics and integrate knowledge and methods from various fields of study. Snyder (2019) also mentions that it can be used to synthesise research findings to discover gaps in the research. In this thesis, the literature review was conducted with the primary aim of gaining more knowledge and understanding of product disposition and behavioural trends associated with engagement and recirculation of unused, stored products. The literature review was also done to discover gaps in previously conducted research.

A selection of articles related to product disposition, consumer behaviours, and product relationships were shared by researchers in the research project "Mining garage gold". Additionally, articles were sourced through citations within previously reviewed materials and searches on Google Scholar. Key search terms such as "Product Disposition", "Product Disposition Barriers", "Disposition Triggers", and "Product Neglect" were used in the search process. Upon identifying relevant articles, they were catalogued in a document library for further examination and reference.

In addition to studying articles on previous research, research data collected within the "Mining garage gold" project was studied. This data included coded interview quotes from interviews conducted in their interview study. The data shared was then analysed further, with the research questions and aim of this thesis in mind.

All the data from the literature review was compiled into a research synthesis, describing all previously discovered triggers, motivators, and barriers in relation to engagement and disposition of unused, stored products. The purpose of this research synthesis was to get a broad picture on what research has discovered so far, to work as a building block for future studies within the thesis work.

3.3 Survey

To gain insights into what triggers, motivates, and prevents households from engaging with and recirculating their unused, stored products, a survey was conducted (See appendix A).

3.3.1 Creation and layout of the survey

A survey is a form of interview that is conducted without the interviewee and interviewing meeting (Bligård, 2015). Instead, a set of written questions are sent to the respondents to answer in writing. In this thesis, the survey was chosen as a method since it can reach many respondents, some that Bligård (2015) describe as one of the main areas of use for a survey. It was deemed ideal to gain insights from a relatively large number of people, of different ages and life situations.

The survey focused on gaining a combination of qualitative and quantitative data from the respondents. The questions were formulated to give the respondent the opportunity to give more qualitative answers, while still being comparable since the questions remained the same for all respondents. Questions about the respondents' attitudes towards their storage, why they have kept products that are unused, as well as which disposition method they prefer and why was also included. Attitudes towards recirculation in general was also investigated to get a better understanding of how people feel about recirculating products instead of throwing them away. All questions were formulated to gain as much insights as possible in relation to the thesis aim.

To be able to reach out to many people, the survey was distributed on social media channels. The survey was written in Swedish since the expected respondents would have Swedish as their native language and could therefore express themself more easily. In total, the survey gained 94 responses. Questions about the respondent such as age, living situation and occupation were asked. These questions were chosen since aspects relating to life situations could be used to find differences between different households. The ages of the respondents were varied but with most of them being younger than 30 and older than 50, see Figure 4. The respondents were mainly full-time employees or students, with about 40% each. The majority, 63%, lived in an apartment, 27% in a villa and the rest living in either a terraced house, on a farm or at their parents' house.

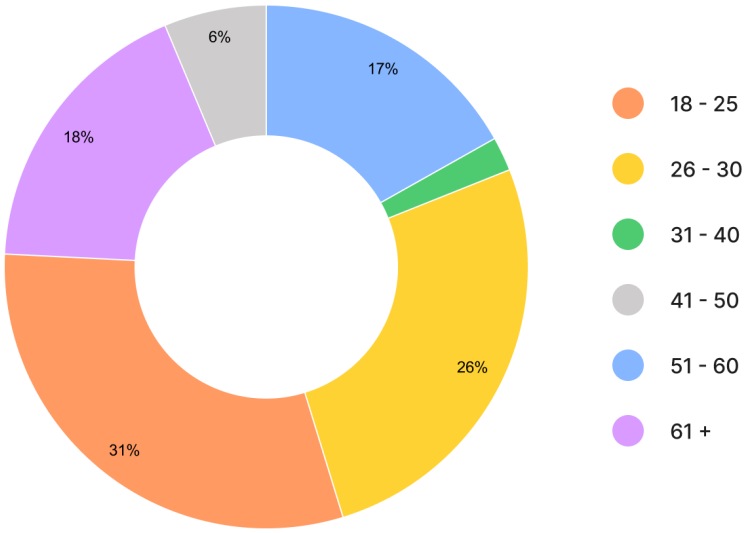

Figure 4: Age distribution of the survey.

3.3.2 Survey analysis

To analyse the data from the survey, a KJ-analysis was conducted. KJ-analysis is a method that helps provide an overview of a large quantity of data (Bligård, 2015). It is a method that starts by focusing on the details, and slowly moves towards understanding of the bigger picture. Since the survey had resulted in a large amount of generalised data, it was determined that a top-down method such as a KJ-analysis would be a good choice. Such a method would allow for a generalised data to come down to more specific information. According to Bligård (2015), the KJ-analysis method includes three tasks with the first being to note down the data retrieved on note cards or similar. In this thesis, the answers from the survey respondents were all written down on individual notes using the digital tool Miro (https://miro.com). When using the KJ-analysis method, it is according to Bligård (2015) important that each note card only contains one thought or concept. This could be a quote from a user, or something specific that was observed during the user research (Scupin, 1997). Once this had been completed, the note cards were categorised based on the survey question they responded to, with each question receiving different coloured post-it notes. As described by Bligård (2015), the notes should then be grouped into different themes or categories that can be identified. This was done, taking one question at a time. Lastly, the categories were given titles, as described by Scupin (1997) and Bligård (2015). The titles given to the different categories were the following: “Feelings about the storage”, “Why unused products are kept”, “Motivators: Engagement”, “Motivators: Recirculation”, “Barriers: Engagement”, “Barriers: Recirculation”, “Triggers”,

"Why a disposition method is chosen", and "Why other disposition methods were not used". Within these main categories, multiple themes were discovered and grouped together.

3.4 Provotype study

To gain deeper knowledge of what triggers, motivates and prevents households from engaging with and recirculating their unused, stored products, a second user study was designed.

3.4.1 Creating the provotype study

In designing the user study, the first objective was to identify how to best delve even deeper into the area in focus. An additional literature review was conducted to explore various methodologies aimed at helping participants reflect on their decision-making, and the emotions that occur during that process. After the initial literature review it was discovered that a possible way forward was to study methods that could help the households focus on and reflect on their decision-making process regarding whether to engage with unused, stored products, or not to. The method of provocative design was discovered and became the method of choice for this study. Provocative design is a design method where designs are used to provoke the user instead of solving their problems, which is the focus of traditional design (Ozkaramanli & Desmet, 2016). Within the field of provocative design, critical design is the most commonly used. Bardzell et al. (2012) view critical design as an approach, rather than a method used to meet the needs of the user. Critical design can be used during the research phase, as a method of collecting data, rather than later in the design process where more traditional design methods are used to help solve user problems (Bardzell et al., 2012). Provocative design was seen as an interesting and effective way to provoke users into reflection. Reflection that would in turn generate more qualitative data, than what could have been achieved by simply conducting interviews.

To be able to design for provocation, the suggestions made by Ozkaramanli and Desmet (2016) in their paper "Provocative design for unprovocative designers", were studied and used in the process of designing the second user study. In their paper, Ozkaramanli and Desmet (2016) present their suggestion on how the process of designing for provocation can be used by designers that are not used to work with provocative design. The method focuses on how design can trigger personal dilemmas, i.e. dilemmas that concern a person's goals or values. Dilemmas are defined as the realisation that there are two alternative behaviours

which cannot be conducted simultaneously (Ozkaramanli & Desmet, 2016).

According to Ozkaramanli and Desmet (2016) the first step to design for provocation is to define the dilemma, the two alternative behaviours on struggles between. Based on the findings of the literature review and survey, one specific dilemma emerged: the choice between *comfort* and *responsibility*. With comfort representing not going to the storage space or engaging with one's stored products, and responsibility representing the act of going to the storage space and/or engaging with the products there. Once the dilemma has been established Ozkaramanli and Desmet (2016) describe how one should brainstorm ideas within three defined areas: *embodied symbols* where one should define two symbols that embodies the concerns within the dilemma, *forced choice* where one finds possible choices in a dilemma and based on this creates a product where the user has to choose between mutually exclusive behaviours, and lastly *behaviour barrier* where one finds impossible choices in a dilemma and decide on either an automatic or habitual choice.

For this thesis, the method was slightly adapted to better fit the timeframe and objectives. Focus was on embodied symbols but also on exploring the different choices households encounter within the defined dilemma, examining potential action paths for the households. It was decided that an artefact symbolising this specific dilemma would be created, and for said artefact to work as a mediating object serving as a tangible reminder of the conscious or subconscious choices involved in the dilemma. Following this, an extensive brainstorming session for various artefacts was undertaken. This ideation process resulted in the idea of creating a provotype in the form of an old-fashioned scale. A provotype is a prototype that, instead of being user friendly, is used to provoke the user (Heikkilä & Schaeffer, 2022). One way to use a provotype is within design research. A provotype is used to emphasise what is deemed as normal, and to create a platform where conversations and discussions about norms, designs and desired futures can take place (Heikkilä & Schaeffer, 2022). The purpose of using a provotype for this study was to have a mediating object that could act as a reminder of the storage space while still representing the choice the households face regarding their storage space. The provotype scale would represent the choice between comfort and responsibility. To further provoke the participants, comfort was replaced with laziness. The idea was that a loaded word such as laziness instead of comfort would act as a better provoker.

To get a feel for the size and form of the provotype, a mock-up prototype was built with foamboard, see Figure 5. A mock-up is a form of prototype that is used in the earlier stages of creating a design (Wikberg Nilsson et al., 2015). A mock-up is built to test the physical attributes such as form, colour, and finish (Bilgård, 2015) or functions and ergonomic features (Wikberg Nilsson et al., 2015). Another mock-up, in plywood, was also constructed with the purpose of testing the balancing function, ensuring that such a function would work in the final provotypes, see Figure 5.

Figure 5: Balance scale mock-ups. The cardboard mock-up (left) and the mock-up in plywood (right).

After some adjustments based on the mock-ups, four balance scales were built out of plywood and painted white. It was important to have the shape clearly resemble an old fashioned balance scale so that the participant instantly would understand how to use it. Small chains with a balance pan attached to them were attached to each side of the balance scale. On each side the words “Laziness” and “Responsibility” were written with a picture embodying the corresponding word placed next to it. To make the provotype even more provocative, small spikes were placed under the balance pan of the lazy side and a cotton ball under the balance pan of the responsible side. Finally, a small container for the weights was added at the base of the scale. See Figure 6 for the final design.

Figure 6: The final provotype.

To better capture the emotions of the participants, and to help them remember what emotions they felt during the study, leaflets based on the concept of an experience booklet were created, see Figure 7. An experience booklet provides a medium for participants allowing them to record their conflicting feelings throughout a study by answering questions (Ozkaramanli et al., 2014). The idea was for these leaflets to be quick and easy for the participant to fill in, to catch their thoughts and emotions in the moment, and to act as a discussion topic and reminder during the final interview, some aspects Ozkaramanli et al. (2014) mention as qualities for the method experience booklet. For the leaflets to be quick and easy, the questions were kept short, and did not require the participants to provide as qualitative data as originally intended with the experience booklet method. The experience booklet was chosen as a method since it helps capture the emotions that arise throughout the study, which was the primary aim of the leaflets.

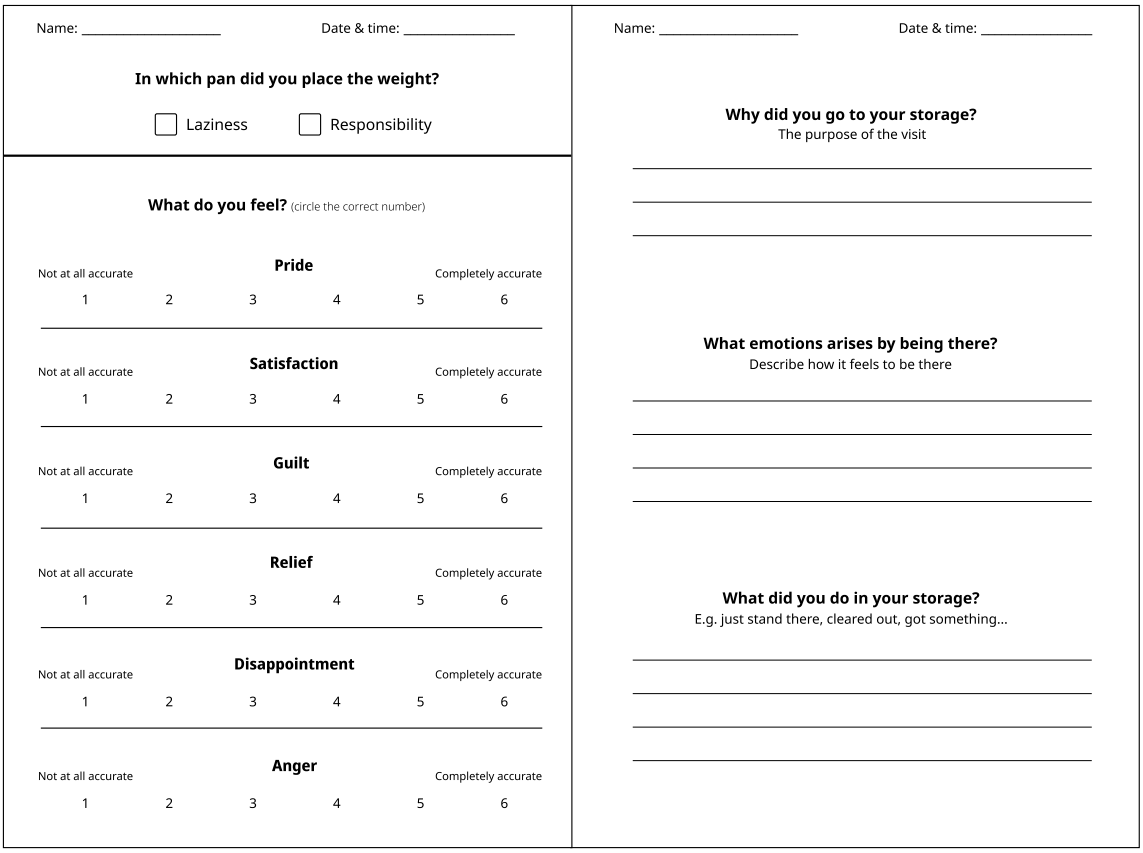

Figure 7: Provotype study leaflets, translated into English. Leaflet placed next to the scale (left) and leaflet placed in storage space (right).

One leaflet was to be placed by the provotype, and the other in the storage space. For the leaflet linked to the provotype, an adaptation of the Geneva wheel of emotions was used. The Geneva wheel of emotion is an instrument used to measure emotional reactions to events, situations, or objects (University of Geneva, n.d.). The participant is asked to indicate their emotions by choosing one or a mix of a set list of 20 emotions, on a scale of 1 to 5 with the option of choosing both “no emotion felt” and “other emotion felt” (Sacharin et al., 2012). To make the leaflets quicker and easier to fill in, the Geneva wheel of emotions was adapted to fit the study. Instead of 20 words as Geneva wheel of emotions include, six words were chosen, words that represented different parts of the scale, and emotions likely felt in relation to the storage space. Each word was connected to a Likert-type scale ranging from 1 to 6, 1 being *not at all accurate* and 6 being *completely accurate*. A Likert scale is a technique used to measure attitudes (Joshi et al., 2015). In its original form, a Likert scale presents statements regarding a particular situation. The purpose of the scales was to capture the feelings of the participants separately, and not combined as a group and therefore Likert-type scales were

used. The range of 1 to 6 was used instead of the traditional 1 to 5, to exclude the neutral number in the middle of the scale. This leaflet aimed to capture the emotions linked to the decision-making itself. The leaflet placed in the storage space contained three short questions aimed to capture the purpose, emotions and actions linked to the visit done by the participant.

After creating the provotype and leaflets, the interview questions for the introductory and finishing interview were formulated, see Appendix B (the questions in Swedish). It was determined to use interviews to capture the thoughts and reflections of the participants both before and after the study. The purpose was to allow for comparisons, and for the finishing interview to take inspiration from the leaflets. Interviews are used to gain data from and about users (Wikberg Nilsson et al., 2015). The finishing interview aimed to use the experience leaflet as a medium for discussion. An interview that is facilitated by the answers in an experience booklet (or leaflet) is called phenomenological interviews (Ozkaramanli et al., 2014). The main goal of phenomenological interviewing is to figure out what it is like to experience a specific phenomenon. During the interview, the participant and the interviewer will go through the experience booklet together and discuss it more in detail (Ozkaramanli et al., 2014). The latter part of the interview was conducted in the storage spaces, to enable further discussion about the space and the products therein. The location was chosen since it was believed that being there would initiate thought processes with the participants that would not occur if the interview would have been conducted elsewhere. Both the introductory and the finishing interview were to follow a semi-structured format, allowing for comparable answers while still promoting a two-way conversation. A semi-structured interview combines the qualities of a structured and unstructured interview format. It allows for the interviewee to talk more freely, as with an unstructured interview, while still sticking to themes and predetermined questions as with a structured interview (Bligård, 2015). According to Bligård (2015), it is best to use a semi-structured, or unstructured interview format if one wishes to gain more qualitative data, whilst a structured interview is better to gain quantitative data. The main aim of these interviews was to collect qualitative data, whilst still sticking to predetermined questions to gain the insights needed.

The entire study was tested in a pilot test where one single household participated. A pilot

study is a vital part of the research process since it provides the opportunity for the real study to be tested beforehand (Simkus, 2023). The pilot study usually involves trying the study on one or a few participants and can help the researchers identify any ambiguities, confusion about the information given to the participants or to obtain preliminary data to gain insights into the possible result of the study (Simkus, 2023). The purpose of the pilot study was to get feedback on the interview questions, the provotype, the leaflets and the study. Feedback from the pilot study participant was used to revise interview questions, the provotype and the leaflets.

3.4.2 Participant selection

To maximise insights, it was decided that only household members responsible for the products in the storage space would participate in the study. Children living at their parent's house were therefore excluded. Four households were selected to participate in the provotype study: three households consisting of couples and one household with a single occupant. This inclusion of both household types aimed to facilitate comparison and identify potential differences between single households, and households consisting of more than one person. The different households were also selected based on their storage situation. It was deemed ideal to include different types of storage spaces such as storage spaces located in the living area as well as those located in an external space (not in the area of living), also to facilitate comparison during the analysis. Life situation also played a part in the selection, as it was desirable to include households that had lived in their house for both a shorter amount of time, a few years, and for a longer time, more than one decade. For the specifics of the households and its participants, see Table 1.

Table 1: Participant of the provotype study.

	Participants	Ages	Storage situation
Household 1	H1	25	External storage space in building + closet space in apartment
Household 2	H2A & H2B	26 & 25	External storage space in different building
Household 3	H3A & H3B	55 & 55	Attic in house
Household 4	H4A & H4B	62 & 61	Basement in house

All the participants were native Swedish speakers. For the participants to be able to express themselves more freely and easily, all the interviews were conducted in Swedish as well as all the materials handed out to the participants.

3.4.3 Study layout

The study consisted of three main parts done in the following order: introductory interview, provotype study, finishing interview (see Figure 8).

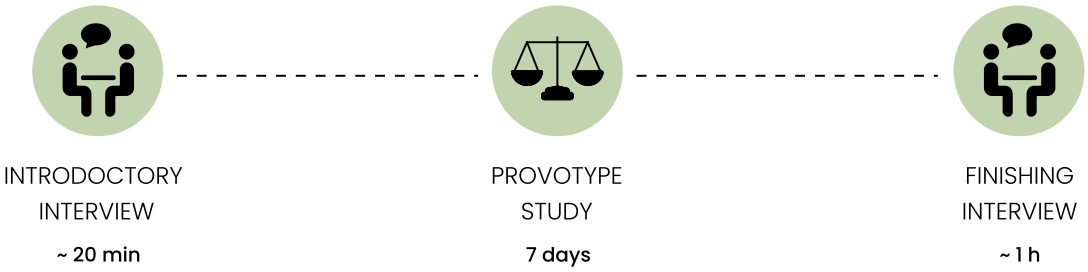

Figure 8: Layout of the provotype study.

The purpose of the introductory interview was to get an overall view of the household, their habits, and their thoughts in relation to their storage space and their unused products. The interview touched upon their current situation and thoughts related to the matter. Once the introductory interview had been done, the household was introduced to the provotype which

was placed in a central spot in their home. The layout of the study and the different tasks involved were also introduced to the participants. Once this was done, the households were left with the artefact for a period of seven days, see Figure 9. It was determined that seven days would be enough time for the participants to reflect, by offering multiple opportunities to place weights in the pans of the scale. The participants were asked to place one weight on the scale for each time they noticed that they were faced with the decision of either going to their storage or not to. Each participant was asked to place at least one weight each day and after placing the weight, fill in the leaflet. The leaflet in the storage space was to be filled in for each visit in the storage.

Figure 9: The provotypes placed in the four households.

After the seven days, the households were interviewed a second time. This interview mainly focused on discovering if the households had gained some new insights during the period they had been part of the study. The interviews used the phenomenological approach where the leaflets were used to prompt discussion and to help the participants remember the events of the week. During the interview, the participants were also asked questions about the study itself, including the design of the leaflets and the provotype. This was done to evaluate the study itself, to find potential aspects that could have affected the results.

3.4.4 Provotype study analysis

When analysing the data from the interviews in provotype study, the method of coding was used. Coding is a method that can be used to analyse qualitative data and enables that data to be organised and grouped into categories because they share some characteristics (Saldaña, 2013). The first step of coding is to pull out data from the research phase, i.e. from the interviews. This was done by reading through the interview transcripts, marking statements or paragraphs from the introductory and finishing interview. These bodies of text contained parts of the interviews that were deemed as valuable and related to the different research questions for the project. Similarly to the KJ-analysis, these statements were then written down on notes in the digital tool Miro. From the KJ-analysis, and research synthesis, themes had already been discovered and the coding was consequently based on these. To be sure not to miss any information, it was determined to note down as much as possible from the interviews, resulting in some notes being irrelevant and therefore discarded during the coding process.

Once the data has been noted down, the data entries receive a code from the researcher, which most often is a word or a phrase that summarises or catches the essence of the data entry (Saldaña, 2013). During the first round of coding, many codes were used. However, when summarising the results from the analysis some of them were merged and given a new code. After this process, a total of 47 different types of codes were found and these were divided in the following main categories: “Barriers”, “Motivators: Engagement”, “Motivators: Recirculation”, “Triggers”, “Disposition”, and “Processes”. The first five categories directly relate to the research question of this thesis. Disposition and processes are not directly related to the research questions but were still deemed relevant for the understanding of the households and their behaviour. The category disposition contains comments regarding the disposition process, and how households feel towards them. All the codes within this theme also relate to another code that is included in either barriers or motivators. The category processes contain comments about different processes or methods the households use to help them to either engage with, or recirculate their unused, stored products.

The method of coding was used since some ideas for categories, specific information, already existed from the literature review and the survey. This made the KJ-analysis method, which were used in an earlier stage of the process, less applicable. Since some quotes from the interviews could entail multiple codes, or be included in multiple categories, it was considered

a better alternative to code instead of using a method such as a KJ-analysis.

3.5 Summarising the findings

Once the survey and provotype study had been completed and analysed, the process of summarising the findings began. Similar findings, such as related triggers, motivators and barriers were linked together. While discussing the findings and compiling them together, it was noted that the process surrounding them needed to be explained for them to be better understood. It also became clear that some triggers, motivators and barriers only occur at specific times or in relation to specific choices the households face. To clarify the entire process, as well as where the different triggers, motivators and barriers occur, a process flowchart was created. The purpose of the flowchart was to get an overview of said process, and to understand how they affect, and are affected by the household.

3.6 Designing for engagement and recirculation

Once all data had been analysed and the process flowchart had been created, the process of designing began. The purpose of the design phase was to create one or more designs that would indicate how design can play a part in influencing households to engage with and aiding them in the process of recirculating their unused, stored products.

To gain further perspectives in the process of creating ideas, it was determined that it would be beneficial to invite designers to help generate ideas. Therefore, an ideation workshop was held (see Appendix C). The purpose of this workshop was to broaden the perspective and generate more ideas than possible for just two designers. To decide what areas to focus on in the ideation workshop, the triggers, motivators and barriers were looked at more closely. It was determined to only focus on a few areas during the ideation workshop, to allow for more time on each area. Several possible areas of focus were mapped out, alongside the different connections between them. It was decided to focus on areas in different parts of the process, thereby targeting different triggers, motivators and barriers. The areas of choice were also to be applicable for as many households as possible, to not just target a few households. This resulted in three areas of focus: *Overwhelming*, *Bad relationship to storage*, and *Recirculation*.

Six design students were invited to participate in the workshop. During the workshop they were asked to ideate based on the three focus areas mentioned. For the first two themes, the

participants were paired up and asked to use the method of brainstorming. Brainstorming is a method used to ideate a large quantity of ideas (Wikberg Nilsson et al., 2015), which was the purpose of this workshop. The idea of the method is that the participants should increase their creative potential by inspiring each other. During a brainstorming session, a theme should be defined, which for this workshop was Overwhelming and Bad relationship to storage. The generated ideas should be sketched or written down on papers, or similar, so that they can be documented (Wikberg Nilsson et al., 2015). In the workshop, the participants were given the freedom to choose whichever they preferred.

For the third and final theme, Recirculation, Brainwriting 6-3-5 was used as a method. Brainwriting is an alternative method to brainstorming and follows the same rules (Wikberg Nilsson et al., 2015). Similarly, the brainwriting session starts out with a theme being defined. The participants then receive three pieces of paper each that they should write three different ideas on, one idea per paper. After five minutes, the papers are sent to the next person. A new timer is started, and the participants should build upon the ideas on the new piece of papers they received and write them down on the correspondent papers. When the papers have returned to its original author, the session is over and a lot of ideas have been created (Wikberg Nilsson et al., 2015). After each theme, the group discussed the different ideas together, to inspire further conversations and ideas in relation to the concepts. It was decided to use two different methods to create more variation, thus avoiding boredom which could have a negative effect on creativity.

After the workshop, the ideas were compiled and the ideas that were considered outside the project scope were removed. During the compilation, it was noted that most concepts were only able to target a few triggers, motivators or barriers. Though this had been the idea when creating the themes, it was further noted that creating an idea by combining concepts, thus targeting a larger part of the process, would be difficult and risk losing potential effect on other areas. Since the purpose of the designs were to showcase how design can play a part in influencing and/or aiding the households in the process of engaging with and recirculating their unused, stored products, it was determined that the best way to move forward was to create a portfolio of multiple high levelled concepts rather than one very detailed concept targeting only a small part of the process, or only a few households. Once this decision had been made, further ideation was conducted using mainly the method of brainstorming. The purpose of these brainstorming sessions was to ideate on the parts of the process that were not covered in the workshop as well as to further develop some of the ideas from

the workshop. Different factors determined which concepts were chosen or not. Concepts that were already on the market were excluded, and the same applied for ideas that were impossible to implement in real life. Since the idea was to target different parts of the process and to ensure all of the different steps in the process flowchart were covered, this was also a criteria when choosing the different concepts for the design portfolio.

In total, eight concepts were created and made into a design portfolio. For each of the eight concepts, a description and image were created and which triggers, motivators and barriers each concept targeted were noted down. The concepts were also placed in the process flowchart to get an overview over which parts of the process the different concepts targeted.

3.7 Evaluating the designs

The purpose of the evaluation was to examine if the concept descriptions were understandable, if the concepts targeted the triggers, motivators and barriers they were intended to, as well as to see if the concepts would be adapted and accepted by different users. The evaluation acted as a base for a small iteration process, where the concepts were refined based on the evaluation feedback.

The evaluation was done using a shorter semi-structured interview. The purpose of using the semi-structured interview format was to be able to ask follow-up questions to the answers given, while still sticking to three predetermined questions. In total, 11 participants were asked the following questions about either all, or a few of the concepts:

- Do you understand how the concept works?
- Would this concept help you in the process of engaging with and/or recirculating your products more often? In what way?
- Would you use this concept today if it was available today? Why/why not?

STUDY OF PRIOR RESEARCH

In this chapter, a research synthesis is presented containing triggers, motivators and barriers discovered in prior research. A chapter describing this thesis relevance in relation to previously conducted research is also presented.

4.

4.1 Research synthesis

Here, findings from the literature review have been summarised and divided into barriers, motivators and triggers.

4.1.1 Barriers

When a household is faced with the decision to either engage with and/or recirculate their unused, stored products, or not to, there may be aspects that prevent them from doing so. These aspects can be referred to as barriers and can also prevent households from parting from these products. In the research done in the project "Mining garage gold", Nilsson et al. (2024a) collected data where the barriers discovered can be categorised into two main areas: *physical barriers* and *emotional barriers*. Physical barriers are barriers related to the effort required from the households, for example effort required to sort through products, refurbish them or to find a buyer for the product. Participants in the study conducted by Nilsson et al. (2024a) also described the difficulties in "getting the job done", and some products being difficult to sell as barriers. In their report, Myrorna (2018) found some examples of physical barriers that prevent households from not getting rid of their unused, stored products. Such barriers include lack of knowledge about how to best dispose of the product, lack of energy and lack of time.

The act of keeping usable products without using them is referred to by Sikorska (2020) as product neglect. According to van't Ende (2018), the main factor preventing people from getting rid of their neglected products is the perceived value attached to them. There are different types of values that a person can attach to a product: *symbolic*, *utility*, and *economical value*. The symbolic value occurs when a product is closely linked to its owner. This could be that the product helps the owner express themselves or that it is linked to a memory, thus creating a strong emotional connection between the owner and the product. In the data shared by Nilsson et al. (2024a) a few reasons for emotional attachment to products can be found. One reason for emotional attachment was that the product had been received as a gift. When a product is received as a gift, the receiver often associates the product with the giver, leading to feelings of guilt when considering disposing of it. Another reason for having an emotional attachment to a product found in the data collected by Nilsson et al. (2024a) was that the owner had made the product themselves. Sikorska (2020) agrees with the previously mentioned, concluding that one of the main barriers for disposition is the perceived emotional

value. Building on the emotional aspect, Roster (2001) argues that people are reluctant to get rid of products that represent ties or affiliations to other people. Myrorna (2018) also found that 40% of the participants that were asked why they save products they no longer used, claimed it was due to the product's sentimental value. This further shows that sentimental value, and emotional connections, are prominent barriers for product disposition.

As mentioned, van't Ende (2018) found perceived utility as a barrier for product disposition. Perceived utility value is explained by van't Ende (2018) as the convenience to keep the product in case it could be needed in the future. This is confirmed by the research done by Sikorska (2020), who found a product's functional value as one of the main barriers for disposing of said product. The fact that people are reluctant to get rid of products that could be of use in the future is also confirmed by Roster (2001). Though often divided into either functional or emotional value, Sikorska (2020) states that most products, to some extent, are associated with both.

Within the area of perceived utility value, van't Ende (2018) also found that households keep these products by fear of regret. Nilsson et al. (2024a)'s data also show that households keep products due to fear of regretting disposing of them. However, unlike van't Ende (2018), they found that this can not only be linked to the perceived utility value, but also the sentimental value of a product. If the product stays stored, still in the household's possession, there is no risk of regret. Once the product leaves the household, that risk becomes prominent.

The final barrier mentioned by van't Ende (2018) is perceived economical value. Myrorna (2018) also found a product's economical value as one of the main reasons for unused products to be kept by households. Included in this category are products that are kept because the owner spent a lot of money on them (van't Ende, 2018). Perceived economical value also relates to products that are kept because their perceived economical value is very low. Such products are not perceived to generate sufficient economical value in return when disposing of them, and are therefore kept (van't Ende, 2018).

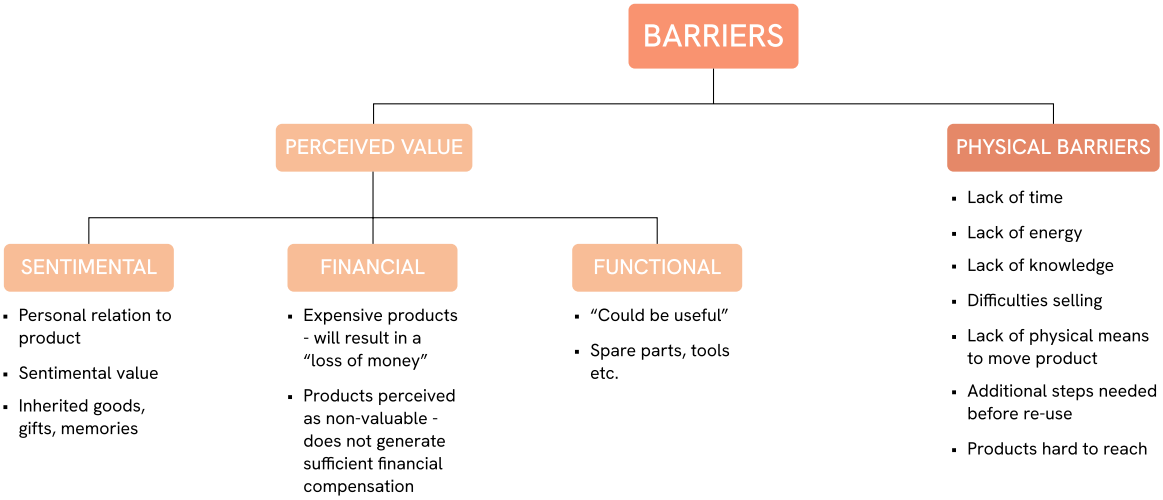

Figure 10: Barriers found in prior research.

4.1.2 Motivators

Belk (2014) defines collaborative consumption as: "people coordinating the acquisition and distribution of a resource for a fee or other compensation" (p.1597). Other compensation can include practices such as bartering, trading, and swapping. Kim and Jin (2019) identify five dimensions of motivators for collaborative consumption of consumer goods. Out of these five dimensions, four are related to the distribution rather than the acquisition of resources. These include *social aspects*, *concerns related to sustainability*, *cost saving* and *fun*.

The social aspect is explained as the consumer being interested in being a part of the greater sharing community, and therefore are more likely to take part in collaborative consumption activities (Kim & Jin, 2019). Harrell and McConocha (1992) also found that choosing to sell products instead of throwing or giving them away, is partly motivated by the enjoyment of getting a social interaction. This indicates that social interactions between seller and buyer can be a motivator for recirculation, more specifically selling products. Paden and Stell (2005) agree, stating that one non-monetary benefit for selling products is social interaction.

Further, the concern for the sustainability dimension is explained as consumers being environmentally conscious and wanting to reduce their waste (Kim & Jin, 2019). Echegaray and Hansstein (2020) also investigated the concept of collaborative consumption and concluded that for collaborative consumption of used goods, the sustainability aspect is a greater motivator than for example cost saving. De Ferran et al. (2020) investigated what

would increase people's willingness to choose disposition methods other than throwing products away. One aspect found was the ecological factor, i.e. wanting to reduce waste and pollution.

The cost saving dimension mentioned by Kim and Jin (2019) is when a consumer is motivated to trade ownership of their own product to earn money. A similar motivator was found by De Ferran et al. (2020), confirming that gaining financial compensation for a product could be a great motivation for selling it instead of throwing it away.

The last dimension mentioned by Kim and Jin (2019) is the motivator of collaborative consumption being fun. This is explained as when consumers find joy in saving money or by simply discovering collaborative consumption. The data retrieved by Nilsson et al. (2024a) also indicate that fun can entail the joy of one's old product finding a new home.

Böcker and Meelen (2017) examine how social, economic, and environmental factors influence people's motivation to share products and services. They focused partially on tool sharing, finding that the consumer is mainly motivated by economic and environmental factors, while the provider of the product is driven by environmental and social factors. Böcker and Meelen (2017) conclude that the consumer of a product is motivated by economical aspects to a higher extent than the provider of the product.

In their research, De Ferran et al. (2020) identified three additional motivators influencing people's decisions to choose a disposition method other than simply discarding products. These factors include *hedonistic-recreational*, *altruistic*, and *generative* motivations. The hedonistic-recreational motivation refers to the pleasure individuals feel from receiving something in return for their products. Altruistic motivation involves the act of doing good for others without expecting anything in return. Finally, generative motivation regards finding the right recipient for the product out of care for either the product itself or the individual receiving it (De Ferran et al., 2020). Similar to these motivators, Sikorska (2020) found some arguments to enhance the willingness to dispose of neglected products, which were: *Someone else can find a better use for the product*, *Someone else really needs it* and *The product could provide the same or more value/enjoyment to someone else*.

The factors mentioned above are associated directly with product recirculation and the motivations driving it. The data collected by Nilsson et al. (2024a) indicate additional

motivators specifically linked to the recirculation process and the act of engaging with unused, stored products. These factors include the maintaining an organised storage space and therefore keeping track of what and where products are kept, the desire to limit one's possessions, and the satisfaction gained from cleaning and decluttering products (Nilsson et al., 2024a).

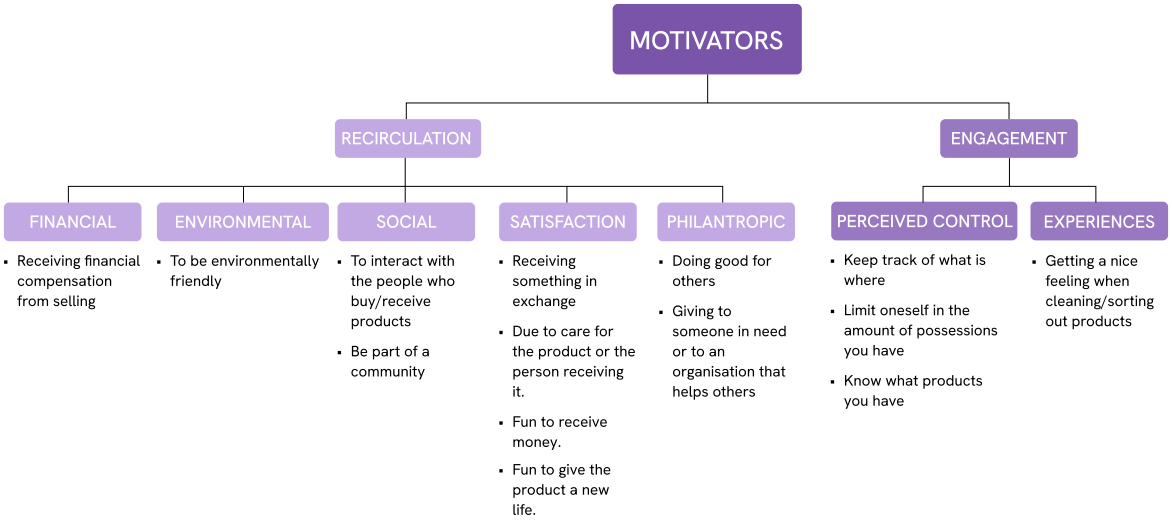

Figure 11: Motivators found in prior research.

4.1.3 Triggers

In the data gathered by Nilsson et al. (2024a), the most frequent triggers found in their data were *life changes*, *moving* and *storage full*. Roster (2001) agrees, mentioning how major life changes, including moving, can act as a changing factor in the relation between the owner of a product and the product itself. Triggers such as these would by van't Ende (2018) be categorised as *situational triggers*. In the research conducted by van't Ende (2018), the most common situational trigger was the act of moving, either because of the act of moving itself, or because the move would result in a reduced storage space, allowing for fewer stored products. This aligns with the data collected by Nilsson et al. (2024a) who found a full storage to be a common trigger for engagement. Another type of life change discovered in the data collected by Nilsson et al. (2024a) is the concept of *death cleaning*. Death cleaning is a Swedish expression meaning that a person gets rid of unused products that they have accumulated throughout the years so that no one else must do it for them when they pass (DiGiulio, 2017).

Another trigger found in the data collected by Nilsson et al. (2024a) was that the household itself could trigger disposition. This would include households of more than one person, where one of the household members would trigger the other to start the process of disposition. Similar triggers are described by van't Ende (2018), who describe such triggers as *social triggers*. However, according to van't Ende (2018), these situation triggers stretch outside of the household and could be a result of any social influence. The categories of situational and social triggers are both extrinsic, meaning that the household is affected by external factors. While these are the most common, van't Ende (2018) found that intrinsic triggers also exist, such as the internal urge to clean up, which could lead to disposition of a neglected product. Another example of intrinsic triggers is acceptance, meaning that the households accept that they will no longer use the product and therefore dispose of it (van't Ende, 2018).

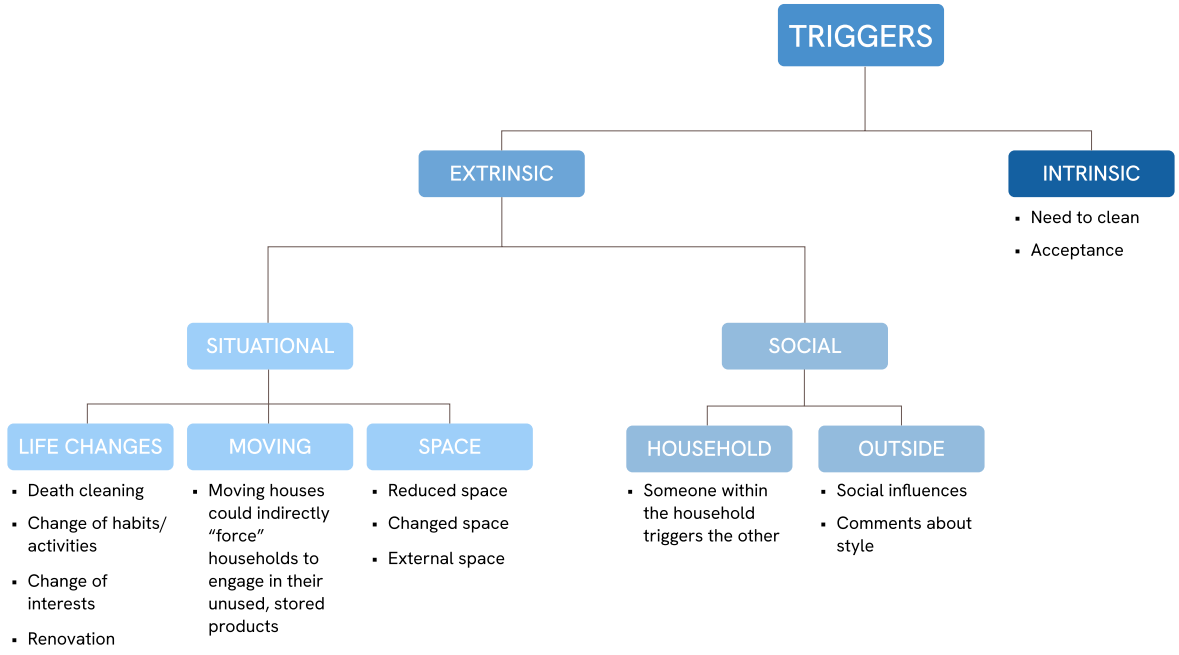

Figure 12: Triggers found in prior research.

4.2 Knowledge gaps in prior research

Keeping usable products without using them, so called product neglect, is the focus in some of the previous research conducted in the area in focus for this thesis (Sikorska, 2020; van't Ende, 2018). These papers have a strong product perspective and lack focus on how the triggers, motivators and barriers are connected to each other, the households, the storage space as well as the process of engagement and recirculation. Prior research therefore fails to describe relevant factors related to the overall process of engaging with, and recirculating unused, stored products. These papers, and as well as other research (Roster, 2001) focus on

disposition and the disposition process, including the alternative of throwing products away. To not risk the households simply throwing away products they want to get rid of, more targeted information about the disposition alternative of recirculation is needed to discover triggers, motivators and barriers specifically related to the process of recirculation.

Kim and Jin (2019) and Echegaray and Hansstein (2020) both investigate the concept of collaborative consumption and motivators related to it. Collaborative consumption is defined by Belk (2014) as the acquisition and distribution of a resource for a fee or compensation. By focusing on getting some kind of compensation for the distribution of a product, one of the alternatives in recirculation, giving the product away, is missed out. In their research, Böcker and Meelen (2017) are examining households' motivations for sharing products. While sharing products is an option for recirculation, it overlooks more permanent alternatives such as giving the product away or selling it.

All the previous research reviewed has mainly focused on either triggers, motivators or barriers and not all of them combined. Information about how the three correlates and how they are manifested in the household's process of engagement and recirculation is therefore missing.

FINDINGS FROM USER RESEARCH

In this chapter, the findings from the survey and provotype study are presented. The findings from both the studies have been compared and combined to formulate a joint conclusion. A comparison with the research synthesis and a process flowchart are also presented.

5.

5.1 Barriers

In this part, all barriers discovered in the survey and provotype study are presented.

5.1.1 Time, energy, and motivation

When it comes to the act of engaging with unused, stored products, there are some barriers preventing households from doing so. The main barrier found in the survey was lack of time and energy. To engage with one's unused products feels time consuming, but also energy consuming. Closely related to these barriers is the barrier of lacking motivation. There are simply not enough factors motivating the households to engage with their unused, stored products. Laziness is also a barrier mentioned by multiple respondents of the survey, something that can be related to the barrier of lacking time, and the barrier of lacking motivation. The interviews conducted in provotype study also highlighted lack of time, energy, and motivation as the most prominent barriers for engagement. From the interviews, it became apparent that the perceived lack of time or energy often comes down to prioritisation. Households tend to prioritise activities they find more enjoyable or deem more pressing responsibilities. Tasks such as cooking, cleaning and work-related activities are examples of more pressing responsibilities.

> Yes of course those things stand in the way, that you need to cook or buy groceries, but it's always a question about prioritising and if one is to go there [to the storage space] for ten minutes, it does not affect the cooking. It comes back to it being a question of prioritising, that 'no, I don't want to, so I won't do it'. And then I don't prioritise it.
> **- H3B**

Motivation to engage with storage spaces was found to be lacking due to the perception of the activity as boring and time-consuming. Many households viewed it as a daunting project, unsure of where to begin. With motivation lacking, the households proved more likely to participate in other activities considered more enjoyable. This was especially true if they felt like they had been acting responsible in other areas in their everyday life.

In the interviews, some households highlighted the importance of having sufficient time

to fully complete the task of engaging with their unused, stored products. The barrier of lacking time therefore refers to lacking time to do the task in full. Participants expressed that leaving the project of sorting through all stored products half-done felt worse than ignoring it altogether. Households also mentioned a domino effect, where engagement with unused, stored products often leads to additional actions, such as decision-making about products and subsequent trips to recycling centres or second-hand shops. This is also a reason for why the households feel like they do not have enough time to engage with their unused, stored products.

> It's the thing that you know that once you have started, it's a bit like a domino effect. One thing builds on the other and you want to know that you have time to finish. I think I said so in the first interview. You want to feel that, you don't want to finish mid-task and then everything stands there, in a mess.
> **- H4B**

Another aspect related to the domino effect is that knowing about potential barriers for recirculation, can become a barrier for engagement as well. When households engage with their products they are aware that this will be followed by additional steps, where one could be recirculation of products they no longer wish to keep. Being aware of barriers related to recirculation could also prevent households from engaging with the products all together, as they know these barriers will appear later on in their process.

5.1.2 Hidden and/or forgotten

The storage space and the products stored inside can become hidden and/or forgotten. If the products are forgotten, it becomes difficult for the households to engage with them since they do not even know they exist. Products could become forgotten by being placed in a non-visible place, but also by being chunked together with other products. Chunking happens if a household chooses to categorise several products together, resulting in them becoming a part of something bigger and losing its individual identity. The storage space can become forgotten if it is located far away from the living area. By not passing it on a regular basis, the households are more likely to forget that there are things to do in their storage space, and that they have usable products stored there. Another factor that could cause the storage space to become forgotten is if it is in an inaccessible spot.

> Since we have an external storage space and we don't see it, they [unused, stored products] don't really exist in my head.
> - **H2B**

5.1.3 Storage space

One barrier that causes many households to ignore their storage space, and the unused products therein, is their relationship with their storage space. This includes multiple aspects but is closely linked to emotions associated with the storage space. Most respondents of the survey reported having some type of negative feeling towards their storage space. Such negative emotions cause a negative relationship, that in turn prevents the households from engaging with their unused, stored products. This is largely due to these negative emotions causing a reluctance to go to the storage space where these unused products are stored. The negative emotions could be frustration, exhaustion, and anxiety. Feelings that often stem from a disorganised storage space, or it being overwhelming.

> It is a very large space where you can fit a lot of things, for better or worse. And it gives me some anxiety actually...
> - **H4B**

Sometimes it is the environment of the storage space itself that prevents households from engaging with their unused, stored products. This could be that the storage space is too cold, too hot, or too cramped, making the experience of being there unpleasant. Another factor that was mentioned was that the storage space was not "cosy" enough, something that becomes a preventing factor for engaging with the products, since there is no way of making it a cosy and pleasant experience.

5.1.4 Accessibility

Limitation in accessibility is another barrier that prevents households from engaging with their unused, stored products. This includes the accessibility of the storage space itself, or the accessibility within the storage space. Some households found that the storage space being located far away, or in a place difficult to access, was a significant reason for them not to go

there. This indicates that storage space inaccessibility is a great barrier for engagement, since the households need to visit their storage space to interact with their unused, stored products.

> I would say that the placement makes it a difficult relationship. I don't go there even if I might need something there, or want to, sometimes we have things up here that needs to be taken there and they just stay here for like a week because we don't have the energy to go there.
> **- H2A**

Limitation in accessibility can also relate to the accessibility of the products stored in the storage space. If the products are stored in an inaccessible place that requires extra effort to get to, it becomes more difficult for the households to engage with them, thus becoming a barrier. This could be that the products are placed behind other products, or high up on a shelf that is difficult to reach.

Lastly, lack of accessibility can also be related to the later steps in the product cycle. Some respondents mentioned that they did not have the means to get rid of the products they no longer wished to keep, either by being unable to transport them to, for example, a recycling station or a second-hand shop, or by being unable to physically move the product due to lack of physical strength. These barriers prevent recirculation, but also engagement since the households are aware that these barriers will occur once they have engaged with their unused, stored products.

> To give away feels better but then you maybe have to travel by tram with lots of clothes and that feels difficult.
> **- Respondent 1**

5.1.5 Overwhelming

This barrier is closely linked to several other barriers. Many households feel overwhelmed by the task of engaging with, and recirculating, their unused, stored products. The feeling of being overwhelmed results in an incapacitated state that results in no actions. The feeling of being overwhelmed can stem from the knowledge of it taking a lot of time, effort, and

energy. It can also be due to the number of products owned and stored, and it being difficult to know where to start. Lack of organisation and order can also contribute to the sense of being overwhelmed, since this can make it even more difficult to know where to begin.

5.1.6 Unwillingness to get rid of the product

The two main reasons why the respondents of the survey keep products they no longer use is the perceived sentimental and functional value of the products. Certain products are retained due to emotional attachment to these products. These could be products that are perceived to only hold significance for the household, not others, or products the household believes would be undervalued elsewhere. Such products often carry sentimental value, either because they are linked to loved ones or to cherished memories. Sometimes, households keep products in anticipation of finding the "right person", someone who will appreciate the products properly. These products remain within the household until that ideal person, a loved one or simply someone who will cherish the object as much as the household does, appears. The phenomenon of finding the right person is also described by Nilsson et al. (2024b), who claims finding the right person makes it easier to dispose of an unwanted product.

> "Some of these books I will probably never read. But it's books that I liked when I was younger, that has some sentimental value...
> **- H1**"

Other products are kept because the household still views these products as serving a functional purpose. These products are retained for their perceived functional value, either because they are useful for specific situations, or because they are part of the planned future set by the household. Such products are labelled as "good to have" by the household.

> "If you take all products like computers or similar. Then you have gotten a new computer or something so it goes down here [storage space]. Then the process is like, first you think that it's good to have for a while. And then they become too old. They have a certain best-before-date so then it's just to send it away.
> **- H4A**"

5.1.7 Difficult to make a decision

The mental load of making decisions for a product can be a barrier for engagement. The household is aware that engagement will lead to decisions regarding which products to keep, and which to dispose of. Knowing that such a process is both emotionally and psychologically challenging, prevents engagement and could lead to the household taking no action at all in relation to their unused, stored products. The decision-making process is not only related to if the product should be kept or not, but also which disposition method to choose once the decision to get rid of a product has been made. The findings from the survey show that the decision-making process seems to become even more difficult if there is a fear of regretting the decision afterwards.

> **Interviewer:** Is it hard to make a decision [on what to keep, sell or throw away]?
>
> **H3A:** Yes. And then you are unable to make a decision and you have to go up with the box to the attic again.

5.1.8 Method of recirculation

Some barriers relate to specific ways of recirculation and prevents the household from choosing that specific recirculation method. This can lead to the product not being recirculated at all. One notable barrier identified is the social aspect of selling products. For some, the idea of interacting with strangers, especially inviting them into their homes for a potential purchase, can be uncomfortable and intimidating. This discomfort may stem from a general unease with conversing with strangers, or by the concerns about the intentions of strangers.

> I do not want to have to arrange a meeting with some random on the internet, but I don't know if it's a psychopath.
> **- H2B**

Another barrier to selling products is the fear of deception. This fear includes concerns such as putting the item up for sale and then discovering the product resold at a much higher price for profit. This risk increases when households lack the knowledge to accurately assess the

value of their belongings. Participants expressed a significant reluctance to sell due to this fear of being deceived, preferring instead to give products away to ensure they are appreciated rather than risk being taken advantage of. This shows that the fear of being deceived is the primary barrier, outweighing concerns about monetary loss. Additionally, some participants expressed a fear of broken promises in relation to the product's new life, such as someone claiming they will cherish or maintain the product, and then discarding it.

> You don't want to be deceived! Like when someone comes and then sells it for the double, then I would rather give it away. Then you feel deceived, and you don't want that. Then I would rather give it to someone who wants it because they like it.
> **- H4B**

Another barrier for recirculation is that the households do not feel that it is worth the trouble. If recirculating a product becomes too much of a hassle, the households are willing to choose a different disposition method such as keeping the product or throwing it away. The troublesome aspects include the physical effort of transporting the product and the mental aspect of making decisions about whether to keep, sell, throw, or give away a product. It seems that many households choose their disposition methods based on how easy the method is to perform, and how good it feels to choose said method. It becomes a choice where the balance between doing what feels right and what is easy has a great influence. If the difficulty of the method outweighs how good it feels to choose said method, the household is willing to choose a less preferred method that is easier to carry out.

> I like recirculation, but I do not like the work and effort it entails. If it's too much work for me. But if I could put everything in a pile and someone comes and picks it up and makes the valuation for me then yes. Because I really don't want to throw things that are functional but what am I to do with it otherwise? When I no longer want it.
> **- H3B**

5.1.9 Lack of knowledge

Some households feel that they do not have enough knowledge of how to best dispose of their products. This could include lack of knowledge regarding where to best recirculate the products, but also lack of knowledge of how to value them. Due to lack of knowledge in valuation, the households do not know whether these products have a financial value or not. If the products are financially valuable, the households risk losing monetary profit. If the products are financially worthless, they would not be worth selling and could be recirculated in a different way. This lack of knowledge causes the households to keep these products instead of recirculating them. This does however not only concern the financial value of products. Another barrier for recirculation is that the households do not know if anyone would be interested in the product, and if it could be of value to someone outside the household.

> We don't know where to sell it, we don't know how to charge for it, one has very little knowledge of those things. Then it becomes difficult.
> **- H4B**

5.1.10 The household itself

The household itself could act as a barrier for engagement and recirculation. It could be that different household members have different priorities, where one person feels the need to engage with their stored products to a higher extent than the other. This could prevent decisions from being made about products where multiple household members need to be included. Another aspect is that one household member is more inclined to part with products than the other. This could lead to an inability to act for all household members, including those more motivated to recirculate and/or engage with the products.

> My husband sometimes prevents me from sorting out as much as I would like. He is more about saving things. There are some of his things that I would really like to give away, but there he has veto.
> **- Respondent 44**

5.1.11 Recirculation within the household

Recirculation can also be done within the household. This occurs when the household decides to re-use their unused, stored products. Barriers preventing recirculation within the household include households being tired of the product, them not having the space for it or not having any use for it. The lack of creativity to remake a product to being willing to use it again is also considered as a barrier that was mentioned by respondents to the survey.

5.1.12 Lack of need

Some households do not feel a need to engage with their unused, stored products. This in turn prevents them from doing so, since there is no motivation. Not feeling the need could be due to the household feeling pleased with their organisation, the number of products they own or that there is enough space for the products so they "might as well keep them".

> But I think if I had a lot of things and I felt like I needed to do something then maybe it [the provotype] would have triggered me more to, at least start doing something about what I have. It is always good to be prompted to do things. But since I am rather happy with my current situation.
> **- H1**

5.2 Motivators

Following are the motivators found in the survey and provotype study.

5.2.1 Engagement

The participants of the provotype study described how one motivator for engagement is the nice feeling one gets after sorting out, or clearing through ones unused, stored products. It was explained that this nice feeling, often described as a feeling of relief, was not one that occurs during the process of engaging with, or recirculating ones unused, stored products, but after. Once such tasks are completed, people tend to feel good because they have done something that they needed to do, perhaps something that they have put up doing because it was deemed as a daunting task. Knowing that one feels better when the task is done, motivates households to do it. There is also a knowledge that completing the task could ease a guilty conscience, or relieve stress and anxiety, further motivating the household. Some respondents of the survey

also mentioned that they enjoy the actual act of organising. The act itself is satisfying and smart solutions for organising generates positive emotion, thus motivating the household to engage with their unused, stored products.

One motivator that was mainly mentioned by participants of the provotype study was the aspect of death cleaning. Participants in the provotype study mentioned previously having had to clean out the houses of their parents or other relatives and this being a straining and laborious activity. This motivated them to not leave the same mess behind when they pass. The participants reflected on the amount of energy and effort it had required from them during previous cleanings at their relatives' houses and concluded that they did not want to burden their children with the same task.

> We cleared out stuff at my parents, now when they moved, and you feel like 'this is not how I should leave it like for my children'.
> - **H3B**

However, it was noted that the motivation of death cleaning is not only about avoiding to burden others, but also oneself. In the interviews, some participants talked about the importance of reducing the number of possessions they had while they still had the ability to do so. According to them, death cleaning is also a way to lighten the burden on oneself, by going through all possessions before the ability to do so is reduced either cognitively or physically, with increasing age. These factors all act as motivation for the household to act.

> Yes, and also to feel that... the thought that you will move some day, that you have prepared before then. And before you get too old. Then you don't have the ability anymore.
> - **H4B**

5.2.2 Recirculation

One of the biggest motivators for recirculation is that the product is perceived as useful for someone else. The product is deemed by the household as still having a functional value for others outside of the household. Since the product is deemed to have a functional value, the

households feel that it would be wrong to throw the product away. Instead, they would rather see the product come into use for someone else and will thus become motivated to recirculate said product.

> I want others to have use for the things I don't enjoy anymore. I don’t want to fill the dump with stuff.
> - **Respondent 91**

To throw away products that have a high sentimental or financial value are also considered to be acts of wrong. These feelings are related to the product itself as well as the potential receiver of the product. For products with a high sentimental value, finding the right person for the product that would use it in the “right” way, is a motivator. For these products it is more about the product being given a good home than to receive monetary compensation. To recirculate for philanthropic reasons is another example of a motivator found, but that is not directly related to the product itself. Doing something good for others and giving the product to someone who needs it, or giving the product to a second-hand shop whose profits goes to charity projects, are all motivators for recirculating products outside of the household.

> If I don’t have use for it, I usually give it away to someone who needs it more.
> - **Respondent 61**

Two other big motivators for recirculation that were found in the survey are financial and environmental motivation. Financial motivation relates to the act of making money, i.e. to receive monetary compensation for recirculating the products. Based on the findings of the provotype study, this seems to be mainly for larger and more expensive products. Cheaper products are more likely to be thrown away or recirculated by being donated to friends, charity, or second-hand shops. The environmental aspect is related to sustainability and the knowledge that recirculation is good for the environment. The motivation is then more about doing good and contributing to a sustainable future.

Another factor that motivates households to dispose of products is the desire to own less. The households feel motivated because they know that they feel better when they own fewer products. Though this is not directly a motivator for recirculation, but for disposition, it could

result in households recirculating more. If that is to occur, other motivators for recirculation must exist simultaneously.

5.3 Triggers

In this part, situational, and product and storage related triggers are presented.

5.3.1 Situational factors

Situational triggers are triggers that come from situational circumstances. The most common trigger found in the survey was moving houses. From both the survey and the provotype study it was discovered that such an event indirectly forces the household to engage with their unused, stored products. This engagement could in turn lead to recirculation if there are enough motivators and if there are few enough barriers for the behaviour of recirculation to occur. It was discovered that households feel the need to clear out their products before a move, to avoid moving into a new place with an overload of unused products. This is especially true if the household is moving to a smaller space, where the household is forced to depart from some of their products due to lack of space in their new home.

> “It’s a dilemma. If you move often, or often, then you do this [engage with one's products] for every move... But if you live in the same place for a long time you don’t.”
> **- H4A**

The findings from both user studies also found that the disappearance of a barrier could act as a triggering factor for engagement and recirculation. When a barrier disappears, an opportunity to engage with, or recirculate products is created. The discoveries from both the survey and the provotype study show that suddenly getting a period of free time can act as a trigger. If the barrier of not having enough time to commit to the engagement disappears, the households can suddenly become triggered to engage with their products and recirculate them. In the provotype study, participants mentioned that when they get extra time, for example during their vacation, they sometimes feel an urge to engage with their unused, stored products. Since the act of engaging with and clearing out products is often perceived as a large project, it is perceived to require a large amount of time to complete. When there is a lot of time available, these projects suddenly feel less daunting, and a trigger arises.

> When I have time, that's when I get these urges. Then I feel that I have the time. Now I have some whole days. Now I am going to do this.
> **- H4B**

Something that was also found in both user studies was that getting help from someone could act as a trigger. Such help would mean that certain barriers would disappear, for example the physical barriers of it being too heavy to carry products, or that the process becomes less tiresome if someone helps. Certain products that are stored require the engagement of more than one person in the household, for example to determine if the product should be kept or disposed of. If all household members responsible for such a decision become available, the engagement suddenly becomes a possibility, the barrier disappears thus triggering engagement.

> ... the children were both home and then we said that now we can go down to the basement [storage space]. They were a bit more ready to get rid of things. So it's not just dependent on us, but we are dependent on the children as well, that they are a part of the process to see if they want something, so you don't throw anything away that they might want.
> **- H4B**

Another trigger found was the urge to get a fresh start. This means that the household gets a boost of energy in the beginning of the new year, new season or a new month and then feel the need to "get their life in order", which often includes engaging with their products and storage. Thus, these changes in time or seasons act as external triggers. Highly related to the aspect of a fresh start, but also barriers disappearing, is that changes in weather, more specifically when it becomes warm and/or sunny. Such changes in weather can act as a trigger for households to engage with their unused, stored products. In the provotype study, the participants explained that the weather itself could give an internal spur of energy, thus creating an intrinsic trigger to engage with stored products. It could also be because the weather becomes an enabling factor for certain determined processes that households have for engaging with their unused, stored products. This enabling factor then becomes a trigger because a barrier disappears.

> I am much in the way that I like the 'fresh-start-effect'. Around new years or the first day of a new month or... I am always drawn to those things. Like 'now it's a full moon' or something like that. I take everything I can to get a fresh start and try to start new habits or things like that. But I am not very good at maintaining it. But I try to think that 'yes, now we can start to clear out'. That you kind of set up your own goals, and think that it will be a new start, that I think helps me to keep things organised and keep the storage in check.
> **- H2B**

Some triggers for recirculation are highly related to opportunity. These triggers were mainly discovered during the provotype study, where the participants were allowed to talk more freely about what triggers them. It seems that others asking for specific products could become a trigger for recirculation of that specific product. However, other opportunities arising could also act as triggers for recirculation of more than one specific product. This could be when a flea market is held or when a second-hand shop opens. Such events cause an opportunity to arise, which triggers the household to engage with their unused, stored products, and to recirculate them.

In the survey study, some social triggers were also discovered. These social triggers include becoming inspired by social media, getting comments from friends, and seeing other people selling or donating products, thus getting triggered by that.

> I had been given ideas/inspiration from social media, magazines, friends.
> **- Respondent 27**

5.3.2 Product and storage related factors

Some triggers are highly related to the products themselves, or the storage space where they are stored. Being reminded of the product is such a factor. When the household is reminded of the product, they could be triggered to engage with said product, because they now know it exists. This could occur when the households visit their storage space for another purpose, and stumble upon the forgotten product in the process.

For households that have storage spaces in a less accessible spot, being reminded of the storage space itself is also a trigger. In the provotype study, this became extra clear since multiple participants mentioned that the provotype itself reminded them of their storage space, thus acting as a trigger for reflection and engagement.

> Because we wanted to bring up our spring jackets and take down our winter shoes and some other stuff, and then we checked and was like 'we have so many shoes in our closet and half of them aren't used'. Then we gave most of them away and took some down [to the storage space]. Or we never took them down, just went down with other things now that I think of it.
> **- H2A**

Seeing an unorganised storage space can also act as a trigger. What then motivates engagement could vary depending on the individual. It could be that the household wants to regain control, and to make it easier to find products in the future after struggling in previous attempts. It could also be that the lack of organisations triggers feelings of anger and irritation, something that in turn causes the household to want to organise to avoid such feelings in the future.

In the survey, lack of space was found to be a trigger. When the households discover that there is no space, they can be triggered to engage with their products, which in turn could also lead to recirculation. This trigger can be closely linked to another trigger that was discovered in the provotype study: having too many products stored in the storage space. Having an overcrowded storage space can trigger the household in different ways, either by forcing them to engage with their products, or because it triggers something emotional within them and their need to regain control over the overcrowded space.

> ... I don't remember exactly when we did it [engaged with our products], but the thing was that then we had an awful lot of things there. At that time therewere even more things. So we thought that we can't have it like this, we cannot fit.
> **- H4B**

5.4 Comparison with research synthesis

When comparing the research synthesis with the findings of the user research conducted in this project, some conclusions can be drawn. Many triggers, motivators and barriers found in the related work can be confirmed, however there are some differences in the findings.

In the related research studied in this project, a lot of focus is on product retention in general and the barriers were largely related to overall product disposition and not to engagement and/or recirculation. This caused perceived value, including functional, financial, and sentimental value, to be a large and very important category of barriers of the research synthesis. The findings from the user studies do confirm that perceived value, especially functional and sentimental, are indeed reasons for product retention, but perhaps not as prominent barriers for engagement and/or recirculation as the research synthesis describes. Though not as prominent, it can still be confirmed that perceived value is a barrier for recirculation since it causes an unwillingness to part from certain products.

Looking at perceived financial value, it was considered an important barrier when studying related work. The financial barrier formulated in the research synthesis includes both the aspect of losing money when selling something, and that products are considered as completely worthless in the financial aspect. The findings from the user studies cannot directly confirm that a barrier for recirculation is that products are deemed financially worthless. Instead, it was the inability to value a product that was considered a barrier. The findings from the user studies can neither confirm nor deny that the fear of losing money is a barrier for recirculation. Just as for products that could be financially worthless, it is the lack of knowledge that creates a barrier for products that could have a large financial value.

In the related work, social factors were found to be motivators for recirculation of products, with the social interaction being described as a motivation for selling products. The findings from the user studies do however show that such social interaction is a barrier rather than a motivator.

The aspect of death cleaning, to clear out the products you no longer use before you die so that no one else needs to do it after you go, was discovered in the related work. Based on the information discovered in the related work, the death cleaning factor was categorised as a trigger in the research synthesis. Households described death cleaning as something that

motivated them rather than triggered them to action. It was not a factor that sparked the idea to engage with their storage spaces, which is how a trigger can be defined, but instead the thoughts about death cleaning were always existent. They engage with their products because they become motivated by factors such as easing the burden for oneself or others.

5.5 The process of engagement and recirculation

The process of engagement and recirculation can be presented using a flowchart, see Figure 13. This flowchart helps describe how the discovered triggers, motivators and barriers are manifested in the households' process of engaging with and recirculating their unused, stored products.

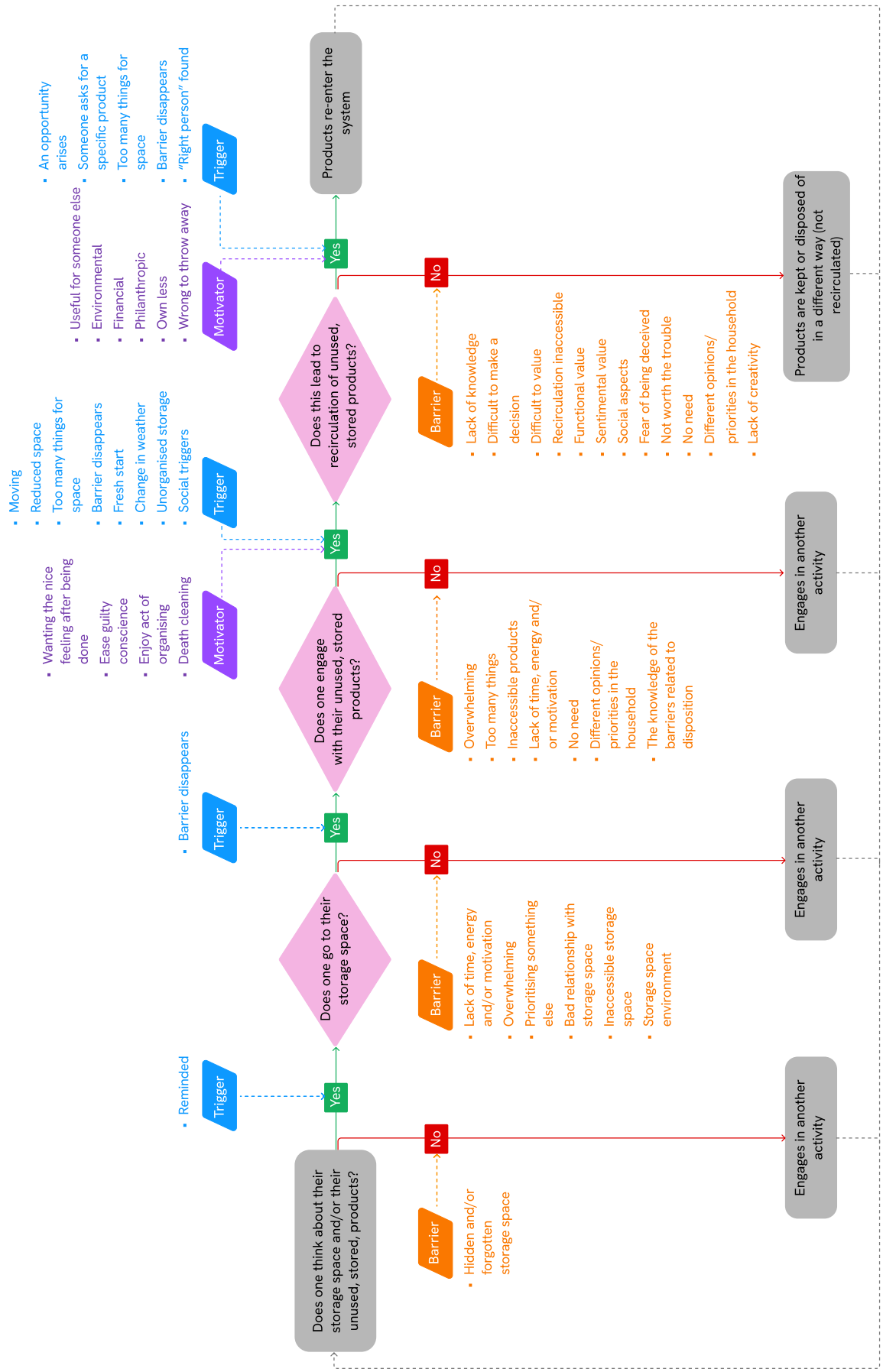

Figure 13: The process flowchart.

The grey boxes symbolise the starting or ending point to the process, with every end leading back to the beginning of the process again, indicating that the process is one that continuously starts over from the beginning. The beginning of the process starts with the question: “Does one think about their storage space and/or their unused, stored products?”.

The pink diamond shaped boxes represent a question where the household is phased by a choice, where the answer to the question is either “yes” or “no”. The parallelograms are inputs to the process, where orange represents barriers, purple represents motivators and blue represents triggers. If the answer to any of the questions is no, that likely means that a barrier influenced the decision, with the potential barriers for that specific decision listed under the parallelogram. If a question is answered by a yes, that likely means that a motivator and/or a trigger influenced the decision. The potential triggers or motivators are listed above the parallelograms.

For each yes, the process moves on to the next question in the process to finally end up with products re-entering the system, and the process starting over from the beginning again. If the answer somewhere in the process is no, that means that the household engages in a different activity than engaging with or recirculating their unused, stored products.

The flowchart provides a new perspective of how all triggers, motivators and barriers are manifested in the process of engaging with and recirculating unused, stored products. Not only does the flowchart provide an overview of how the different triggers, motivators and barriers are connected to each other, but also how they are connected to the households and their process of engaging with and recirculating their unused, stored products.

In their everyday life, households are faced with different decisions in relation to their storage space and their stored products. The decision is most often a choice between some kind of engagement with the storage space or the stored products therein, or to engage in a more prioritised activity. Which decision one chooses to make is affected by triggers, motivators and barriers. The flowchart creates a way of showing that every decision can be affected by multiple factors at the same time.

The flowchart describes a rather linear process, where each question is always followed by another. However, the process does not always look this way. It can have different starting points, with the starting point being a trigger instead of a thought. One example of this could

be if someone asks for a product. Then the process would begin at the final question, where recirculation is the first step. The process could then continue by moving to earlier stages of the process, such as the question if the household goes to their storage space, showing how the process can move in different directions and have different starting points.

DESIGN FOR ENGAGEMENT & RECIRCULATION

In this chapter, the eight concepts are presented alongside with how they are represented in the process flowchart.

6.

6.1 Design concepts

The eight designs created were aimed to cover different areas of the process described in the process flowchart. The purpose of the designs was to exemplify how design can inference and aid households in the process of engagement and recirculation. Since the concepts are high levelled designs, the concepts are not very detailed and do not take a business perspective into consideration. The concepts all relate to different triggers, motivators and barriers, causing multiple concepts to be present during more than one part of the process. Where the different design ideas fit can be seen in Figure 14.

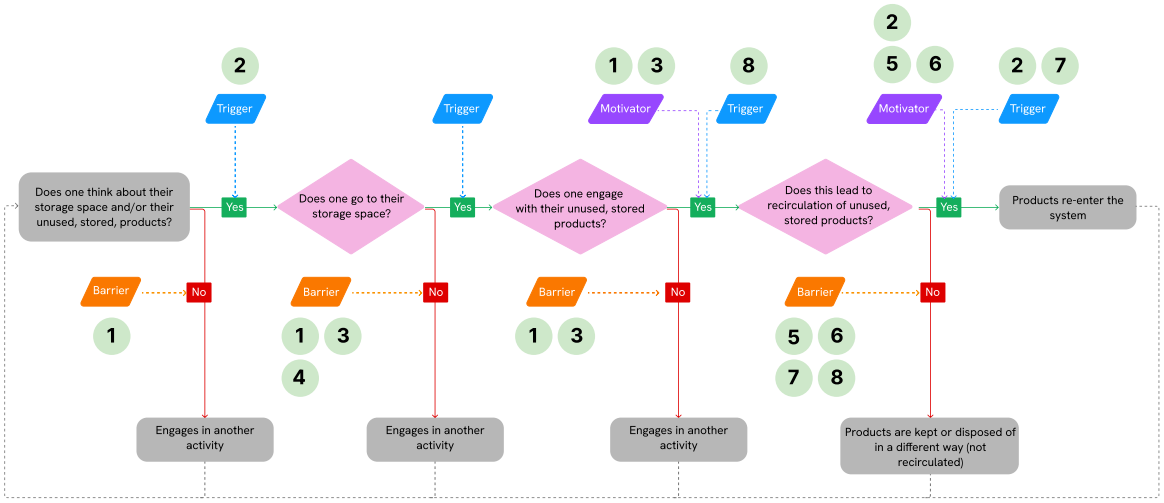

Figure 14: Process flowchart with the design concepts being mapped out.

Concept 1: Digital storage control

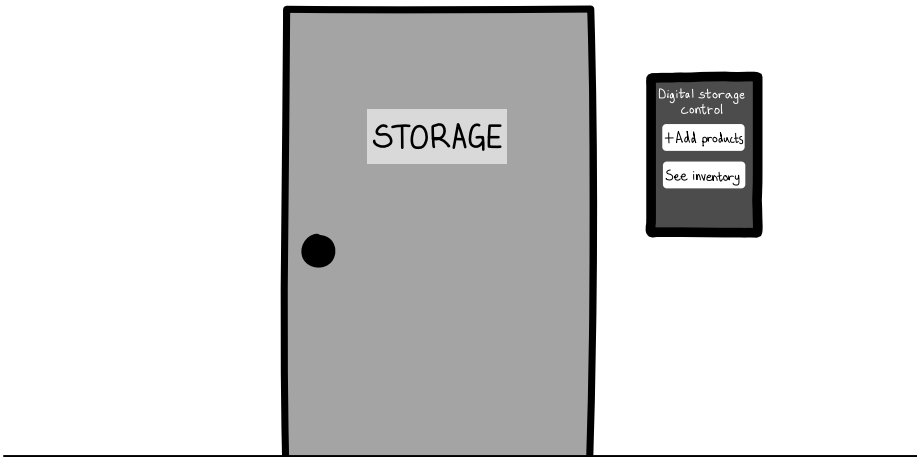

Figure 15: Digital storage space.

What?

A digital screen placed nearby or inside the storage space where the household can register all the products they have stored in their storage space. The household can also register if they have different sections within the storage, as well as which products are stored in which section.

Why?

The screen will help the households keep track of what they own and have in storage, as well as where these products are stored. This will help with products becoming hidden and/or forgotten as well as making inaccessible products feel and become more accessible.

Barriers:

Overwhelming

Hidden and/or forgotten products

Inaccessible products

Motivators:

Enjoy act of organising

How?

The digital storage control can be installed by the household at any time, preferably after a recent move or when going through all stored products. When first setting it up, the household will have to register all their products, as well as where they have them stored, into the system. This will require a rather large amount of effort from the household; thus, it can be

a big step to start using the product. Once the products are registered, the household can search for products, or look through each section to see what is stored there. This allows the household to keep better track of their products, and to find products without having to go through multiple boxes, or even entering their storage space. If a product is temporarily or permanently removed from the storage, it can easily be removed from the system. If a new product were to enter the storage space, the household simply needs to add it and where it is placed.

Concept 2: ReCircle

What?

An online community where households can register what products they have in storage, without an ad being posted. When someone registers an interest in a specific product or product category that the household owns, a notification will be sent to the household owning the product, who can then choose to contact the interested buyer.

Figure 16: ReCircle.

Why?

Creates a way for households to be informed about interest in products they own, without them having to decide whether to keep or sell the product before a potential buyer is found. This also helps remind households that they have products that can be of value for someone else and helps them find the right person for the product.

Triggers:

Reminded

Someone asks for a specific product

Motivators:

Useful for someone else

How?

ReCircle is an application for both potential sellers and buyers. Households can register products they own but do not use, either by registering a specific product, or if they have products within a category. An example could be that a household owns many children's toys. They can then either describe one or multiple specific toys, or just register that they have children's toys. The registered products cannot be viewed by anyone else than the owner of the products. From the buyer perspective, a user can register an interest in a specific product or product category that they wish to purchase. Households who own that specific product or products within that category will then get a notification saying that someone in their proximity is interested in something they own, as well as what product they are interested in. If they have said product and wish to sell, a contact between the potential seller and buyer is set up in the application.

This concept would require some effort from the households when they register their products, however it is entirely up to the household which and how many products they choose to register. They can also choose to register categories, such as children's toys rather than the specific toys they have, to save time and effort. Once it has been set up, it would require the same amount of effort as with any other online marketplace for recirculation.

Concept 3: Sections of harmony

What?

A system of shelves that allows the household to divide their storage space into sections. The shelves come with curtains for different shelves, allowing the household to cover the certain sections of their storage.

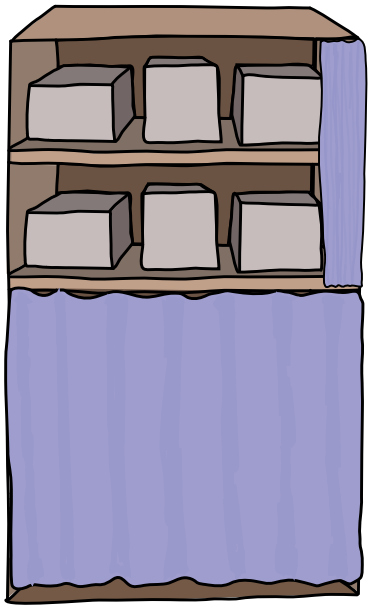

Figure 17: Sections of harmony.

Why?

By being able to cover the shelves, the storage space will look more organised and become less overwhelming for the households. The different sections can also help households to engage with only a small part of their storage at a time, not having to engage with all products at once.

Barriers:

Overwhelmed

Motivators:

Enjoy act of organising

Wanting the nice feeling after being done

How?

The households can buy the shelves where either an entire shelf, or different parts of it act as different sections. The shelves also come in different heights and sizes to fit into multiple different storage spaces. Each section has a curtain that can either be left open, revealing the contents on the shelf, or be closed to cover up the shelfs and the products stored there. The suggestion is that the curtains are closed when the section has not been organised, and opened once it is neat and tidy. By opening the sections where the households have engaged in the products within, they can easily see their progress if they decide not to do everything in one go.

It will require some effort for the household to purchase the shelves or boxes, and to set them up. Once it is set up, the household can use them as normal shelfs, with the addition of being able to open and close the curtains.

Concept 4: Relationship fixer

Figure 18: Relationship fixer.

What?

A service where a household can order home different props and exercises that they can use to better understand and improve their relationship with their storage space.

Why?

Many households have a bad relationship with their storage spaces causing different negative emotions that in turn prevent them from engaging with the products they have stored in the space. By exploring that relationship, and to spend more time with their storage space using different activities and challenges, the idea is that the households will improve that relationship. This will then cause the barrier of the bad relationship to become smaller or disappear altogether.

Barriers:

Bad relationship with storage space

How?

Households can go to the service website and order home a unique experience that will help them explore and improve their relationship with their storage space. The experience includes a package of different exercises and props that they can use to understand and improve the relationship. When ordering, one can choose to either go for a generalised version that is

intended to work for most households and storage spaces. This can be chosen if the household is unsure about how they feel, or what they need help with. The household can also choose to order a more personalised experience, by registering what type of storage they have, if it is organised or not, what they feel towards it and if they have any previous ideas regarding what prevents them from going there as much as they would like.

Once a household has ordered this experience, they will be sent home a booklet including different exercises or activities. Some activities will include a reflection, where the household can write a shorter diary to explore their thoughts and feelings towards their storage space.

Examples of exercises:

- The household is prompted to go to their storage space once a day and write down the feelings that arise when they spend more time there.
- A treasure hunt, where the household is to treat the storage space as an opportunity to find hidden treasures.

Concept 5: Value Scanner

What?

A service where the household can take a picture of and add some basic information about a product they want to recirculate. The service will provide a recommended price for the product, if there is a demand for such a product, as well as which platform it should be redistributed on.

Figure 19: Value Scanner.

Why?

There is an uncertainty amongst households if the products they own are valuable to someone else, and what the product is worth in financial terms. There is also a lack of knowledge on where to best sell or give the product. This application tackles all these uncertainties and helps guide the household to a more informed recirculation process.

Barriers:

Difficult to value

Lack of knowledge

Motivators:

Useful for someone else

Financial

How?

When the household has a product they wish to recirculate, but are unsure of how and to what price, they can take a picture of and add some basic information about said product. The application will then retrieve data from different online marketplaces for second-hand shopping, including what price similar products are sold for as well as how many people search for, and purchase similar products. This will give the household an indication of how popular their product would be, and what price they should set. The application will also retrieve data on where such a product is usually sold and recommend platforms to the user. If the product is given a low recommended price, the household may feel that it is not worth the effort for them to sell it themself. The service will therefore also recommend a physical second-hand shop nearby that can accept the product, together with its opening hours. The application will show which ads it has based the pricing and demand information on, allowing for transparency and for the user to make an informed decision about their choice in price

and platform.

Throughout the process the effort from the household is low. The process of scanning the product and receiving a price, and if there is a demand for the product, requires less effort than if the households were to search for this information themselves.

Concept 6: Letter of detachment

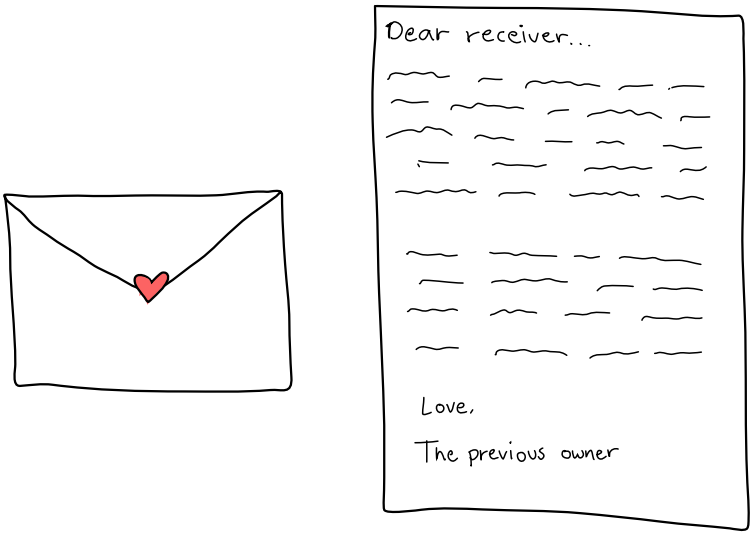

Figure 20: Letter of detachment.

What?

A letter correspondence between the old owner of a product and the new owner. The old owner writes about the history of the product and what it has meant to them, and the new owner responds with what they will do with the product, and what it could potentially mean to them.

Why?

Many households have products that they have a strong emotional attachment to. These products have a strong sentimental value for the households, thus making it more difficult for them to part from these products. The idea of this concept is to use storytelling as a way for a household to detach from a product that has a high sentimental value to them. By being allowed to tell their story about the product to the new owner, and receiving a response in return, the hope is that it will become easier to depart from the product. It will also increase the chance of the household to feel like the product comes to the right home, and that they have found the right person for the product.

Barriers:	Motivators:	Triggers:
Sentimental value	Useful for someone else	Right person found
Fear of being deceived		

How?

This concept is a letter correspondence between the household parting from a product with high sentimental value, and the person receiving it. The households will respond to specific questions where they get to tell their story about the product, and what it has meant to them. These questions include:

- When and how did you acquire the product?
- How have you used it?
- What has the product meant to you?
- Any final words about the product you want to send to its new owner?

In return, the receiver of the product will also write a responding letter where they get to tell their story about the product's future. In this letter the product receiver can assure the disposing household that the product will be given a good new home where it will be used for a good purpose. The product receiver will answer the following question:

- Why do you want this product?
- How will you use this product?

Once the responding letter reaches the household parting from the product, they can decide if they feel like the new home would be good enough for their product, and then choose to sell it or give it away based on the answer they have received.

Concept 7: SustainaTruck

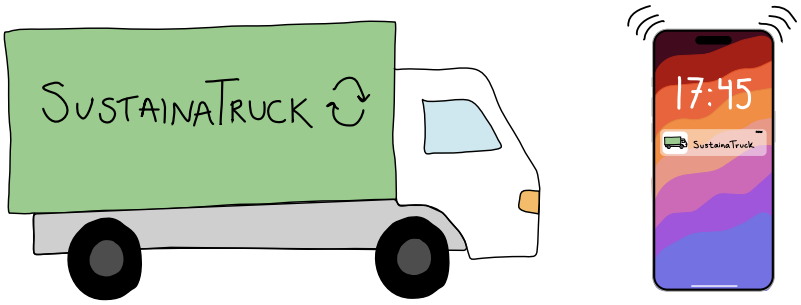

Figure 21: SustainaTruck.

What?

A service where households can book a truck to come and pick up products they want to recirculate. The truck will then drop the products off at a nearby second-hand store it has a collaboration with. If the truck is booked by one household, households nearby connected to the service will get a notification that a truck will come to their neighbourhood and will also have the opportunity to drop off products.

Why?

The service helps households with the step of physically having to transport their products from their homes to a place where they can be recirculated. This is a step that many households find tiresome, and the knowledge of this step could cause a barrier for engagement and not just recirculation. By sending notifications to other households, an opportunity is created and can act as a trigger.

Barriers:

Recirculation inaccessible

Not worth the trouble

Difficult to value

Triggers:

An opportunity arises

Barrier disappears

How?

If the household has products that they want to recirculate, they can contact the service and book a time for pick-up of their products. When the service truck arrives, they will pick up all

the products and let the households know what is likely to sell at second-hand shops and what they likely will have to send off to the recycling centre. This is good in case the households do not want their products to be thrown away, they have the option to keep the product instead. Other households that are also registered to the service will receive a notification when a truck is coming to their area. If they wish to also use the service, they can register that they wish for the truck to pick up some of their products as well. The price of the truck will be based on the number of products the households want to get rid of and how big the products are. The price will also be split among all the households that decide to take part of the service no matter who ordered the truck.

This service will require the household themselves to sort out their products and determine which ones they want to keep and which ones they want to get rid of. Booking the service is easily done through an application, where the household only needs to fill in how many products they need help with so that the right sized car can be sent. It requires no additional effort once the service has been booked.

Concept 8: ReCrafty

What?

A social media and image sharing application where users can upload inspirational photos of products that they have recirculated by giving the product a new life.

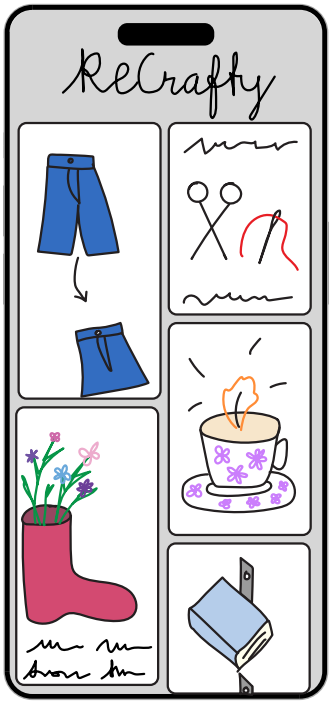

Figure 22: ReCrafty.

Why?

When it comes to recirculating products within the households, some feel that their lack of inspiration and creativity prevents them from doing so. Social triggers exist and can help create inspiration, thus motivating and triggering the household to give their products a new life.

Barriers:

Lack of creativity

Triggers:

Social triggers

How?

Users can register to the application just as with any other social media platforms. The application is intended to be a community, where people can upload images of projects where they have recirculated a product in a creative way. As well as images, users can post tips and tricks they want to share with others, thus helping other users who may be unsure if they have enough knowledge or creativity to take on their own project.

The application is intended to be much like similar platforms. It can be used by multiple users and does not require much effort to either use for inspiration, or when posting inspirational posts.

6.2 Evaluation

The evaluation resulted in some deeper insights into how the concepts were perceived by the users, as well as how they would be accepted and if they targeted the intended triggers, motivators, and barriers. As well as giving additional insights, the evaluation also acted as a base for smaller alterations to each of the different concepts.

During the evaluation, the participants were asked if they understood how the concepts were intended to work. Overall, the concept descriptions were considered understandable, but some descriptions were altered slightly where there were some uncertainties from the participants. The participants also had some general feedback towards the concepts. This feedback was considered, and the concepts were altered based on this feedback wherever seemed appropriate. This feedback mainly related to concept acceptance, as well as how well they targeted the intended triggers, motivators, and barriers.

The participants were also asked if the concepts would help them in the process of engaging with and/or recirculating their products, and if it could result in them engaging and recirculating to a higher extent. Here, the answers were mixed and seemed to be based on individual preferences and pre-conditions. For example, one participant mentioned that the passive way of selling one's product via ReCircle, the second concept, would lower the barriers for them to recirculate more and would therefore help them. In contrast to this, another participant talked about how they preferred the selling process to be quick and easy, and not passive as ReCircle would allow for. Thus, this participant felt that ReCircle would not be of help at all for them. Another example of where it differed between participants is with Letter of detachment. Some participants, who expressed that they had struggles with selling products with a high sentimental value, really enjoyed the concept and expressed how it would help them. They described how giving and gaining a story would really help them feel like the product got the new place it deserved, as was intended with the concepts. However, others described that they did not usually get an emotional connection to their products. These participants did not feel that a concept such as Letter of detachment would help them at all. Instead, it would only add extra steps to a process that can already be demanding and time consuming. This exemplifies how the different concepts would be received, and perceived, differently by different users, depending on their individual preferences and what triggers, motivates and prevents them as individuals.

Lastly, the participants were asked if they would use the concepts if they were available on today's market. Here, a connection between perceived usefulness and willing to use a concept was noted. Participants who felt like they would be helped by a concept would also be inclined to use it were it available today. If a concept was not deemed helpful, the participants admitted that they would not be likely to use it. Another factor that contributed to whether the participant would use the concept was the effort it required from them. For the Digital storage control, participants mentioned how it would be a large commitment requiring a lot of time and energy to register their products in the system. This resulted in the participant being sceptical to whether they would use the product, even if the concept were thought to help in gaining control over their unused, stored products.

DISCUSSION

In this chapter, different aspects of the thesis are discussed, including some in depth discussion regarding the findings and contribution of the thesis, as well as some discussion in regards to process and participant selection.

7.

7.1 All households are different

The process flowchart created shows which factors could influence which choices and at what time in the process. The process flowchart shows a compilation, where all factors are presented to give a full picture of all possible factors. However, during the analysis we noted that what motivates one household, was not a motivator for another. The same applied for triggers and barriers. We believe that this correlates with the fact that as with everything in life, people are triggered, motivated, and prevented by different things. Not only does personality play a crucial part here, but also previous experiences, pre-conditions, and one's overall life situation. Previous experiences could include what one has been taught during their upbringing. We noted that many households who kept products did so because their parents had done so. It was how they had been taught to act in relation to their owned products. Others described that they had changed their behaviour and thought processes because they had been affected by someone in their household. This clearly indicates that what we are taught and influenced by affects how we act, and since we are taught and influenced by different things we are bound to act and reflect differently from others.

Pre-conditions could include how much space one has, where one lives (closeness to places for recirculation) or whether one has access to transport or not. Not being able to physically move or transport a product to a place for recirculation could be a great barrier for someone who either lives very far away from one, or for someone who does not have access to a car. Whilst for someone who has access to a car, such barriers would be non-existent. This study highlights that there are differences, and certain aspects that could influence such differences. Ultimately, this indicates the importance of being aware of these differences, and to know who you are designing for when creating design solutions aimed to help increase engagement and/or recirculation. Whilst these differences have been noted in this study, more research is needed to map exactly which triggers, motivators and barriers are applicable for which type of households, as well as more detailed information on why they are not applicable for everyone.

7.2 Does increased engagement lead to recirculation?

One aspect that is important to discuss is what the result of increased engagement would be. In this thesis, focus has been on finding factors that could increase engagement with unused, stored products, for this to then lead to these products re-entering the system by being

recirculated. The idea is that recirculation of unused products, as an alternative to storing them, could lead to a more efficient use of resources. While this has been the focus, and the triggers, motivators and barriers presented are linked to engagement and recirculation, it became evident during the user studies that increased engagement may just as well lead to more products being thrown away. When interpreting the statements from the households, it became clear that increased engagement would lead to increased disposition of unused, stored products. However, when discussing disposition, the households did not only focus on recirculation but also throwing products away. We therefore see that there is a risk that increased engagement could result in a behaviour that could be considered less sustainable than the current one, where functional products are thrown away instead of being retained in storage. We argue that keeping products without using them is more sustainable than throwing them away since these products could potentially be recirculated or used in the future. Focusing on factors related to engagement only is therefore not recommended. Solely focusing on this part of the process could very well lead to more products being thrown away. For a more sustainable result, it is important to focus on factors related to the specific disposition method of recirculation. Despite this, some design concepts presented in this thesis only focus on increasing engagement. The solutions therefore do not solve the entire problem, and can cause new barriers, but they are examples of how design can be used for different parts of the process.

7.3 Household and storage relationship

When looking at all identified triggers, motivators and barriers, one identified aspect stands out. Whilst many factors can be clearly identified and understood, one factor is slightly more difficult to grasp: the relationship between the household and their storage space. During the interviews, this relationship was never explicitly mentioned. However, the conversations kept going back to aspects such as guilt and anxiety, clearly indicating a strained relationship between the households and their storage spaces. We noted that households have bad associations with their storage, and the emotions they felt when talking about it were mainly negative. This caused major barriers especially in relation to engagement. We believe that this is a very important factor, one that would need much more focus than it was given in this master's thesis. The strained relationship should be studied on a deeper level in future work, with a higher focus on psychological factors. From what was discovered in this master's thesis, we believe that there is much more to uncover and to understand about this phenomenon, and that such understanding could lead to new insights that could help households get a better

relationship with their storage spaces and thus be more likely to engage with and recirculate their unused, stored products.

7.4 Internal dilemma of disposition

When talking to different households it became evident that one's conscience plays a big part in the entire process of engaging with, and recirculating unused, stored products. Households talked about how they could not throw away functional products because it "did not feel right". We noticed that households would rather keep such products than to throw them away due to this sense of it feeling like the wrong thing to do, even though keeping the products would add to their guilt of owning too much. This indicates that some sort of internal, moral understanding of what is right and wrong influences the decisions on whether to keep, recirculate or throw products away. Households are willing to keep products even though they know that they feel bad doing so, because throwing away functionally or sentimentally valuable products sometimes is even worse. The decisions made when a product is in its disposition phase, is a balancing act between what feels the least wrong and what is the most convenient. An interesting aspect, which could be of value to study further is why such an act feels wrong, and why this has become their way of thinking. Since this way of thinking and feeling causes households to keep products rather than throwing them away, it clearly has a great influence on the decision made regarding disposition. Just as with the choice between keeping and discarding products, perhaps the same could apply for the choice between throwing a product away or recirculating it. We believe that social norms and people's understanding of how things "should" be done could be important factors that affect the thought process, that in turn affect the decision-making process. If we could understand this better, we could learn of new ways to affect the household's ways of thinking in relation to disposition, and more specifically recirculation.

7.5 Everything is connected

During this project it has become clear that all aspects of the process of engagement with and recirculation of unused, stored products are highly connected. Triggers, motivators and barriers have been separated throughout this project, to clarify how the different aspects affect the households. However, we want to emphasise that these factors are indeed strongly connected to each other, the household, the storage space, the products and the process in which they occur. The fact that one trigger discovered is that a barrier disappears, and that

lack of motivation can be seen as a barrier, shows just how connected the three categories of factors are. The separation should not be misinterpreted as the different factors existing on their own, and where only one factor affects the choices households are facing in the process of engagement and recirculation. The choices households face are affected by multiple factors, co-existing simultaneously, and it is always a balancing act where the different factors need to be weighed against each other. Our conclusion is that if the barriers outweigh the motivators, the act will not be done. If the motivators on the other hand weigh heavier than the barriers, the behaviour is more likely to happen.

One interesting aspect that we want to bring to light, that clearly showcases just how connected all aspects of the process are, is that designs that aim to target one barrier in fact could cause another barrier to occur. One example of this is the design concept Letter of detachment. Whilst this design concept helps households detach from their products and make it easier for them to part from products that they have a strong emotional connection to, other barriers could occur, still preventing recirculation. One thing that was brought up during the evaluation process was that this concept should only be used for products that will be given away, and where there is no monetary benefit to gain. The risk when money is involved is that either the seller or the buyer exaggerates their story, perhaps even by lying. If a person truly wants a product, they may come up with a story they believe would please the seller simply to get access to the product. The same applies for the seller, who may come up with a story to make the product more interesting to gain more money. This could cause the barrier Fear of being deceived to occur. Though the concept helps with one barrier, it could very well cause another to occur. We believe this proves the importance of understanding the interconnectedness between all factors, and how important it is to be aware of what this interconnectedness means if one wishes to design to influence or aid engagement and/or recirculation.

7.6 How to target more households

The eight design concepts each target different parts of the process described in the process flowchart. What is important to note is that though these solutions are aimed to help as many as possible, they will not be applicable to all households. When evaluating the concepts, it was brought up by multiple participants that certain concepts would not be for them, even though they liked the idea and thought it would be of help for others. The same applied for solutions the participants felt were helpful for them, but that they knew would perhaps not be

useful for others. As discussed, all households are different with different needs, and this also needs to be considered when designing to aid and influence the process of engaging with and recirculating unused, stored products.

We believe that one way to target more households than the design concepts created in this thesis do is to combine different design solutions into one concept covering a larger part of the process. By doing so, the design solution is more likely to target a larger group of households than one that focuses on only a small part of the process. One idea could be to merge Digital storage control with ReCircle. By merging the concepts, ReCircle would not require any registration process but could use all the products registered in the digital storage control unit. This would make it easier for the households, since they would not have to register products twice, but also since they would not have to reflect on what products they could be willing to sell or not. Such a merge would result in a concept that could potentially work for a larger number of households, thus being a better solution in less risk of causing new barriers in other parts of the process.

7.7 Design for engagement or recirculation?

When analysing the findings, we discovered something that can be of high relevance: should one design focus on designing for engagement, recirculation, or both at the same time to make the biggest impact? The answer to that question is not simple. What we have noted, and what we recommend to designers aiming to aid and influence the process of engagement and recirculation, is that if one is to design for engagement, they also need to design for recirculation to avoid risking functional products being thrown away. We can also say that if one is designing for recirculation, great consideration of the previously required actions is required to not create a design that would not be used, since our assumption is that engagement is required for recirculation to happen. It can be argued however, that since one barrier for engagement is knowing that recirculation comes with many barriers, designing only to ease the process of recirculation could in fact also result in reduced barriers for engagement thus making it an easier task to complete for the households.

When looking at the barriers discovered for the step of engagement and the step of recirculation, one important thing can be noted that is also highly relevant if one is to design for this process. The barriers discovered related to engagement can be seen as somewhat less tangible and more internal. These barriers strongly relate to emotions, and assumptions

related to previous experience. One example of such a barrier is the barrier of being overwhelmed, a barrier that is strongly linked to emotions. The opposite applies to the final step in the process, recirculation. The factors related to this step are more tangible, and more related to practicality rather than emotional factors, with the exceptions of products that have a strong sentimental value. These insights lead us to believe that it is perhaps "easier" to design to aid and influence recirculation than engagement. Though this may be the case, we also want to add that we believe that designing to tackle the less tangible aspects of engagement, though perhaps more difficult, could generate better results. We argue that since many factors related to engagement are strongly linked with emotions and assumptions, these can generate stronger and more long-lasting results. One aspect of this we believe to be particularly interesting is the relationship between the households and their storage spaces. If one can create designs that can result in better relationships, we believe that multiple other barriers such as Overwhelmed as well as Lack of energy and motivation could disappear as an effect. By having a better relationship with their storage spaces, households should feel less overwhelmed, and the prospect of engaging with the stored products should feel less energy-consuming. An improved relationship could also very well lead to stronger motivation, increasing the significance of the motivators during the decision-making process.

Regardless of where one focuses when designing, we argue that the most important aspect in designing is to understand that the process of engagement and recirculation is complex with a strong interconnectedness. By being aware of this, we believe there is less risk of causing new barriers, and a larger likelihood of creating designs that will aid and influence the process of engaging with, and recirculating unused, stored products.

7.8 Study layout

In this part, the participant selection is discussed as well as how this has affected the results of the thesis. The provotype study is also discussed.

7.8.1 Participant selection

As previously discussed, while some triggers, motivators and barriers are relevant and applicable for most households, it can differ between different households as well as between different individuals. This means that the participant selection is crucial to fully represent all households, something that is important to map all potential triggers, motivators and barriers

for engagement and recirculation.

The participant selection could very well have had an impact on the findings of this master's thesis. Though the survey reached 94 respondents, a relatively large number, we still do not believe these respondents are fully representative of all households and individuals. Age has a big influence on life situations, an important factor when it comes to what triggers, motivates and prevents a household, meaning that by having few or no respondents in certain age groups could cause certain life situations to be missed out. There was a big gap in respondents aged between 31 and 50, an age where households are more likely to have younger children or children living at their houses, factors that could affect triggers, motivators and/or barriers. Households aged above 50, that were well represented in the survey responses, are more likely to have lived in their houses for a long time and have therefore accumulated more products, factors that could also affect the discovered triggers, motivators and barriers. We believe that it is likely that the household types not represented in the survey responses could have other triggers, motivators and barriers than those more represented in the study.

Since the survey was distributed on social media, it reached a randomised selection of respondents. To reach a better selection, we believe that it would have been better to distribute the survey on channels targeted to different groups, allowing for a more representative selection of respondents.

When selecting the different households for the provotype study, the idea was to have them consist of different sized households, living situations, ages, and storage situations. Though these factors were used to select households, the fact that only four households were included in the provotype study still caused a lack of diversity in household profile. Though these households represented different household profiles, they were not representative of all households. No households selected had younger children, none were living far out from the city, and all households were financially secure. This could be a reason for why financial motivations were not highly present in the findings from this study, something that could point to a misrepresentation of the selected participating households.

7.8.2 Provotype study

The purpose of the provotype was for it to act as a triggering artefact, triggering reflections among the household members. The idea was that this would in turn cause the households to

further reflect on the choices they face and become more aware of their relationship with their storage spaces, thus generating deeper insights. Though the purpose was for the provotype to trigger reflection, it was expected that it would also act as a trigger for engagement. The participants mentioned that the provotype had acted as a trigger in the way that it reminded them of their storage space, but not as a trigger for engagement. Households described that though they were triggered, this was not enough for them to engage with their storage and products therein. This indicates that it is not enough to only trigger households, they also need to be motivated to engage with their storage and their unused products. Since the main purpose of the artefact was to trigger reflection, the designed provotype can be considered successful.

Another reason why the provotype did not provoke as much as intended can be explained by its design. The scale was painted white causing it to blend in with households' decor. Some households described that they forgot the scale existed as the week went on because it blended in with the rest of the room, even though it was placed in a central space. This indicates that a different finish, where brighter colours and/or patterns likely would have been a better choice to make the scale more provocative. We therefore see that it is important to consider all design elements, inducing colour, of the provotype when designing for provocation.

The leaflet placed by the scale was created for the participants to note down what they were feeling at the moment they placed the weight on the scale. For the task of filling in the leaflet to not take too long, making the participant unwilling to do the assignment, the six Likert-type scales were created to make the process of noting down their feelings quick. However, despite having circled their current feelings, several participants struggled to remember how they felt when asked about it during the finishing interview, especially why they felt the way they did. This caused participants to sometimes guess why they felt the way they did during specific occasions. Despite this, we believe that the finishing interviews managed to capture, through discussions, most of how the participants had felt during the study period. If the study were to be conducted again, we would recommend having the participants also make some notes regarding their feelings to more easily remember how they felt and why.

For the provotype, the words *responsibility* and *laziness* were used to mark the different sides of the balance scale. The idea was for responsibility to feel like the "right" choice, and for laziness to feel like the "wrong" choice. When discussing their experiences, some participants felt that the words were not representative of their choices. More specifically one

participant described how they did not feel like laziness represented their choice of not going to their storage space. For that person the choice was more closely linked to other factors such as lack of interest, lack of time or lack of things to do there. This person was provoked by being called lazy, feeling that they had not been lazy at all. Another participant also noted this sentiment, stating that they had been very responsible overall in their everyday life, though perhaps not specifically in relation to their storage space. They too felt provoked by being required to place a weight in the "laziness" pan, even though they had been responsible in other areas of life. Such provocations indicate that the chosen words had the desired effect of provoking the participants to a certain extent. The participants did not want to be perceived as lazy and were disturbed when they had to place their weights in that pan.

CONCLUSION

In this chapter the conclusion of this master's thesis is presented.

8.

In this master's thesis, different factors were discovered that help answer the question of what triggers, motivates and prevents households from engaging with and recirculating their unused, stored products. These different triggers, motivators and barriers highlight important aspects that could help increase the number of products that end up being recirculated instead of retained in storage spaces. The different triggers, motivators and barriers were mapped in a process flowchart, alongside the different choices households are faced with, to show the complexity of the process as well as the how factors are manifested in the households' process of engagement and recirculation. It was discovered the triggers, motivators and barriers highly affect which choice a household makes in relation to engagement and recirculation.

It was discovered that though triggers, motivators and barriers differ from each other, they also are strongly connected. One aspect that is a strong indicator of this is that one trigger discovered is that a barrier disappears. Though the triggers, motivators and barriers occur at different stages of the process, they can affect earlier and later stages in the same process. It was discovered that one barrier for engagement could be knowing about future barriers that will occur in relation to recirculation. For a designer, aiming to design to increase engagement or recirculation, it is important to have a holistic perspective, to avoid creating new barriers with their designs.

The findings also show that though many triggers, motivators and barriers are true for many households, there can be differences between different households and individuals. What may be a motivator for one household, is not guaranteed to be one for another, and the same applies for triggers and barriers. Depending on personal preferences, experiences, life situations and cultures to name a few factors, a motivator for someone could in fact even become a barrier for someone else.

To give examples of how design can play a part in enabling and aiding households in the process of engaging with, and recirculating their unused, stored products, eight design concepts were created. These concepts show how design could tackle different triggers, motivators and barriers, thus aiding, and influencing households to engage with and recirculate their products.

This thesis provides new insights to the area by presenting a holistic view of the interconnectedness between triggers, motivators and barriers. It also gives a clear process description targeting the entire process from where the thought of the storage may or may not

exist, to where products are disposed of using different methods instead of simply focusing at one stage or another. These new perspectives fill the discovered gaps in the research, while still leaving room for further research within the area.

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Appendix

Appendix A - Survey questions

Del 1

Hur gammal är du?

- ☐ Yngre än 18
- ☐ 18-25
- ☐ 26-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ Äldre än 60

Vad har du för sysselsättning?

- ☐ Heltidsanställning
- ☐ Studerande
- ☐ Tjänstledig
- ☐ Pensionär
- ☐ Sjukskriven
- ☐ Utan arbete
- ☐ Annat

I vilken typ av boende bor du i?

- ☐ Villa
- ☐ Lägenhet
- ☐ Radhus
- ☐ Inneboende

- ☐ Bor hemma hos föräldrar
- ☐ Gård eller liknande
- ☐ Annat

Vad har du för attityd till återbruk? Utveckla gärna ditt svar.
Med återbruk menar vi att en produkt kan användas igen av ett nytt hushåll då det första hushållet inte längre behöver den. Det kan även innefatta att produkten får ett nytt användningsområde inom det egna hushållet.

Del 2

Vad har ditt hushåll för typ av förråd?

- ☐ Källare
- ☐ Vind
- ☐ Förrådsrum i lägenheten / huset (i nära anslutning till boytan)
- ☐ Externt förråd (i anslutning till, men inte i, lägenheten)
- ☐ Externt förråd (hyr någon annanstans)
- ☐ Garage
- ☐ Lada, friggebod eller liknande (externt men på den egna tomten)
- ☐ Annat…

Hur stort är ditt hushålls totala förrådsyta? (uppskattning i kvadratmeter)

Hur ofta är du i ditt förråd?

- ☐ Dagligen/flera gånger i veckan
- ☐ Någon gång i veckan
- ☐ Någon gång i månaden
- ☐ Någon gång om året
- ☐ Mer sällan

I vilket syfte besöker du oftast ditt förråd? (ursprungssyftet till besöket, varför du väljer att gå dit)

- ☐ För att hämta eller lämna något specifikt
- ☐ För att kolla vad som finns eller inventera
- ☐ För att rensa/röja/sortera
- ☐ Annat

Vad får du för känsla när du besöker ditt förråd? Beskriv gärna så detaljerat du kan. Det går även bra att nämna flera olika känslor.

Har du koll på vad som finns i ditt förråd?

- ☐ Ja - jag har bra koll
- ☐ Delvis - jag vet vad jag har i stora drag
- ☐ Nja - jag har bara lite koll
- ☐ Nej - jag har mycket dålig koll

Vilka typer av produkter har du i ditt förråd? (Exempelvis: gamla kläder, leksaker, juldekoration, arvegods med mera)

Tänk på några av dina förvarade, oanvända produkter. Varför har du sparat dem?

Del 3

Vad motiverar dig till att engagera dig i de oanvända produkter som finns i hushållets förråd?
Med engagera sig syftar vi till att aktivt lägga uppmärksamhet på sina förvarade produkter. Det kan bland annat innebära att sortera, inventera eller liknande.

Vad motiverar dig att återbruka hushållets oanvända, förvarade produkter?

Finns det något som hindrar dig från att engagera dig i de oanvända produkter som finns i hushållets förråd?
Med engagera sig syftar vi till att aktivt lägga uppmärksamhet på sina förvarade produkter.

Det kan bland annat innebära att sortera, inventera eller liknande.

Finns det något som hindrar dig från att återbruka hushållets oanvända, förvarade produkter?

Om du tänker på tidigare situationer då du har engagerat dig i och/eller återbrukat dina förvarade produkter - vad triggade dig att göra detta?

Vad gör du (oftast) med saker ditt hushåll inte använder men som du vill bli av med?

- Ger bort till familj eller vänner
- Ger till behövande
- Ger till second hand-butiker (hit räknas även insamlingsboxar)
- Säljer
- Sparar i förrådet
- Annat

Varför väljer du detta/dessa sätt?

Finns det något du hellre hade velat göra? Varför väljer du att inte göra det idag?

Övriga kommentarer kring ämnet eller enkäten?

Appendix B - Interview questions

B.1 Introductory interview

Vi kan börja med att prata lite om var du/ni har de flesta saker ni inte använder? Vad kan vi räkna som ditt/ert “förråd”?

Vad är din/er relation till förrådet?
Skiljer det sig inom hushållet?

Hur ofta är du/ni där?

- Skiljer det sig inom hushållet? Varför?

Vad har du/ni för saker i förrådet? Mer specifikt saker som aldrig används.

Skulle du säga att du/ni har bra koll på vad som finns i förrådet?

Vad får du/ni för känsla när du/ni besöker förrådet?

Hur känner du kring dina oanvända saker? Vad får du för känsla när du tänker på dem?

- Hur känner du kring antalet oanvända saker du har?
- Är du nöjd med mängden oanvända saker du äger? Varför, varför inte?

Hur ofta går du/ni igenom dina/era saker? (Kanske för att inventera eller sortera?)

Vad hindrar dig/er från att engagera dig/er med dina/era saker?

Vad motiverar dig/er? Finns det saker som gör det lättare att engagera dig/er?

- Skiljer det sig inom hushållet?

B.2 Finishing interview

Om studien

- Hur har det varit att ha vågen hemma hos er?
- Hur känns det att ha haft vågen hemma hos er?
- Hur har vågen uppfattats?
- Något som varit lätt eller svårt? (kanske kring dokumentationen)
- Har vågen varit provocerande för er? Har den fortsatt att vara det under veckans gång?

Hur har ni använt vågen i hushållet?

(Hur har det varit att använda den?) *Kanske att de svarat på detta i första frågan*

- Har ert beteende påverkats av att ha vågen hemma hos er?

Har vågen lett till några nya diskussioner mellan er?

- Hur har det påverkat er något att ni båda deltog i studien?

Diskutera kring lapparna de fyllt i

Be dem minnas tillbaka på situationerna och beskriva lite mer utförligt varför de kände som de gjorde

Hur kändes det att placera vikten i de olika vågskålarna?

Se om det skiljer sig mellan de olika personerna - fråga kring detta i så fall

Om de inte gick till förrådet - varför?

Resterande frågor tas i förrådsmiljö

Hur kändes det att vara i förrådet när ni väl gick dit? (om de gjorde det)

Vill ni beskriva lite vad ni har för grejer i ert förråd?

Hittade ni några nya saker som ni inte visste fanns där? Hur kändes det?

Om vi idag frågar er, vad har ni för attityd till ert förråd?
Har det förändrats något sedan sist? (om de inte säger det själva)

Vad har ni för attityd till era oanvända saker?

- Har det förändrats något sedan sist?

Vad har ni för relation till ert förråd?

- Har er relation till ert förråd påverkats av att delta i studien?

Vad har ni för relation till era oanvända saker?

- Har er relation till era oanvända saker påverkats av att delta i studien?

Har ni kommit till några insikter under veckans gång?

Nu när ni haft en vecka att fundera lite kring era vanor:

- Har ni kommit på något mer som triggar er till engagemang? Varför?
- Något som hindrar er från att engagera er? Varför?
- Något som motiverar er till att engagera er? Varför?

Dispositionsmetoder

Vad händer med era produkter efter att de hamnat i förrådet?

- Har ni någon process för att sedan göra er av med produkterna? (Ge exempel eller liknande vid behov, sortera, vårstädning, plats där saker placeras mm.)
- Skiljer det sig mellan olika produkter?
- Skiljer det sig mellan er i hushållet?

Kan ni beskriva hur er process ser ut när ni ska besluta om en produkt ska sparas eller inte?

- Skiljer det sig inom hushållet?
- Skiljer det sig mellan olika produkter?

När ni väl bestämt er för att göra er av med en produkt, vad gör ni med produkten då? (Ge exempel om det behövs, slänga, sälja etc.)

- Varför väljer ni denna metod? Be dem förklara utförligt.
- Hade ni hellre valt någon annan metod? (eller finns det en annan metod ni skulle kunna välja i stället)

- Varför väljer ni i så fall inte denna?
- Något som hindrar?
- Något som skulle kunna motivera?

Vad är er attityd till återbruk? Varför?

Om vi inte fått svar på det redan:

- Finns det något som skulle kunna motivera er till att återbruka mer?
- Finns det något som hindrar er från att återbruka?
- När ni väl återbrukat, vad har fått er att göra det då?

Appendix C - Workshop instructions

C.1 Information sent out before workshop

Barriär: En barriär är en faktor som hindrar människor från att utföra en viss handling. Barriären kan vara fysisk eller mental. Fysiska hinder kan innefatta att det är fysiskt jobbigt att flytta eller bära något, alternativt att fysisk tillgänglighet saknas. Ett mentalt hinder är istället att någonting upplevs som mentalt krävande, till exempel för att det känns som en omöjlig uppgift, att det krävs mycket tankekraft eller att det är emotionellt påfrestande.

Motiverande faktor: En motiverande faktor är något som motiverar människor till att utföra en viss handling. Människor kan motiveras av olika faktorer såsom att få någonting i gengäld för att utföra en handling. Detta kan vara pengar eller att det känns som att man gjort en god handling, där moraliska värderingar i stället motiverar.

Trigger: En trigger är en extern eller intern faktor som får en människa att tänka på något specifikt (i vårt fall sitt förråd och sina oanvända saker). För att en trigger ska leda till handling krävs att även motivation och möjlighet till handlingen finns samtidigt. Externa triggers är hints/påminnelser från omgivningen och interna triggers kommer inifrån och kan till exempel vara känslor.

Engagemang: Med engagemang menar vi att hushållet aktivt uppmärksammar de saker de äger som de inte använder. Detta innebär att hushållet på ett eller annat sätt engagerar sig med sakerna genom att exempelvis inventera, organisera eller sortera. Detta kan leda till att saker sparas, men även att hushållet väljer att göra sig av med saker de inte längre vill/kan/behöver spara.

Återbruk: Med återbruk menar vi att en produkt kan användas igen av ett nytt hushåll då det första hushållet inte längre behöver den. Det kan även innefatta att produkten får ett nytt användningsområde inom det egna hushållet. Det innefattar alltså inte att återvinna, eller att använda materialet hos en produkt för ett helt annat syfte. Exempel på sätt att återbruka är att ge till second hand, sälja eller ge till en närstående.

C.2 Information during workshop

Dålig relation till förrådet

Under vårt arbete har vi upptäckt att många personer har en dålig relation till sitt förråd. Att tänka på eller att vara i förrådet framkallar negativa känslor som dåligt samvete, ångest, frustration och trötthet. Detta leder till att de undviker att gå till förrådet och engagerar sig i eller återbrukar inte sina oanvända produkter. Många beskriver att deras dåliga relation har uppstått för att förrådet varit stökigt och oorganiserat, för att de inte har koll på vad de har för produkter eller att de har för många grejer. Den dåliga relationen kan också uppstå på grund av förrådets fysiska miljö, att miljön där inne är för kall, för varm eller att det är för trångt.

- Hur kan man förbättra folks relation med deras förråd?
- Hur kan vi få dem att inte få dåliga känslor av att tänka på eller besöka förrådet?

Överväldigande

En aspekt som får väldigt många att inte engagera sig med sina saker, eller att återbruka, är att hela processen känns överväldigande. Hushållet vet om att engagemang ofta leder till fler saker som måste göras (exempelvis köra saker till tippen, eller till second hand), och det känns jobbigt att göra något "halvgjort". Många hushåll förväntar sig därför att processen att engagera sig med sina oanvända saker tar väldigt mycket tid, ork och engagemang, något som i sin tur leder till passivitet. Känslan av överväldigande kan öka om hushållet upplever förrådet som oorganiserat eller om de har för många saker.

- Hur kan vi få processen att upplevas mindre överväldigande?
- Finns det något man kan göra för att det ska ta mindre tid?

Återbruk

Många upplever att de undviker att engagera sig med eller återbruka sina oanvända saker för att de upplever återbruksprocessen som något för jobbigt och att det inte känns värt besväret. Det finns också en stor okunskap kring hur man på bästa sätt återbrukar sina produkter, vad som är smidigt, vad som är bäst för miljön, vad som är värt att sälja/skänka samt vad för pris man ska sätta på produkten.

- Hur kan man få de positiva aspekterna av att återbruka såsom att tjäna pengar, göra något bra för något annan, göra något bra för miljön, att väga tyngre än de negativa aspekterna, såsom att lägga ut en annons, köra till en second hand-butik eller ta beslutet om vad som ska sparas eller inte?

- Hur kan man öka folks kunskap kring återbruk och återbrukets olika alternativ?
- Hur kan återbruk bli smidigare och lättare än att slänga produkter?

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