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MAKING IT EASIER FOR USERS TO ENGAGE IN REPAIRING THEIR BACKPACKS
MASTER GRADUATION PROJECT   MARLON HERDE

Preface

When thinking about the topic for my graduation, going into textiles, clothing, and accessories was already clear to me. The topic has fascinated me since my bachelor studies and an internship in that field. To me, clothing, accessories, and hardware are the perfect combination of aesthetics and functionality, art and technology.

Including repair is something that came over the past months before the thesis. As the textile industry is quite a polluting one, to me, it is interesting to find solutions that decrease this pollution. Repair lowers environmental impact and decreases consumption, which, in my opinion, is an essential part of a more environment-friendly future. Therefore, the project was of high personal interest to me.

It has been quite a ride with many different emotions. I gained new skills in a more methodological and analytical approach to designing, which I hold in high regard.

However, the most important thing here is to thank the people who supported me during this journey.
I want to thank Arjen and Renske for supervising the project and always critically helping me analyze and question my decisions to find the best next step.
A big thank you also to Imo for all the support during the project, without which it would not have been possible this way.
Thank you, Charlie, for the time working together during the last months. That changed the game completely.
Moreover, I want to thank Gaby and Waltraut for all the support I know I can always rely on.
And a thank you to Anne for the talks and ideation support in the project and to everyone who participated and helped me on this ride.

Executive Summary

Repair is gaining popularity over the last few years but still is under-represented in society. This project does research backpack repair, especially home repairs by users. Backpacks are generally easy to understand in their construction, as the seams and patterns are visible. Still, repairing is not common because of different factors. User behavior plays an essential part in this; therefore, the thesis focused on user behavior for repair.

The research question to answer in this project was how self-repairing a backpack could be made more accessible and motivating for users. This plays into addressing the issue of user behavior for repair and the problems they face regarding backpack repair.

The literature search showed that research in repair had been done on clothing, but there is a gap in backpack repair. This project also attempts to contribute information to that gap.
Either way, clothing or backpacks, there are several reasons why users do not engage in repair. Known factors that negatively influence engagement in repairing are financial aspects, the lack of skills/knowledge, the missing resources, the time it takes, or the low emotional relationship people have with a product. That means the underlying factors can make the efforts to engage in repairing a backpack currently too high.
While individual repairs in textiles are not that common for most consumers, that can be caused by companies actively trying to prevent users from repairing, by bad product design, and by consumer behavior.

Talking with experts provided more in-depth information on the current methods and state of repair for backpacks. In addition, it gave information on the difficulty of providing glue solutions, the complexity of backpack assembly, and sewing as the most accessible technique.

Research on backpack damages was conducted to get specific information on the field. It revealed that the most occurring damage types are ripped fabric followed by broken zippers.

Common barriers and motivations for users to repair their backpacks were researched through user interviews. They showed that time, effort, aesthetics, price, and symbolic values are essential for repair.

The insights from the research were used to ideate design solutions that address the found issues. A business planning was set up for the chosen concept, and analyses of the repair market, target groups, and financial planning were used to refine the concept into a viable product and build a brand that makes it desirable.
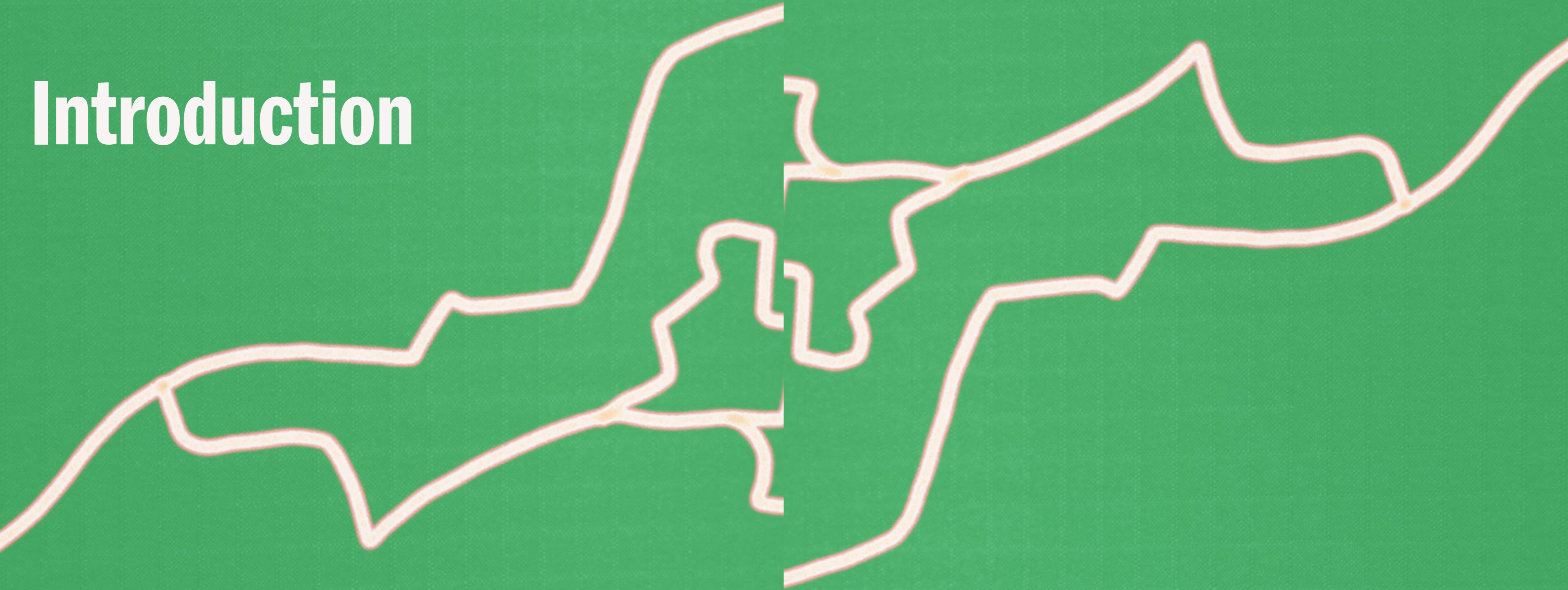
The final concept, a repair patch, is designed to give users an accessible introduction to repairing and sewing. It plays into the emotional journey users perceive during a repair, giving them the confidence to conduct a repair themselves and a positive feeling to finish it.

Introduction

PROJECT BRIEF

Repair has the potential to keep products in use longer and, at the same time, reduce environmental impact. It also can increase the emotional attachment of a user to a product. On the contrary, the fashion and textile industry negatively impacts the environment. In 2018 the clothing and footwear industry, for example, accounted for 10% of global CO2 emissions (European Parliament, 2020a). Moreover, the market is growing. The global market value is constantly increasing, expected to be around 33 billion US$ in 2027 (Statista, 2022a). In the current climate crisis, this development of an increasingly polluting industry needs to change. One way to face the issues of the current consumption system is the circular economy. Recycling is an example within it that got popular. To reduce a product's impact even more, other strategies, such as repairing, opt for prolonging its lifetime. A reason for that is that it needs less energy to recover materials and is less logistical effort.

Repairing is an integral part of moving towards a circular economy. Furthermore, it has become increasingly common for companies to offer repair services or help users repair products themselves. Besides the renowned outdoor brand Patagonia, which claims to be in business to save the planet and has engaged in repair almost since the day they were founded, other brands do that as well. Also situated in the outdoor gear business, the Dutch retail chain Bever, for example, recently started to offer in-store repair services for customers. It can be a viable part of a business when companies engage in repairability, for instance, selling spare parts or offering services. Moreover, it can also improve a company's perception and image of the customer.

While repairing is often a complicated process in sectors like electronic consumer goods, this is different for the fashion and textile industries. For example, it is more comprehensible when looking at the construction of clothing or backpacks. Stitching lines can be seen in the materials, and when something breaks, the user can rip it open, sew new cloth in, stitch it together, or glue a patch over it. However, even in that area, there are differences.
The central focus of the project is on the product of a backpack. Reasons to repair come from different motivations and depend on the product type. A backpack, in the field of fashion and textiles, serves both functional and emotional purposes. Functional, because it is a means to transport things, and emotional, because it is often a statement expressing a personal style or identity. Backpacks are more complex than a t-shirt or sweater, and opportunities to integrate repairability seem more promising. Also, it is a higher investment, so users might have a stronger personal motivation to engage in repair.

The project opts to find ways to make users engage more in repairing backpacks their selves. In the climate crisis debate, concerns about the security of supply arise and make do-it-yourself projects, to which repair is also assigned a trending theme. This can also be seen in a market with high turnover (Jonas et al., 2021). But more importantly, repairing by oneself is an emotionally stronger act than letting something be repaired. Repairing, therefore, is not only about the fact that a product is restored but also about the engagement with the object during the process. The values and experiences that come with this process can give users a feeling of self-efficacy (Hielscher & Jaeger-Erben, 2021). Houston also describes it as care and emotional labor (2019). Repair, therefore, is more than of pure functional nature but has social and emotional aspects to it.
Additionally, Laitala et al. state that users generally found repair services too expensive (2021). Home repair, however, has the potential to be more cost-efficient as less labor by external parties is involved.
The question that evolves for this project is:

How can self-repairing a backpack be made more accessible and motivating for users?

Three sub-questions that need to be answered evolve from that:
4. What damages occur to backpacks?
5. What are the barriers for users to repair their backpacks?
6. What motivates users to engage more in repair?
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aim

The project aims to find a way for users to facilitate repairing their backpacks. Different products often need different techniques, tools, or methods. Even people experienced in repair can face issues when applying techniques they have not used before. To test and see if the project's solution works, the aim is also to create a concept that can be tangible during the given timeframe. This allows the creation of a user-tested product that facilitates the process. And although repairing is a topic that intertwines many different problems and aspects, it is only possible to address particular aspects of that in the given timeframe of the project. Therefore, next to the product of backpacks, the focus is on the repair by the user. A major part of the research is the behavior of users in repairing to find a solution that addresses the issues found. The solution space, however, cannot cover every type of damage found on a backpack but will focus on a chosen type and repair technique.

Additionally, the literature search revealed an existing lack of research specifically on repairing backpacks. Therefore, the project aims to contribute information to the topic and give new insights by analyzing types of damage found on backpacks and specifying motivations and barriers to repairing backpacks.

APPROACH

The general approach to the project is based on the four phases of the double diamond model, shown in figure 1 (Design Council, 2019). In the 'discover' phase, the area of repair and backpacks is explored through desk research, expert talks, and research to find damages on backpacks. User interviews, a repair motivation-and-barrier model, and a user journey help to define the problem statement and the requirements to develop a design solution. Therefore, a brainstorming session helps to ideate different possible solutions. Finally, in the 'deliver' phase, user testing is done for improvements, and a strategy is developed to refine the chosen concept.
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report structure

After the introduction and goals of the project, the report is structured first to give information on the theoretical background used for the project. Following, the research insights from desk research and expert talks provide a foundation for what will be needed in order to create the problem definition. Next, the user research investigations use the literature insights to develop additional results on backpack repair. Research into backpack damage helps to understand where and how backpacks break. The problem definition is formed based on this data and leads to three concepts, with the final giving more insights into the development process. Finally, for the chosen concept, a business planning is set up to refine the design to the final concept and create a strategy around the physical product.

Discover

Define

Develop

Deliver

Theoretical
Background

Context

Expert
Talks

**Field
Investigations**

Damage
Research

User
Research

**Problem
Definition**

Ideation

Brainstorm

Product
Concept
Evaluation

**Concept
Development**

Prototyping

Product
User
Evaluation

**Business
Planning**

Concept
Refinement

Final Concept

Closing
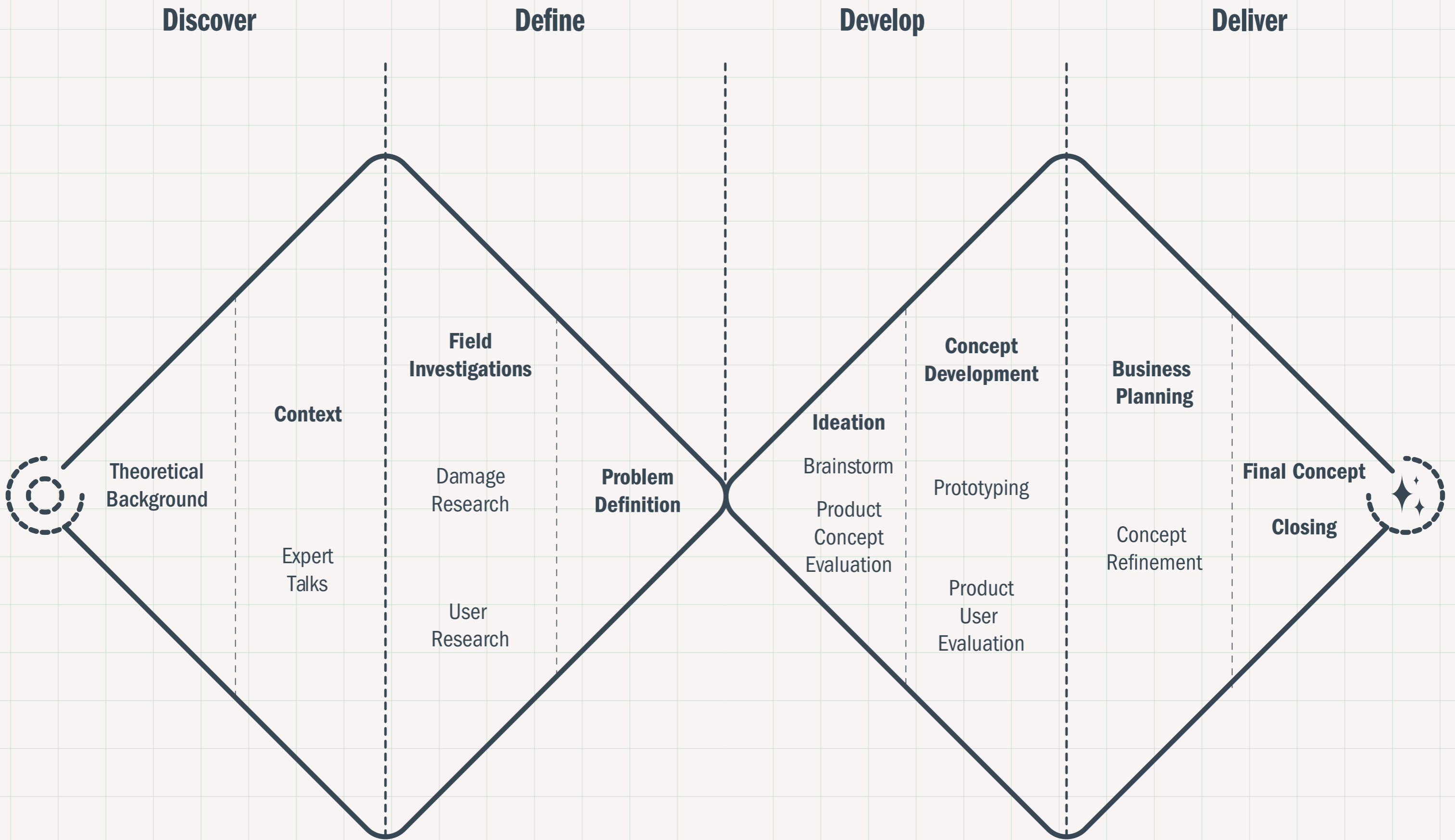
Figure 1 – Project Approach

Theoretical Background

Develop

Deliver

Discover

Theoretical Background

Define

This chapter describes the main topics and important models for the project. The two main topics repair and backpacks will be introduced and defined. Additionally, the concept of the circular economy as an important part of the modern repair discussion is explained. Lastly, the repair motivation barrier model is introduced, which is essential for user research and helps the development of the project.

BACKPACKS

As described in the introduction, backpacks are the focus product of the project. Focusing on a specific product is due to this project's scope and the fact that the repair type differs from the broken object. For example, when repairing an electronic device, completely different tools, knowledge, and materials (soldering, screwdrivers, cables) are needed compared to patching a hole in a backpack (sewing machine, thread, fabric).

Backpacks are an everyday object for many people at work or study, to transport daily things, carry gear for sports or other hobbies, or as a means to transport belongings during traveling. The Cambridge dictionary defines a backpack as „a large bag used to carry things on your back, used especially by people who go camping or walking" (Cambridge Dictionary, 2022a). In contrast, the term 'bag' is a more general term describing a "container [...] in which you carry personal things, or clothes, or other things you need for traveling" (Cambridge Dictionary, 2022b).

Anatomy of a backpack:
For the further progress of the process, it is useful to know the basic construction of a backpack and the terms to which they refer. Figure 2 describes the different parts that make up a backpack.

Shoulder Harness
Handle
Zipper
Decorative Panel
Sternum Strap
Padded Shoulder Strap
Strap
Elastic Compression Strap
Hip Padding
Mesh Side Water Bottle Pocket

Figure 2 – Backpack construction based (Fashionary. (2016). Fashionary Bag Design: A Handbook for Accessories Designers. FASHIONARY.)

Shoulder Harness

Interior Protective
Laptop Pocket

Bag Bottom

Handle

Interior Zipper Pocket

Elastic Compression Strap

Interior Open Pocket
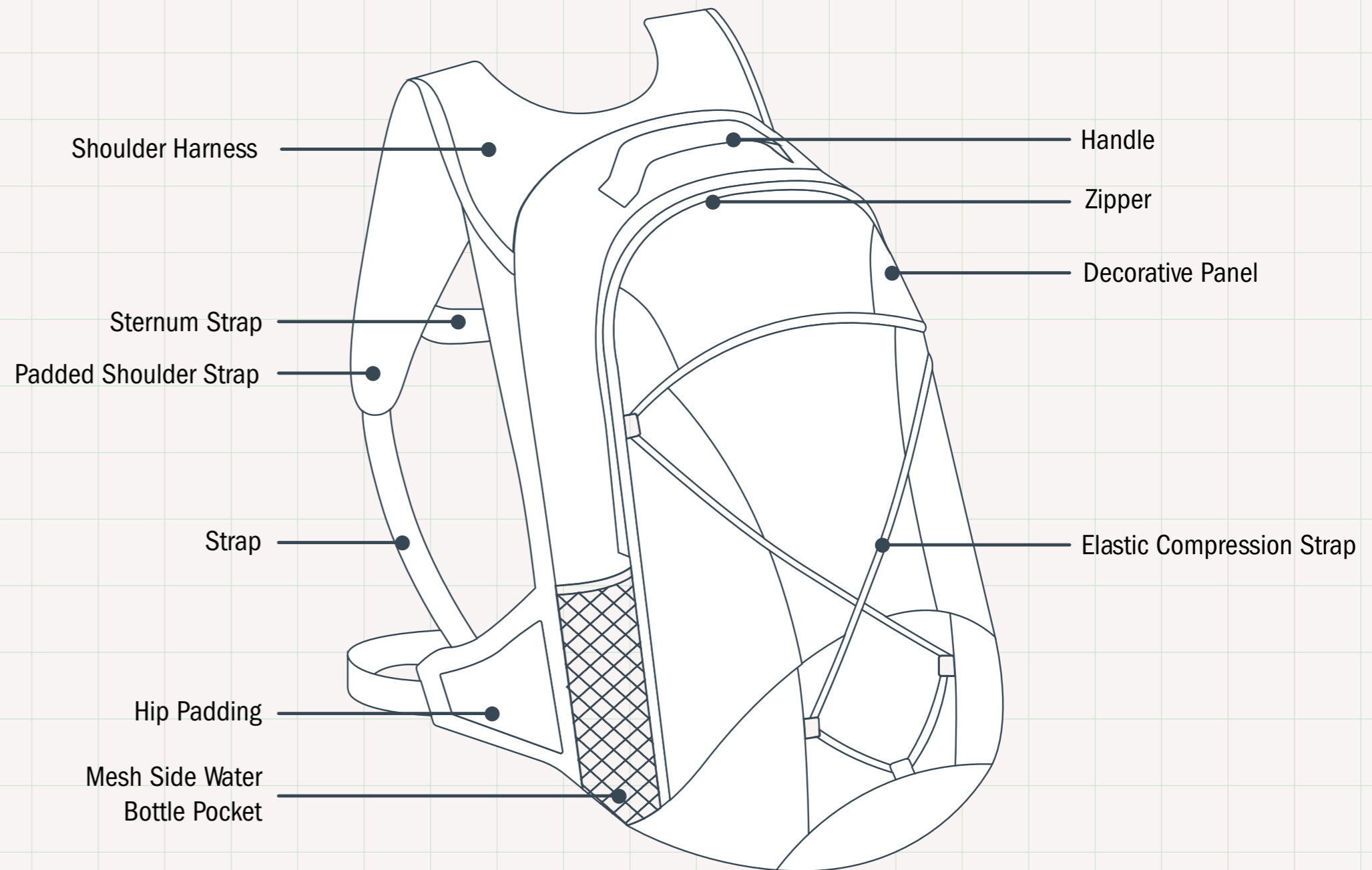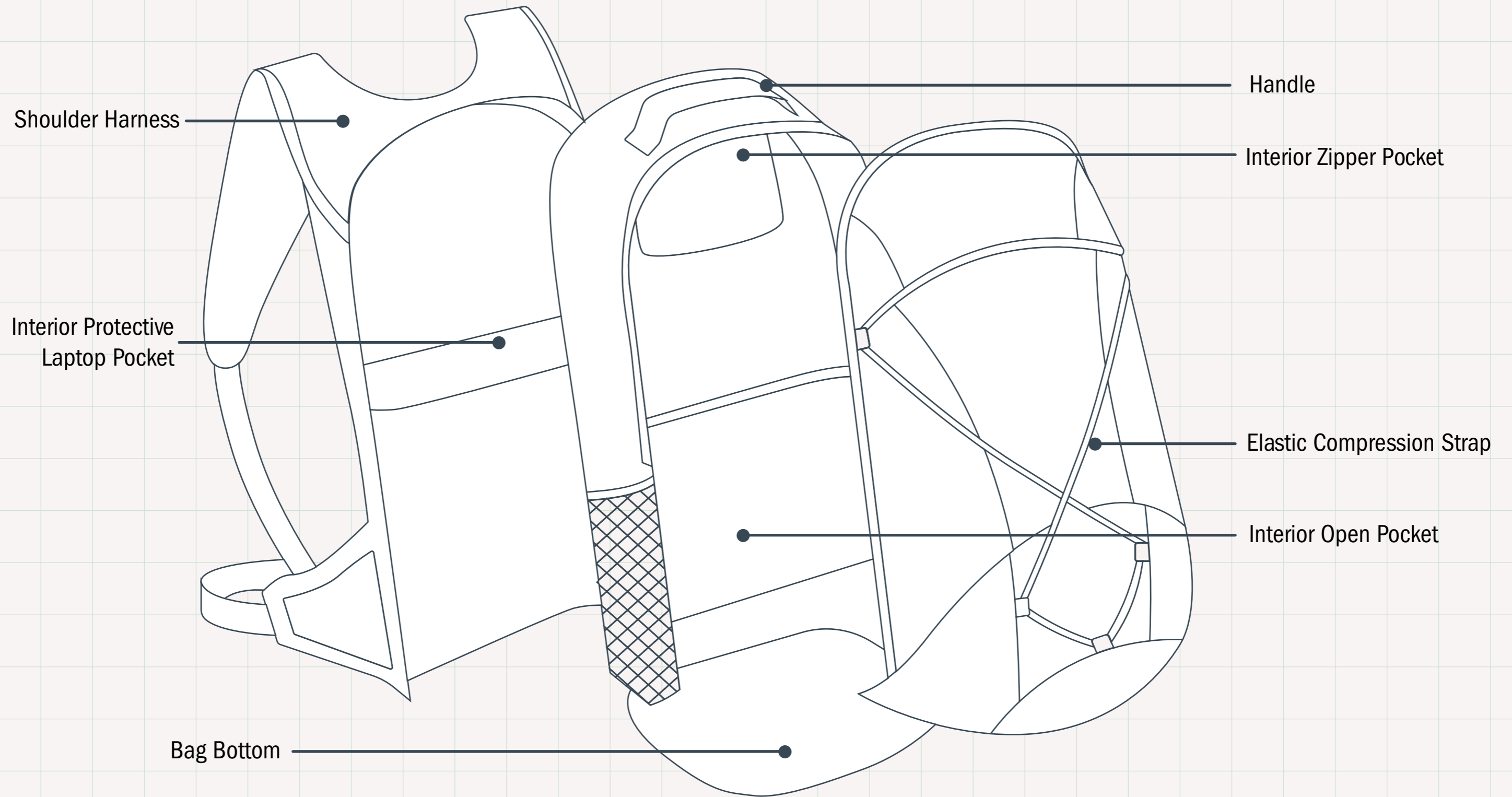
Figure 2 – Backpack construction based (Fashionary. (2016). Fashionary Bag Design: A Handbook for Accessories Designers. FASHIONARY.)

Circular Economy

The most common nature of the current economic system is often described as a linear economy or 'take-make-waste system': An economy with a steadily growing, excessive need for resources. From these resources, products are made, which customers consume. Once its lifetime is over, it ends up in the trash and damages the environment. In the chaos of landfills, materials are mixed, can not be identified anymore, and, eventually, lose their value. They are left behind there or get burned.

Next to the damage to the planet, the limited amount of resources available is another problem. Accelerated by the linear economy, the earth will reach its resource boundaries. A famously used example in this context is the 'spaceship earth.' It depicts the earth as a closed system in which we cannot add anything. Once the resources are redistributed, there is no chance to generate new ones (Kalen, 2010).

The CE offers a different approach to filling this gap between trash and resource. It shapes the straight line into a circle by recirculating waste to use as a resource. The CE and its technical cycle can be seen in figure 3. Ideally, it does not produce trash but sees it as a valuable resource for production. In theory, it is a never-ending loop of material utilization.

This loop starts with the resources crafted into materials during production and afterward assembled into products. The consumer uses and disposes of them when they are not needed or functioning anymore. At this point, the main idea of the CE comes in. The disposed product will be recovered for the resource sector through recycling, for example, so that manufacturers can use the materials again.

There are several adjustments in the other sectors needed as well to make this loop-closing sector work. The CE focuses not only on recovery and recycling but on the whole circle. It is already crucial which resources are chosen. They decide if a product will biodegrade or get recycled at the end of its lifetime (Wautelet, 2018). For more on the history of the CE, see appendix – History of the Circular Economy.

Repair*

Repair is often mentioned as a solution in the current debate to tackle the environmental crisis partly. As a life-prolonging method, it plays a vital role in the CE context. Repairing leads to a lower need for consuming new products and is a crucial strategy for maintaining products and prolonging use in the CE. Effectively, it can positively influence the environmental impact of production and consumption (Ellen MacArthur Foundation, n.d.; Bakker, 2019).

At the same time, these motives of repair can already be seen in the last century. Repairing in favor of sustainability or independence, for example, was already present in the 1960's DIY-movement and the environmental movement of the 1970s. However, generally, there is a trend of decreasing importance in repair because of the rise of mass consumption and the take-make-dispose attitude (Jonas et al., 2021).

Repair has a long history and has probably been part of us humans almost ever since we exist. It is a practice to bring objects back to a functional state so something can be reused again. A German dictionary from 1837 describes it as 'improve, mend, bring something back to the initial' (Lippe, 1996). Today, the Cambridge dictionary defines it as putting "something that is damaged, broken, or not working correctly, back into good condition or making it work again" (Cambridge Dictionary, 2022c)

Krebs et al. (2018) state that the term 'repair' developed as a common word at the beginning of the 20th century. Before, in Germany, the concept of 'mending' was more common. It described the process of bringing something back to good condition. With the shift from mending to repairing, there was also a shift in the meaning. While mending was more in the sense of patching something, repair – during industrialization – developed more to replacing, often standardized, parts (Krebs et al., 2018).

Also, the motives for repair regularly changed during this time. In post-war times, repair motives came from a necessity due to the scarcity of resources, especially for clothing. Krebs et al. (2018) state that, in the
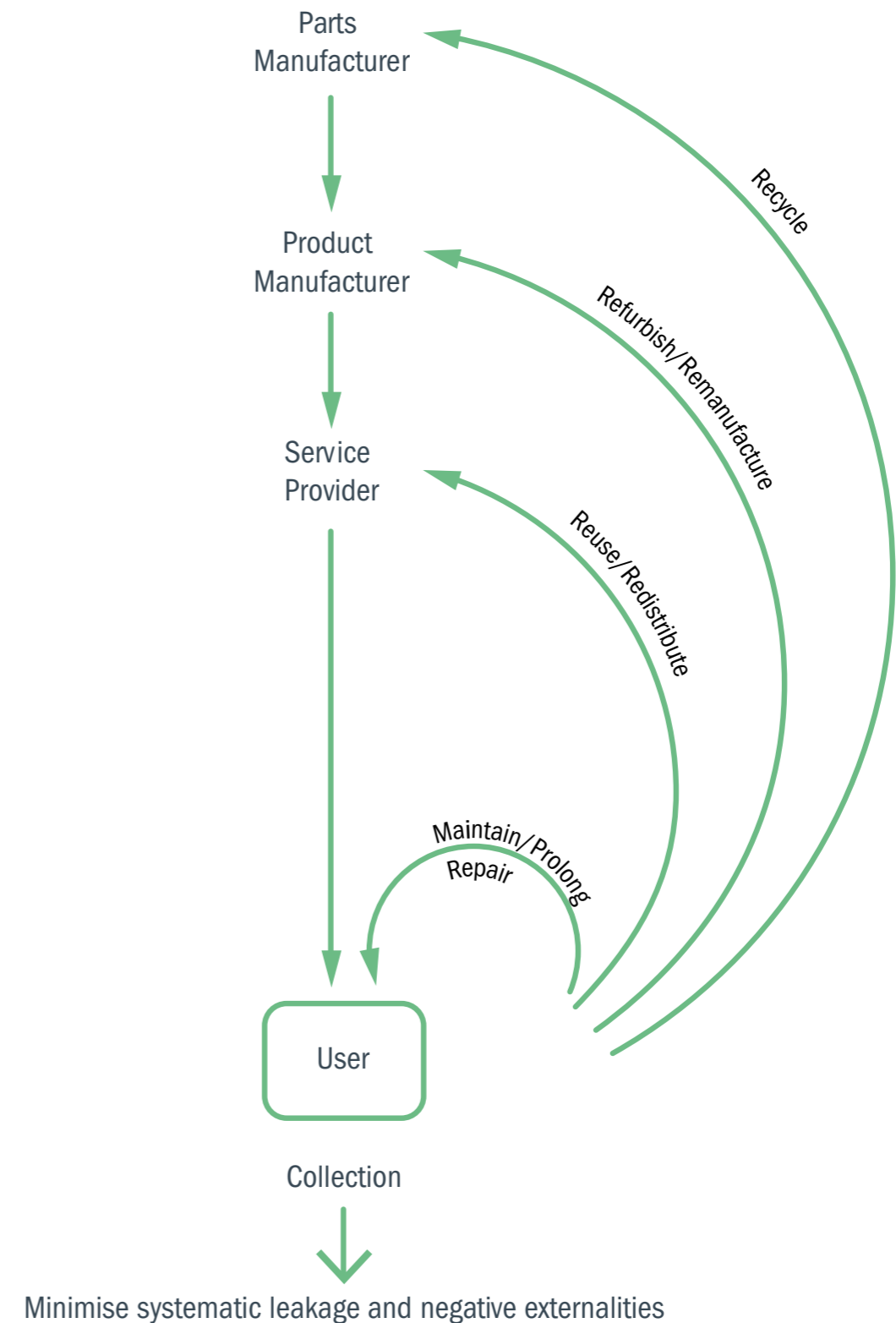
Technical Cycle

Figure 3 – The circular economy with focus on the technical cycle. Repair is placed in the inner circle (Based on: Ellen MacArthur Foundation. (n.d.). The butterfly diagram: Visualising the circular economy. https://ellenmacarthurfoundation.org/circular-economy-

course of history, the meaning of repair changed regularly. From being a virtue to being a stigma of poverty. With the modern age and fast fashion companies shaping the clothing market in the 90s, repair gradually lost its importance as the low prices of new clothing could no longer justify the financial and time effort (Krebs et al., 2018). In different areas, it shows that repairs are needed earlier than they used to be or are too complicated to do due to products constantly becoming more complex. The economic factor, additionally, contributes to repair not being worth it anymore, which leads to a habit of replacing (Krebs et al., 2018).

When it comes to the modern interpretation of repair, it often is connected to the Circular Economy, which repair is a part of by prolonging a product's lifetime and reducing material usage (Fachbach et al., 2022; van der Velden, 2021). It also can be observed that many initiatives are coming up, like repair cafés or Fablabs, where people can craft, repair, and work together with others (Jonas et al., 2021). Furthermore, the right-to-repair movement is getting much attention, in which people fight for companies to make repairs accessible to users (Klosowski, 2021). Platforms like iFixit engage strongly in that (iFixit, 2022). However, other companies are working on improving repairability as well. The outdoor brand Patagonia, for example, has been promoting repair for years (Chouinard & Klein, 2016).

Relevance of repair:

In decreasing the environmental impact of products, different strategies can be applied. In the CE, different circles indicate different strategies and efficiency levels for an environment-friendlier production and use. These strategies include, for example, recycling, remanufacturing, maintenance, or repairing. The closer the loops are to the user, the more efficient these measurements are (figure 3). For repair, this means that it "preserves value by enabling the extension of the product's life, minimizing both waste and resource and energy consumption" (Llorente-González & Vence, 2020). These methods become especially important in a situation where new products are developed and replaced increasingly faster (van der Velden, 2021). Prolonging a product's lifetime reduces the need for new products and their production. That plays into the current efforts to curb the climate crisis (Ramires & Duffy, 2021).

Repairing, therefore, shows the will to keep a product in use longer and not buy something new. Being able to repair something by oneself is a sign of self-reliance, which is an essential step toward becoming more independent (Heckl, 2015). These capabilities are interesting, especially in a world that is more and more connected by globalization. Processes are connected and interdependent all over the world. Something that has been seen recently in the COVID pandemic (Ruge, 2020) or the stuck ship in the Suez Canal. Both situations experienced a supply shortage, and many resources were unavailable (Riecke, 2021).
But repair practices include the cultural context as well. As one of the methods that aim to sustain a product longer, it implies sustaining its " thing-ness " and strengthening the relationship between human and object (Krebs et al., 2018). Therefore, repair increases the value given to an object by the user. Llorente-González & Vence affirm that repair should be promoted more in different channels like policies or taxes as well as design because repairing has not yet the importance it needs in the CE (2020).

Repair Motivation Barrier Model

The repair motivation barrier model helps to categorize and structure the reasonings behind user behavior in repair. It gives an overview to understand better what motivates users to repair and hinders them from repairing. Therefore, the user interviews in this project are based on the repair motivation barrier model and help to code the motivations and barriers users face with repairing. The gained insights are important in creating the problem definition for the further project.

The repair motivation and barrier model (RMB) by Terzioğlu is specifically made toward repair behavior and builds upon Fogg's behavior model. It illustrates several factors that can motivate or hinder people from repairing their belongings and shows the "relationship between users, products, and repair activity." Also, the

author describes it as a model suited for designers that deal with circular design or design for repair (Terzioğlu, 2021).

Generally, the model is divided into three categories: technical, value, and emotional. These categories have sub-categories that influence how people behave in repair.
'Design related problems,' for example, include problems that come with the design of a product. Often these are not constructed to facilitate repairing but hinder it. Also, using low-quality materials can render a product unusable, which is known as planned obsolescence. These are part of the category 'technical aspects.' The symbolic value of repair – a sub-category of the 'value aspects' – comes with a higher meaning people give their repair. For instance, a visible repair can express that someone engages in it and shows it to others.
'Lack of confidence' is an example of 'emotional aspects' and describes the negative emotions people face when not feeling confident enough to conduct a repair because of special tools needed that give the feeling a product is not supposed to be repaired, missing knowledge on how to conduct a repair, or missing experience in repairing (Terzioğlu, 2021).
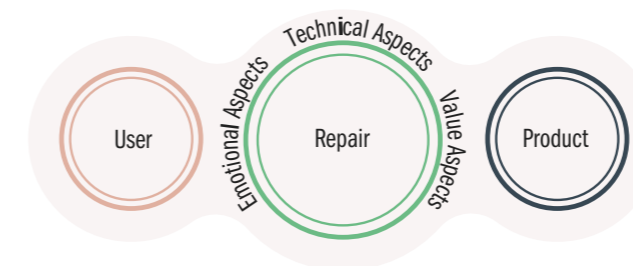
Figure 4 – Three aspects in repair. Based on Terzioğlu (Terzioğlu, N. (2021). Repair motivation and barriers model: Investigating user perspectives related to product repair towards a circular economy. Journal of Cleaner Production, 289, 125644. https://doi.org/

Context

This chapter explores the current state of research that has been done on users' motives to repair or not repair and reveals the literature gap on backpack repair. Furthermore, it investigates which companies already engage in repairing backpacks and which problems are still present.

Therefore, the questions to be answered are:
· What is the current state of research on users' motives to repair?
· What is the current state of the market on backpack repair?

Motives behind Repair

In the field of repair, different aspects are coming together. Roughly said, it has three parts: the object that needs to be repaired, the necessary tools to do so, and the user who conducts the repair (Terzioğlu, 2021).

Reasons for users to repair can vary. For example, in a 2019 study, the three most mentioned reasons for participants to repair their clothing were "they continue to last longer"; "I try to reduce my environmental footprint"; "I have a personal attachment to them" (Terzioğlu, 2021).

The users are important because they are the ones that need to take action to repair a backpack. When it comes to clothing, common reasons not to repair are that the products are not in fashion anymore, something new is bought out of boredom, or because of "a desire for something new" (McLaren et al., 2015). When deciding to repair a backpack, there are two primary choices — either bringing it to an external party to get it repaired or users repairing it themselves. Conducting a repair by oneself is often not that easy, however. In a study on repair in 2015, it became apparent that, for several participants, it was not easy to successfully use the techniques for repair, especially with a lower skill set and experience in crafting. This resulted in the participants "feeling frustrated or disappointed with the results" (McLaren & McLauchlan, 2015). Regarding the skills needed, Ackermann states that "consumers tend to conduct repair activities that need limited knowledge and skills" (Ackermann, 2020)

Without the right tools, a repair will turn out difficult. The accessibility of the tools and materials for a repair is essential in the repair process. And they should work appropriately and according to their intention. With backpacks, it can become difficult because of their specific properties. This became apparent during an interview with the former person responsible for repair at Ryzon, a Cologne-based bike accessory brand, where one of the arguments was that especially repairing backpacks from all the fields of textile products is complicated. The reasons are the constructional design and thick materials that demand special machines.

A standard sewing machine is rather not suitable for working with this product. Therefore, using basic tools like needles and thread is preferred. Although, this can still be challenging due to the heavy fabric used in backpacks (M. Herde, personal communication, May 10, 2022). The team lead of hardware at Vaude, a German outdoor company, mentioned in a talk that repair can get complicated regarding materials and tools, but ideally, repair should be made as easy as possible for the user. Gluing, for example, is a valid option to patch backpacks, but the many different types of glue and materials they are intended for make it complicated to have an easy way of using glue as a standard tool for repair (M. Herde, personal communication, May 23, 2022).

The third factor that is important for repair is the product itself. Through design for repair, the repair process can be facilitated for the user. While talking with Vaude, it was also mentioned that when a backpack allows the user to exchange only one buckle on it, this is not what could be named 'design for repair.' Therefore, a backpack must have a holistic design approach to be repairable. Further, it was argued that repair not necessarily needs to be shown through a big logo. It can also be the construction that displays durability and repairability (M. Herde, personal communication, May 23, 2022).

The literature research revealed different opinions on the aesthetic of repairs. McLaren et al., for instance, state that 82% of their respondents wanted clothing repair to be invisible. However, she also says that a different approach to design can change the perception of repair and make it more acceptable through personalization and easy accessibility (2015). Gwilt demands the "mainstream markets" to make not only invisible but also visible clothing repairs accepted in society. She says that "this process of normalization is a challenge that designers can tackle specifically through the use of innovative design-led approaches to new garment designs" (Gwilt, 2014). In a study by Diddi and Yan, the majority of the participants stated that they do not worry about their clothing not looking the same after mending them (2019).

BACKPACK REPAIR

To get a first impression of repair in backpacks, a quick search on Instagram gave a feeling of how popular the topic of home repair is. For example, the hashtag #bagrepair resulted in around 36,600 posts, but the hashtag #backpackrepair only resulted in approximately 240 posts.

While looking for literature on backpack repair, it was important to categorize the product to find matching sources. However, research on this topic was lacking. While other, broader categorizations such as 'travel goods' (Statista, 2022b) or 'luggage' (Cambridge Dictionary, n.d.) could include backpacks, they also would consist of other products. However, these terms as well were lacking results. Clothing repair, on the other hand, generates a variety of research that has been done. Although clothing and backpacks have the textile materials and fashion aspects in common, there are still differences that distinguish them from each other. Backpacks are different from being repaired. Their construction needs specific machines, and the thick materials demand to work differently than with clothing. It is also a more complex product regarding the cutting pattern and the different parts used on a backpack. Nevertheless, due to the available research that is done and the commonalities with backpacks, the insights from clothing repair were still helpful for the further development of the project to understand what motivates users to repair or hinders them from repairing.

Current market:

Of course, repairing is nothing new in the business area. And although in any field of the industry, many companies try to avoid repair – due to its economic disadvantage when compared to selling new products (The Daily Upside, 2022) – organizations like iFixit and the right-to-repair movement give attention to this topic (iFixit, 2022; Ramirez, 2022). And also, the European Parliament makes efforts to enable repair for users (European Parliament, 2020b). Nowadays, also multiple companies exist that have a strong focus on repairability. Each offers a different approach which is why this part focuses on the most relevant examples for the

thesis. An example of a company stimulating repair is the brand Patagonia. Their engagement in less harmful products has been in their DNA since day one, and repair is an integral part of it (Chouinard & Klein, 2016). Patagonia has a repair service to send broken products to them. They do accept many products for repair but not everything. Also, they offer many tutorials and videos for repairing by oneself (Patagonia, n.d.).

Vaude, a brand operating in the same area, also offers a repair service for their products and tutorials to repair products at home (Vaude, n.d.a). Patagonia and Vaude also offer repair tutorials in collaboration with the repair company iFixit on their website (iFixit, n.d.). Additionally, Vaude has a spare part shop with items like buckles for backpacks (Vaude, n.d.b). There are limits to the repair service, however. According to Vaude, they currently only offer repair services for backpacks where they can ensure that the repair is not visible afterward (M. Herde, personal communication, May 23, 2022).

> A personal story to add is a friend who approached Vaude to repair his backpack with a broken zipper. After inspecting it, they calculated a repair price of approximately 100€, around two-thirds of the initial cost.

For instance, the bike accessory brand Ortlieb sells backpacks on which parts can be replaced quickly by screwing on and off specific broken components (figure 6) (Ortlieb, n.d.a). Additionally, spare parts can be bought on their website (Ortlieb, n.d.b).

The Amsterdam-based brand PackBag has a more holistic approach. Their business concept is backpacks that are made from different modules. These modules are interchangeable to personalize a backpack but mainly to make repairing the products more accessible. Once something breaks, the user can replace the module with a new one (figure 7) (Packbags, n.d.).

When comparing selected backpack brands, it becomes apparent that most do not offer repair services. For 17 of 26 brands, repair services could not be found on their website, while nine did offer repairs. However, three of them only offered repair within the warranty of

products, and two warned that repair by unauthorized parties could affect the warranty. Additionally, four of the analyzed brands had a spare part shop for backpack parts (Appendix – Repair by backpack brands).

Unfortunately, there are also negative examples of companies pretending to support CE ideals when they actually greenwash their products. Recently, the brand GotBag made headlines for its intentionally false advertisement of backpacks out of recycled ocean plastic. As it turned out, not only were their backpacks not made of the amount of ocean plastic that they claimed – and it was not even plastic waste entirely from the ocean – but their advertised repair service did not even exist (Land et al., 2022). Those examples could lead to people not believing in products or companies that are genuinely committed to improving products' repairability or reducing their impact on the environment. Thus, people might lose faith or will not be motivated to engage in it anymore.

Top: Figure 7 – The PackBag consists of three replaceable main parts: the inner bag, the outer bag, and the shoulder straps. https://www.packbags.nl/product-page/copy-of-a-backpack-10x7x3-2-0-indium-blue

Left: Figure 6 – The back parts of the Ortlieb backpack can be easily replaced by screwing them off. https://www.ortlieb.com/de_de/packman-pro-two+R3213

Bottom: Figure 5 – Patagonia's repair offers (Patagonia - Worn Wear Tour Europe - Fix Your Old Gear. (n.d.). Patagonia. Retrieved 2022, from https://eu.patagonia.com/gb/en/wornwear/)


TAKE AWAYS

The literature review marked the start of the project on repair and backpacks. The insights into the current market gave an overview of what types of backpack repair already exist. Furthermore, the literature revealed that several works on repair have been done. In the field of textiles, it was mainly done on clothing. In contrast, the literature review also revealed that the research in the field of backpacks was close to none. For example, in the study by Terzioglu, backpacks were used as one of many products for testing repairing. Nevertheless, it was seldom explicitly mentioned, nor the central research focus.

· The reasons for repairing vary in the users' motivations. These can be rather emotional or functional. According to Terzioğlu, the main reasons to repair are users' emotional attachment to a product, the environmental impact, or the functionality of a prolonged lifetime.
· Ackermann states that users often preferred repairs to require as little effort, time, and skills as possible. Adding to that, McLaren & McLauchlan state that users had problems successfully using the techniques for repair, especially when they had a lower skill set and experience in crafting, which led to frustration.
· The literature review revealed a gap in research done on backpack repair specifically.
· Repair has the potential to bond more with an object. The measurement of prolonging the lifetime and putting effort into it creates a stronger attachment.
· Literature also suggests that for repair, different aspects are intertwined. For a repairable product, the user motivation and the accessibility of tools, materials, and methods need to be present together.
· Repair for backpacks is available, and a range of brands offer it. Although, this differs in brands. The companies that also actively promote environment-friendliness usually have a repair service (Patagonia, Vaude), but even here, exceptions are found (GotBag). Other brands also offer these services, but it is not always clear on their websites where to find them and how it works. Most of the repair offers are by service, and not always that clear how the process goes and what it means.
· The aesthetics of repair are a controversial topic. While generally, people prefer a repair that is not visible, McLaren and Gwilt suggest making repair more visible as a sign of changing the perception of repairs.
· From the interview with Ryzon and Vaude, the experts stated that gluing is a common repair method but can get complicated when choosing a suitable glue for a fabric type. Therefore, Ryzon said that a repair by needle and thread is the easiest and most accessible way for backpack repair.
· The literature showed that facilitating engagement in backpack repair requires considering multiple points. For example, a product that is easy to repair cannot fulfill its purpose when the user is not even planning on fixing it. At the same time, a willing user will face massive problems when a product is not designed for repair or the necessary tools are not accessible. Therefore, it is important to acknowledge and include these interdependencies.
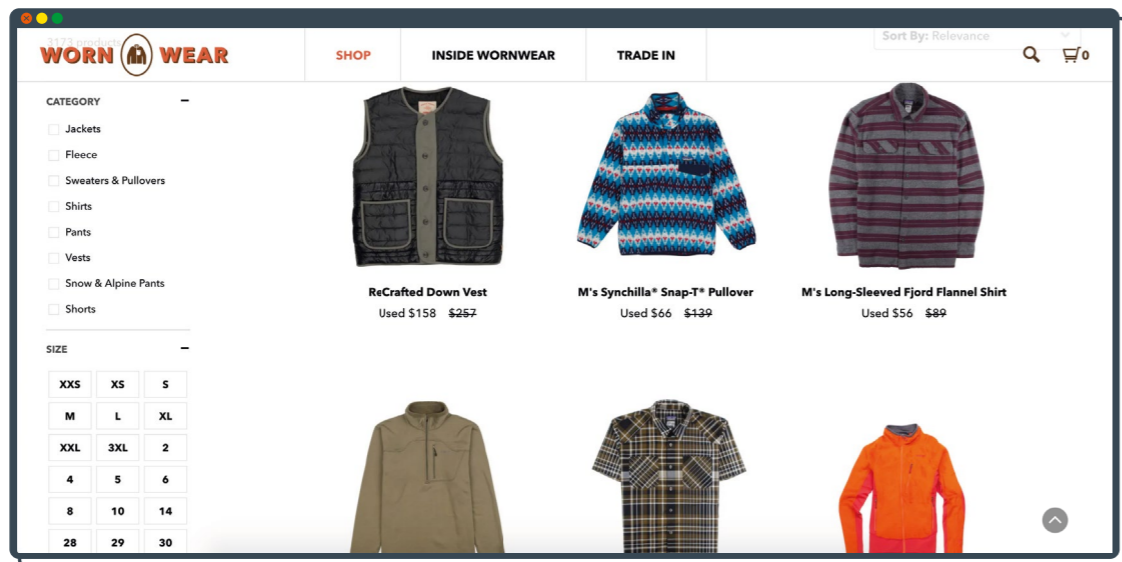
Field Investigations

Because the literature revealed a gap in research on backpack repair, own investigations needed to be done. Therefore, this chapter opts to find out users' motives for backpack repair as one part. The other part relevant to the project is looking more specifically at the product 'backpack' and investigating what types of damages are occurring. That raised the questions:

· Where do backpacks break, and what types of damage do they have?
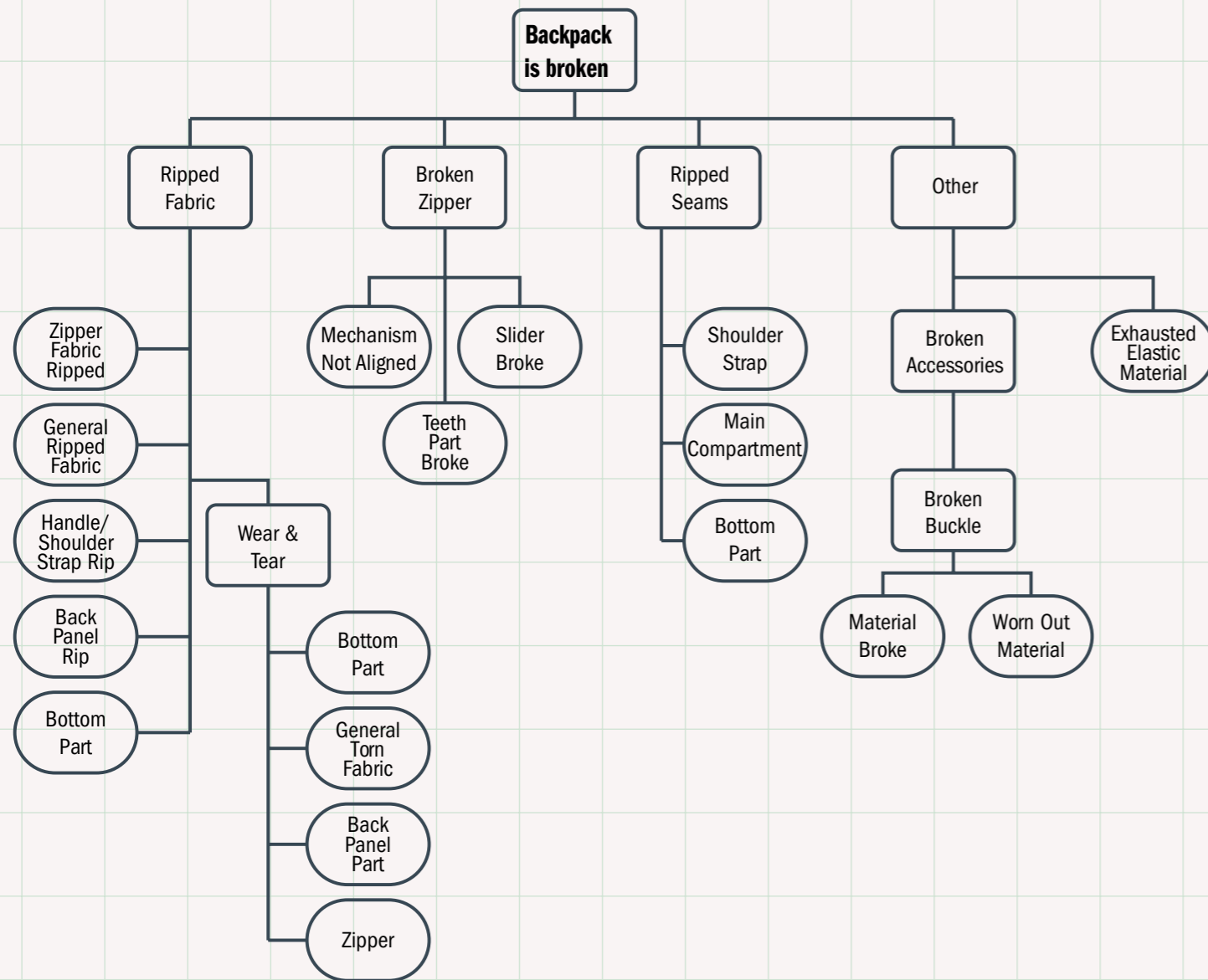· What are the motivations and barriers for users to repair?

Figure 8 – Fault Tree Analysis

Damage Research

When repairing backpacks, various types of damage might require different techniques, materials, or tools. Therefore, field research was done by studying broken backpacks to understand better where damages occur and how they happen. The investigations help to identify the different specific damages and define the focus for the concept development later.

Setup:

The setup of the experiment was based on creating an image database. Therefore, photos of broken backpacks from 25 people were collected. A fault tree analysis (FTA) was used to analyze the failure modes (Thode, 2017). The top-down approach's top event is 'broken backpack.' From there, the different failure modes found were documented. Figure 8 describes the structure of the damages.

Analysis:

After collecting images from 77 cases of different types of damages on a total amount of 37 backpacks. 14 of the 37 backpacks were not used by the participants at that time. Two of the 25 participants indicated that they do not own a backpack with at least minor damage. The documented damages include backpacks in which the fabrics or components were fractured, harmed, or did not work correctly (Merriam-Webster, n.d.a). Therefore, they were aesthetic flaws and damaged spots or components that did not guarantee their function anymore. The analysis revealed four main categories: 'ripped fabric,' 'broken zipper,' 'ripped seams,' and 'other.' The latter combines the categories 'broken accessories' and 'exhausted elastic material' because of their low occurrence. Based on the four main categories, the percentage of occurrences was documented additionally. This can be seen in Figure 9. Here, the cases under the category 'wear & tear' were not included as they can be identified as future cases of ripped fabric but had not been broken yet. Therefore, the number of damages included was 61. For detailed information, see appendix – Broken Backpacks Data Sheet.

Results

Ripped fabric:

Fabric that has holes or is ripped accounts for 62% of the damage. They can be found in different places on the backpacks, but most were located on the front side, the bottom, and in the upper area where the shoulder harness connects to the main compartment. Next to that, 'wear & tear' were cases of damage that eventually ended up being ripped fabric but are not ripped yet. It was material that became frayed, probably through constant friction, either from carrying it on the back or sliding on the ground. Therefore, it was not included in the categories. But when adding this failure mechanism, its overall share would even rise to 70%. The failure mechanisms behind ripped fabric have different possible reasons. As a part of wear & tear, friction between the backpack material and other surfaces can lead to ripping fabric over time. This also applies to ripped material on the bottom of backpacks. A similar mechanism can be found on the back panel of the backpack. The ripped fabric is likely caused by friction

between the user's back and the backpack. The zipper fabric and the shoulder strap materials may rip due to high tension resulting from an overload of the backpack.

Broken zippers:

Zippers that were not aligned anymore or the handle broke off were one of the reasons why they did not function anymore. 23% of the damages meant the second most occurring reason for damages on backpacks. The failure mechanisms behind zippers probably primarily result from either too high tension caused by weight overload or as a sign of high usage. Another mechanism can be a misalignment of the zipper teeth, causing it not to function properly anymore.

Other:

Other included three more categories of damages that occurred. Their share, though, was very low and therefore did not compare to the size of the other occurrences.

Ripped seams:

Seams usually are joined by a thread, but in some cases, they can be glued or welded. When the tension is too big, or signs of wear are getting bigger, they can rip, which happened in the experiment in 4% of the cases.

Broken Accessories:

Broken accessories are non-fabric parts that are not part of the backpack's main body. Zippers are excluded from that category. In this study, only buckles were affected, with a share of 7%.
Exhausted elastic material:
This category refers to the elastic materials in a backpack. When being under constant usage and tension, these materials lose their stretching strength over time. A failure of this occurred in 3% of the cases.

From all the damages, it was analyzed which of them meant a failure of the backpack's functionality and which were aesthetically or in a state that did not yet indicate a loss of functionality. Failure, here, means that the damage is in such a condition that the functionality of the part is not provided or at least not guaranteed anymore. It turned out that the highest difference can

62%

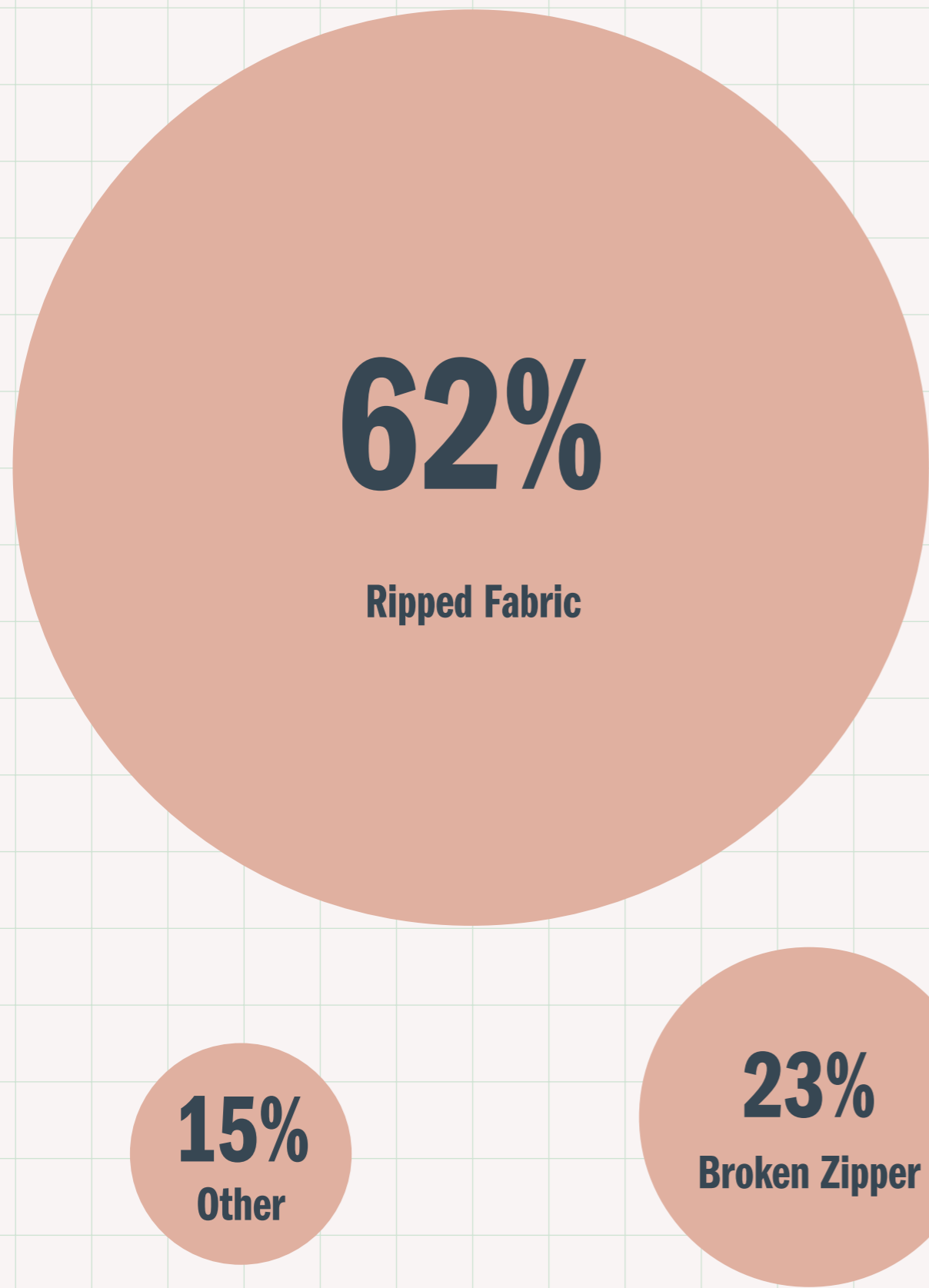Ripped Fabric

15%
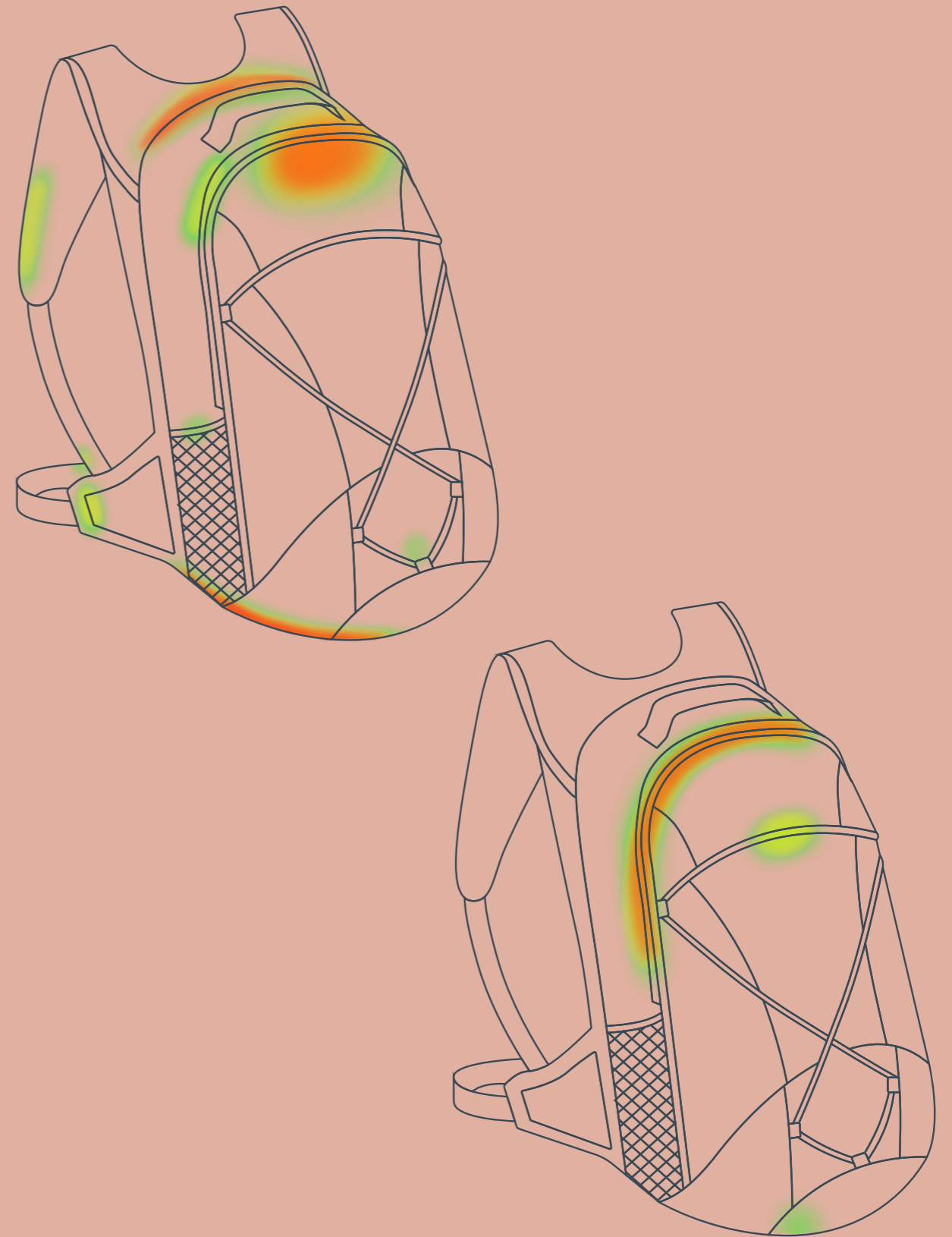Other

23%
Broken Zipper

Figure 9 – Distribution of damages on backpacks

Figure 10 – Heatmap - Top: Ripped Fabric; Bottom: Broken Zippers

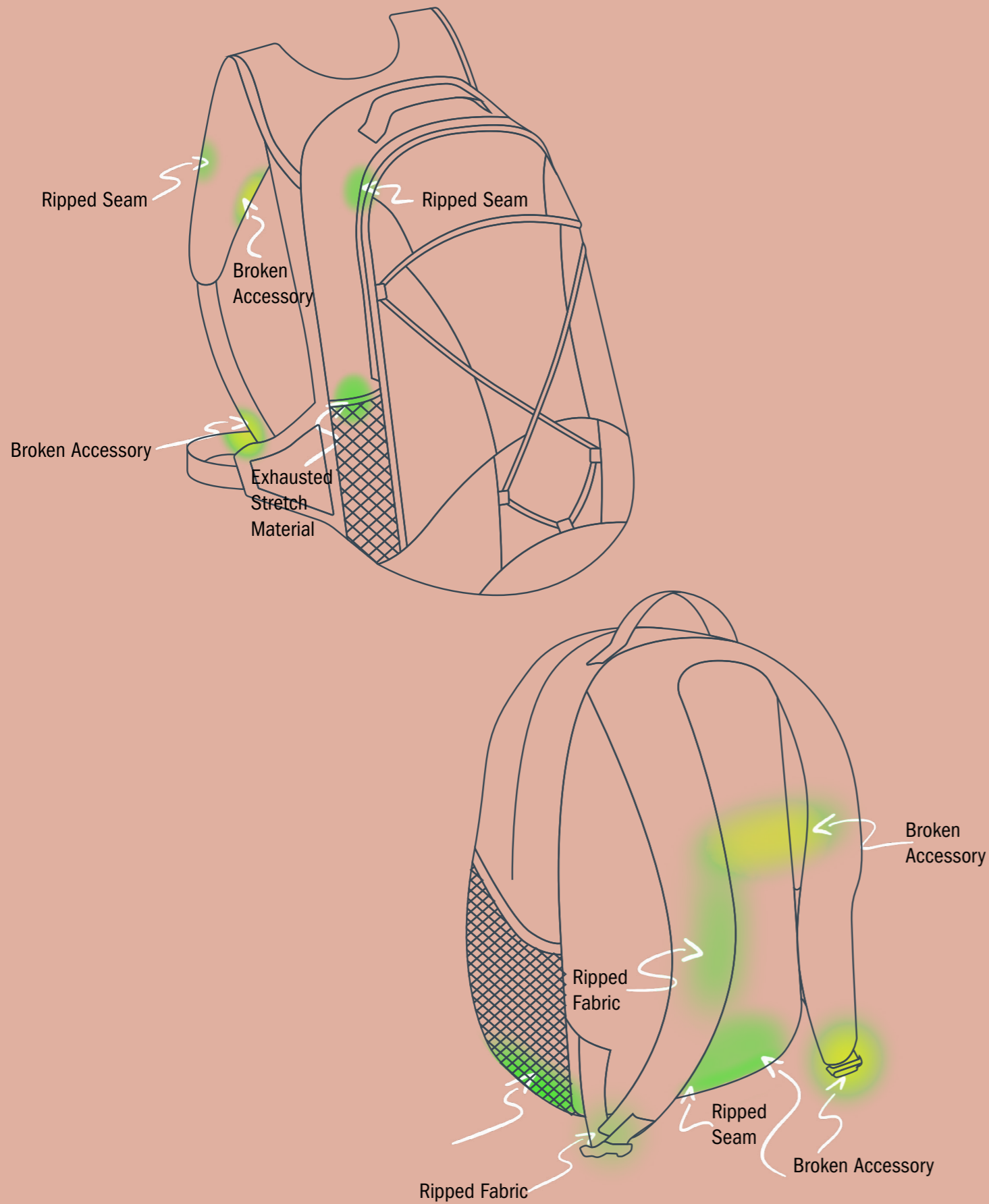Figure 11 – Heatmap - Smaller categories front and back

Labels on figure: Ripped Seam, Ripped Seam, Broken Accessory, Broken Accessory, Exhausted Stretch Material, Broken Accessory, Ripped Fabric, Ripped Seam, Broken Accessory, Ripped Fabric

be seen in 'broken zippers.' One zipper was still usable, while all other 13 zippers categorize as failures. The category of 'ripped fabric' was interesting because it makes up the biggest part of damages. The results for 'ripped fabric' show a lower difference than 'broken zippers' but, overall, a higher occurring failure. 24 of the 38 damages were categorized as failures.

Concluding:
The analysis of the damages showed that the majority of them were caused by 'ripped fabric' at 62%, followed by 'broken zippers' at 23%. Most cases of 'ripped fabric' occurred on the bottom, the front side, and the area where the shoulder harness is connected to the top side of the backpack. As the most occurring form of damage, it is most likely that a ripping fabric is the first failure that happens to a backpack. The mechanisms behind these damages differ from friction between the backpack material and other surfaces but also users' backs. Tension due to overload is also a potential failure mechanism.

Zippers, on the other hand, mostly broke at the main compartment or a smaller one in front of it.

With zippers, it became evident that functionality is not guaranteed once damage occurs. Only one of the 14 zippers was still usable. The other categories have fewer case examples, making the two biggest categories, but especially 'ripped fabric,' the most interesting and important ones.

Discussion:
In the literature, no available data that gives information on damage types and place of occurrence regarding backpacks was found. However, to find a solution that enables users to do repairs on their backpacks more easily and how to do this, it is crucial to understand what types of damages need to be repaired. The research gave valuable insights into this. It revealed different kinds of damages and where they occur. This was important to understand which repairs might be needed. However, the analyzed samples were often still in use, meaning that the damages might not be severe enough to replace the backpack. Some of them were not in use anymore, but for future research, it might be interesting to analyze the damage to discarded backpacks. With 37 different backpacks studied, it gave a

good base for the further development of the project. A higher sample rate might provide insights into a more diverse range of damage types when doing further research on this.

User Research

As the previous study focused on the product, an interview study helps get information directly from users and their behavior. Talking with different participants who all at least had some experience with repairing gave more insights into the field. They spoke about their experiences with repair and what motivates and hinders them from repairing. Two participants had already repaired their backpacks themselves before.

This approach aimed at getting more information, specifically on backpacks in the context of repair. Also, it should bring insights directly gathered from potential stakeholders for the project in contrast to the more general information from the literature.

Method:
An interview guide was used to lead the conversation (Appendix – Interviews) (Patton, 2001). The questions were asked in changing orders to be able to react to participants' answers or answers a participant already gave to questions not yet asked. Therefore, a guide with questions about repair in general, in the context of backpacks, and backpacks in general, was made. The intention was to ensure having the same questions within all interviews and also being able to plan the interview time better and facilitate the coding in the analysis phase (Patton, 2001). To react to the different situations of the interviews, the order of questions and asked follow-up questions to certain participants' answers were adjusted when necessary.

The first part was directed toward the interviewees' experience with repair in general, their motivations and barriers, and how they would experience their repair processes. Then, when the interviewee already had experience with backpack repair, the experience questions were asked about backpack repair. However, for
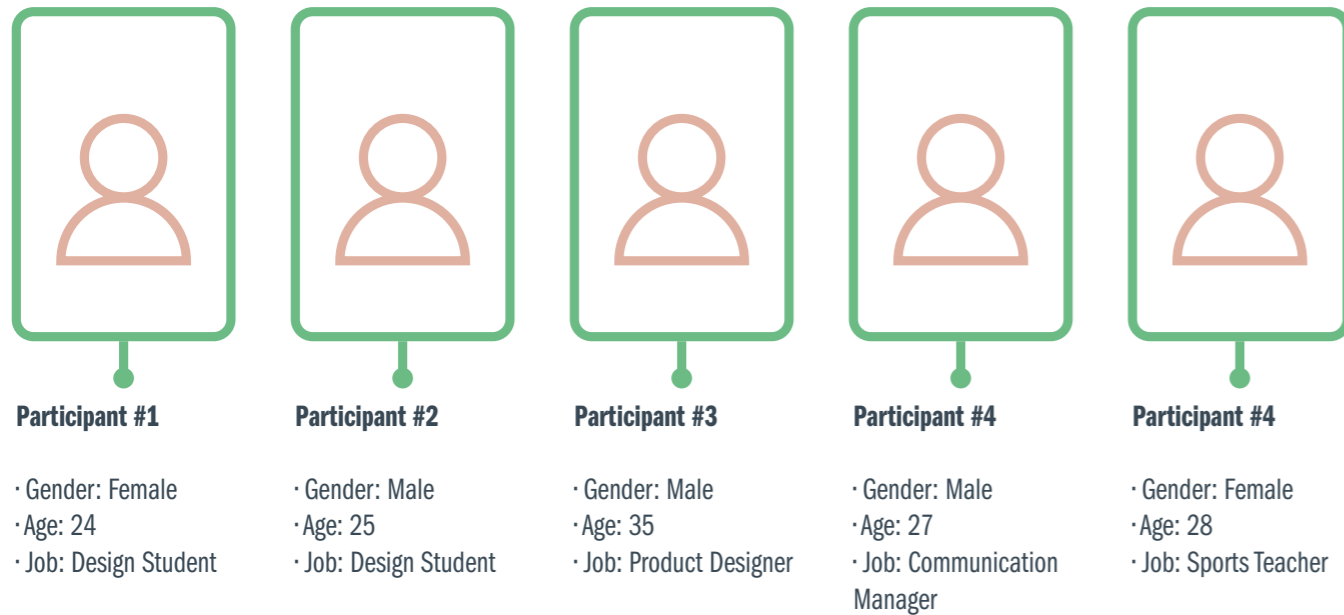
Figure 12 – Participant Data

Participant #1
· Gender: Female
· Age: 24
· Job: Design Student

Participant #2
· Gender: Male
· Age: 25
· Job: Design Student

Participant #3
· Gender: Male
· Age: 35
· Job: Product Designer

Participant #4
· Gender: Male
· Age: 27
· Job: Communication Manager

Participant #4
· Gender: Female
· Age: 28
· Job: Sports Teacher

all interviewees, the second part included questions about the repair of backpacks. After that, a few questions about how they perceive the image of repair were asked. In the end, the participants had the chance to give any comments they might have in mind.

During a trial interview, several questions had to be taken out due to time planning. Initially, the idea was also to ask questions about backpacks in general, but during the actual interviews, questions were answered more extensively than expected, so it was necessary to react during the interviews. Therefore, the part about backpacks in general had to be cut out almost completely. This was done for the following interviews to ensure that the same questions were asked.

Procedure:
After a trial interview with one female participant, five participants were interviewed – two female and three male. The trial interview was intended to get comfortable with the structure and organization so that the actual interviews could be focused on the content.
All participants had different experiences regarding the types of repairs, but all had at least done one before. After asking for permission to record the interview and using it for the thesis, the general questions about repair, in the beginning, were intended to get the inter-

viewee comfortable with the topic. Then, the following questions were asked.

Coding:
The RMB model was used to code the interviews and adjusted to fit the results. More specifically, the code 'accessibility of materials & methods' was changed into a motivating factor instead of a barrier because the responses suggested this to be more suitable.
The categories functional aspects, value aspects, and emotional aspects from the RMB model were used for the theme 'context' to keep consistency, although 'context' does not belong to the model. It was added to contribute additional insights.
The model helped to organize and structure the insights from the interviews to get clarity and facilitated the discussion and creation of the requirements. Nevertheless, it was still good to adjust the model to the specific needs of the interview results.
Furthermore, a user journey map helped to visualize what participants told about their repair experiences and what they would desire for a more motivating, enjoyable repair process.

Results:
While every category of the RMB model was at least answered once in the interviews, not all of them were
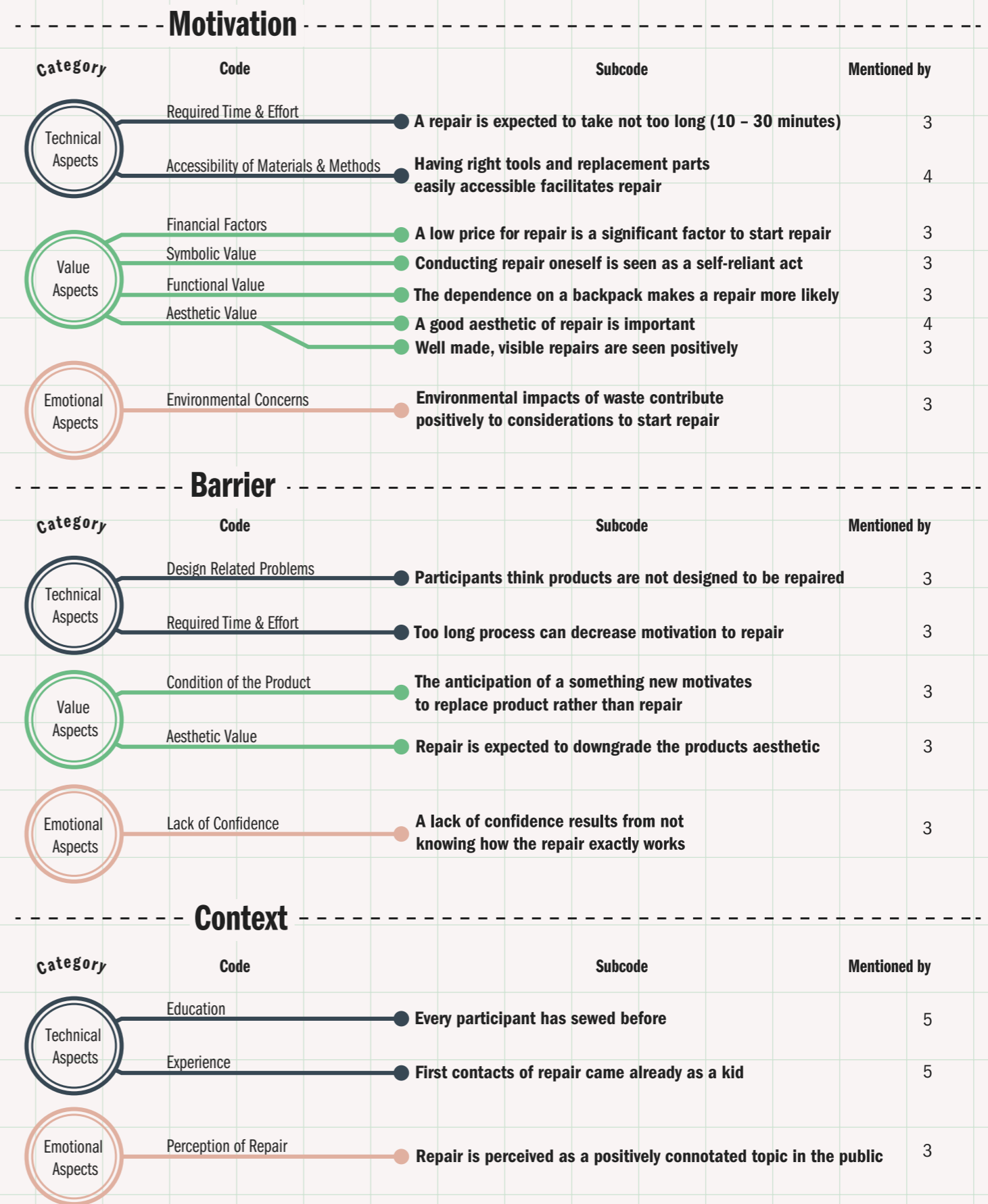
Figure 13 – Coding Results Of The Interviews

answered by each participant.

In general, it became apparent that the different skills and experience levels of repair lead to divergent judgments on the difficulty and effort of repair. While interviewee #1 said that sewing for her is enjoyable to work with because she feels comfortable with the machine and interviewee #2 mentioned that he thinks sewing is quite an easy skill, participant #3 felt that sewing is a different skill set that is out of his comfort zone although he has quite some experience in repairing.

All participants prefer or at least opt for repairing themselves, but the motives behind it can differ. Participant #4, for example, would like to let someone else do the repairing but would feel bad when he knows he could also do it himself. However, the symbolic value of repairing on their own is mostly seen positively. Other participants see the perceived independence or curiosity toward a product as a reason to repair an item themselves.

Motivations:

The theme 'motivations' was meant to analyze what makes users repair. The categories describe different aspects that play positively in the motives to repair.

Required time & effort:

The required time and effort were a reason present during all interviews. Three participants mentioned that a repair should not take too much time accumulating in a span of 10–30 minutes.

Accessibility of materials & methods:

When coming to the accessibility of materials and methods, it is intended as a barrier, and although the interviews showed that participants regularly had negative experiences with poorly explained tutorials for repair – participant #3, for example, said that he is frustrated by easy-looking tutorials that do not work for himself – there was little response specifically on that barrier. Instead, it became apparent that this category works better as a motivator. Four participants mentioned that having the right tools and replacement parts easily accessible would be part of an optimal repair experience that motivates more to repair.

Financial factors:

Repair as a cheap option was mentioned as a significant factor in engaging in repair.

Symbolic value:

The symbolic value can inherit quite different aspects. A repair can, for example, function as a conversation starter. During the interviews, it turned out that repairing oneself is seen as an act of self-reliance. Not being dependent on other companies or stores but being able to do it themselves was seen positively.

Functional value:

Here, the functional value refers to the importance of a product in the user's life. So, something they use daily (e.g., a smartphone) has a higher urgency to be repaired than something they only use occasionally (e.g., hiking shoes). Compared to other objects, the interviewees mentioned that repairing a backpack is expected to be more likely because the dependency on it is higher than on clothing, for example. One participant explained it as: *"I think that's different, like with clothing. You have many clothes. And with a backpack, normally you just bring one. [...] You just do not have an extra spare everywhere."* While many other objects are owned in higher quantities, backpacks probably are owned in lower units.

Aesthetic value:

When it comes to the aesthetic of repair, there were contradictory statements made. Participant #2 mentioned that he really likes the individualizing aspect repair can give to a product and repair techniques such as Kintsugi. On the other hand, he also said that he could not remember a repair that turned out in a different, individualized style. And he also usually opts for mimicking the product as it was in its original state. Participant #4 found it rewarding when a repair looked good but also said that the aesthetic is not that important to him – *"when it works, it works."* In general, participants agreed that repair should look good. However, the opinions diverged on whether a repair could be visible or if the object should look like the original.

Environmental concerns:

Repair is perceived as an environment-friendly act. Par-

ticipants think that repair is good for the environment. However, they do not mention the exact reasons. Only participant #2 says he believes it is good to avoid landfilling by repairing backpacks.

Interestingly – after stating that he thinks repair is a good idea for the environment – participant #4 actually raised the concern that repair instead of buying a new backpack might have adverse effects on the environment: *"[...] You should [...] compare it with how much impact it has on the environment if you buy the whole new bag. [...] If you buy all the separate things, [...] compared to buying [...] one new bag. What makes the most impact on the environment? It might be even worse [...] to buy all the separate things than just buy one new backpack. I am not sure about this, though."*

For the codes 'endurance', 'condition of the product,' 'emotional attachment,' 'perceived pleasure,' and 'perceived negative feelings,' the participants had different perspectives on that topic, or only a few stated their opinion related to it.

Endurance, for example, was only mentioned by two participants. While participant #2 positively mentions that his backpack repair holds up, participant #4 says about one of his repairs that *"it probably will hold for like, I hope, at least a year. [...] Maybe it gets loose again, and I will just stitch it back up."*

Also, for 'emotional attachment,' only participant #3 talked about his backpack being a gift, so throwing it away for a new one is tough because of the emotional attachment.

When talking about perceived pleasure, participant #2 says that he has the *"most fun in taking a broken piece of plastic, model it, remodel it in, in software and print it."* Participant #3, on the other hand, talks about the feeling of accomplishment that makes it pleasurable when he can ride his repaired bike again.

Only two participants mentioned the perceived negative feelings, but here they had a similar reason to repair. Both said they would expect adverse reactions from others when they use a broken backpack. Although, participant #1 mentioned that it needs to be heavy damage – *"it needs to break more. The hole needs to be bigger. [...] The urge needs to be [...] higher. Then I think, okay, this cannot go on. Otherwise, it will be just awkward to walk around with."*

For personal interest, participant #2 mentioned that what he likes about sewing is that *„the tools you need for this, just the thread and a needle, [...] that with only these frugal tools, you can repair something as complex as a backpack."*

Barriers:

In contrast to the motivations, the theme of 'barriers' is on the opposite side. It reveals what hinders users from repairing. The categories here describe the reasoning why people might decide not to repair or not think about it.

Design-related problems:

Generally, interviewees think that products are not designed to be repaired. Participant #2 was upset that often it is only *"minor things that break and ruin the whole product."* Participant #3, on the other hand, thinks that a *"backpack should be so strong [...] you should not have to repair it."* And participant #1 says that companies build their product on purpose in a way that they do not endure too long.

Required time & effort:

Four people talked about the required time & effort. The required time stood out as a common factor. Participant #2, for example, said that he enjoys remodeling the broken parts and 3D-print them the most but that this usually takes the most time. On the other hand, he also mentioned he dislikes hand stitching because *"it just takes ages."* Participant #3 finds it annoying to stitch when talking about it because he cannot do something else during that time. And besides not having the tools and the repair being a demanding task, participant #5 talked about a case where the process would have taken much time. Participant #3 said that when he does not know where and how to repair his backpack, he might procrastinate for quite some time upon it until he gets tired and would just buy a new one.

Condition of the product:

Some aspects of the condition of a product can motivate repair. For example, if a product is not available to purchase anymore, it might be more likely that the broken one will get repaired. As a barrier, the inter-

views showed that the anticipation of something new motivates one to replace a product rather than repair it. Thinking of a better version or a different product stimulated the idea of buying something new.

Aesthetic value:
The aesthetic value can also work as a barrier. For example, when talking about repairing her jeans, participant #1 says that afterward, she uses them as workwear: *"now I cannot wear it to, you know, more formal things."* Also, participant #3 says that he finishes a seam with glue. That makes him more confident a repair will hold, but it does not look nice. For participant #5, the repair skill also caused insecurity about the look of the repair: *"the color of the thread that I was a bit afraid that you did see it, or that I was pulling it too tight that you would also see that you fixed it."*

Lack of confidence:
A lack of confidence in repair can lead to not conducting a repair at all. The interviews showed that when people do not know precisely how the chosen repair works, they lack confidence in it. Participants #1 and #2 stated they did not want to feel stupid not knowing how to repair, while participant #3 said that he had poor experiences with sewing and would not trust the result.

Also, for barriers, some categories resulted in different or very few opinions among the participants. For example, regarding the required skills for repairing backpacks and textiles, participant #3 says, *"I feel like I need a different skill set that I do not have."* A similar code, 'required knowledge,' was mentioned by participant #5, saying that she does not know how to repair her backpack and, therefore, expects not to repair it herself. Participant #3 is more specifically talking about how he does not know how to finish a seam when he finishes stitching: *„That is the part where it gets too technical for me."* For the code 'endurance,' participant #4 mentions that he would probably buy a new backpack when a backpack repair would only last for a couple of weeks.
Regarding the reversibility of a repair, participant #5 talks about a repair experience where she was afraid she might not know how to put the parts back together

and take a risk.
The financial factors were not as extensively mentioned as expected, and the reasoning differed between participants. For participant #2, the financial barrier was that he was scared to break his toothbrush during repair to a state where it does not work at all anymore, and he could not buy a new one because he had no money. So having the money to buy a new one would have actually motivated him to repair it. Participant #3 says that when he gives his backpack to a repair service and repairing the zipper would cost above 40€, then *"I would also be quickly interested in just getting in a different backpack."* Participant #5 talks about how she would buy a new backpack if a better version is available, she adds that it also should not be too expensive. So, the barrier is not directly linked to the repair but is a motivating factor in buying a new product.
Participant #3 was the only one who mentioned a fear of a negative stigma on repairing: *"I [...] feel like whenever [...] I would walk around in trousers that have this hole that clearly has been repaired it would not be good for my image."*

Context:
Next to the motivations and barriers, the intention was to get information on how people came in touch with repair, where they learned it, their experience level, how they perceive repair in their environment, and how, in their opinion, repair should be communicated.

Experience:
Of all the interviewees, everyone stated that they already had experience in sewing before. The skill levels, though, were different. Participant #4 mentioned that *"sewing is the required skill, and I have bad experiences with that. Very limited but very bad experiences."* Participant #1, on the other hand, is very confident working with the sewing machine and also repairing pants for her friends. Also, three interviewees seem to think of sewing being done by hand instead of a machine.

Education:
All participants came in touch with repair already as a kid. Three participants (#1;#3:#5) stated to have come in contact with repairing through their parents. Participants #4 and #5 also mentioned having had classes

in school that taught practices to repair. *"During high school for six years. [...] I learned how to stitch like and to sew."*

Perception of repair:
The opinions diverge a bit in this category, but the participants generally perceive repairing as a positive topic in society. Some participants, though, think it is not that popular yet, while others feel it very much is and is gaining more attention. Participant #1 sees repair as a popular topic, especially with *"repair cafes [...] popping up, and I think it is such a cool concept."* Participant #5, on the other hand, states: *"I do not think it is very present, to be honest."*

Communication of repair:
All participants had opinions on how repairing should be communicated to make it more engaging, but the ideas differed. What was interesting, though, was that participant #4 said that he thinks it should not be possible not to see the message to repair. It should, for example, be included in the backpack, so everyone must see it. Participant #5 thinks people should be prouder of their repairs and talk about it with others to inspire: *"I think people need to be a little bit prouder when they fix stuff because then they talk about it. And then maybe the other person also thinks, oh, maybe I can do that too."* Interviewee #1 went in a similar direction and thinks that the communication of repair needs to be more than the functionality of it. In her desired process, she wants a motivational tutorial that gives confidence and takes pressure away.
While participant #1 stated that, after talking about it in the interview, she wanted to repair her broken backpack, participant #5 actually sent an image of her repaired backpack a few days later. And participant #2 also said that whenever he repairs something, he tells people about it and shows it to them.

User journey:
The questions were designed to understand the motivations and barriers for people to repair, their repair process, and how they think it could be improved. The user journey visualizes the steps they take from the decision to repair until the end of the process. It stood out

that one of the first steps for people is to look online for resources. Common resources were YouTube and Google. While the feelings before the repair process were mixed – ranging from being stressed to confident – a commonality was the negative feelings or emotions people often had during the repair process.
When the repair was successfully finished, people mostly described having positive feelings. Two participants, for example, stated they are proud when they complete a repair.
Also, for the repair itself, participants appreciate it when repairs do not take too much time. When talking about repairs, the period mentioned was 10–30 minutes in total.

1. GATHER INFORMATION

2. GET TOOLS

4. CONDUCT REPAIR

5. FINISHING REPAIR

Actions

· Search sources online
(e.g. YouTube, Google, Reddit)

· Contact producer
· Find right needle & threat
· Find right yarn

· Sew or glue
· Just go for it
· Improvise

Feelings

Confident about a
successful repair

Pleasure being
comfortable with tool

Good to feel
independent

Proud to have
completed a repair

Time stress

Anger

Process itself
is not fun

Frustration

Insecure if
repair will endure

Problems

· Badly explained tutorials

· Missing time & place
· No access to the right tools

· Feels out of skillset
· Sturdy materials are difficult
· Don't know how to finish seam
· Helpless when it goes wrong

· Not trusting the end result

Desires

· If to hard let someone do it
· Clear tutorials and spare parts

· All tools need to be ready
· Clearly labelled replacement parts
· Easily accessible spare parts

· Easy to fix
· Short time needed
· Don't feel stupid
· Get confidence

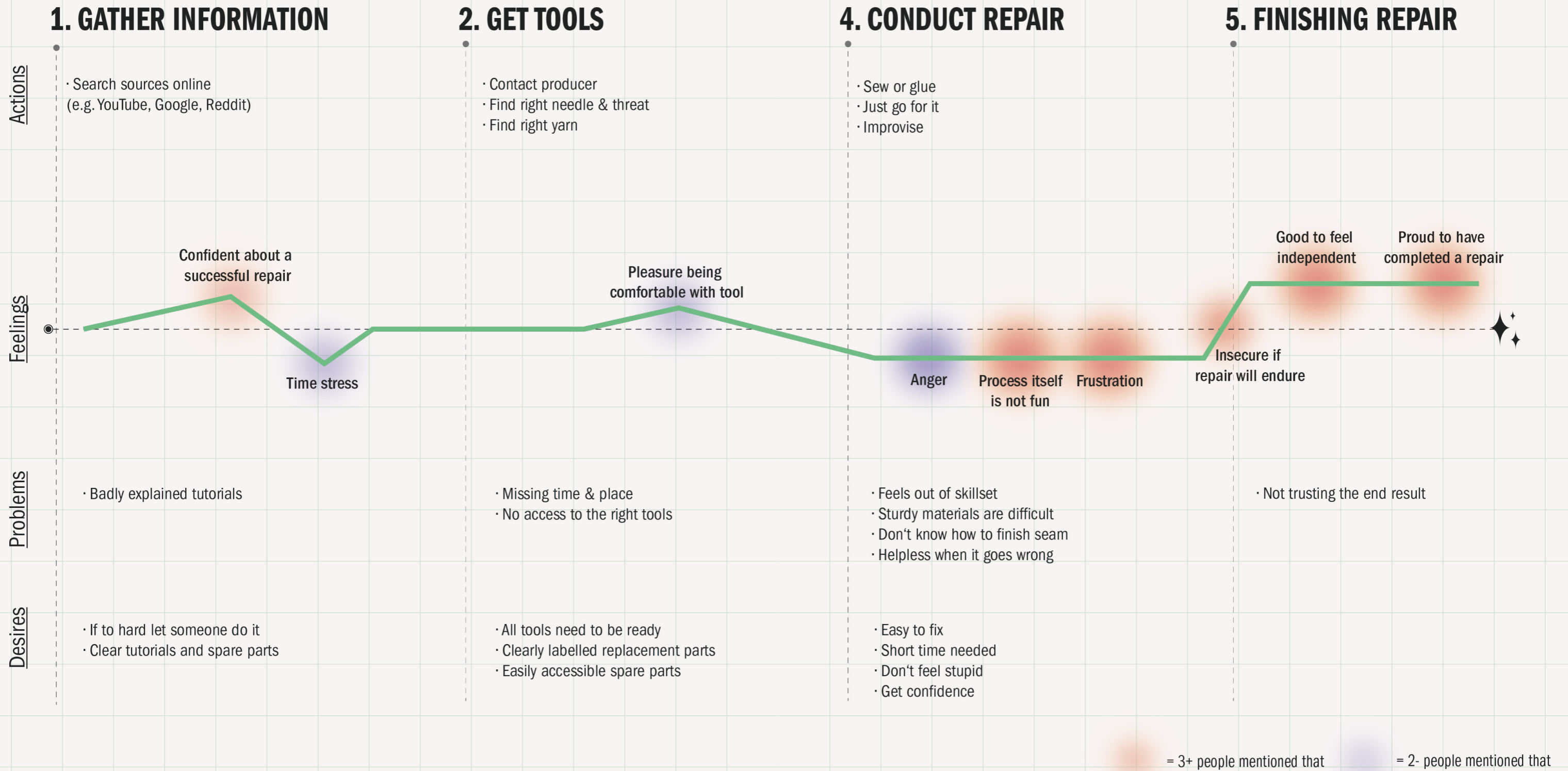= 3+ people mentioned that   = 2- people mentioned that

Figure 14 – User Journey Based On Interview Insights

Concluding:

The interviews gave valuable insights into the field of repair and especially on backpacks. For 'time & effort,' participants stated that a repair should not take too long (10–30 minutes) and can be demotivating when it takes longer. This corresponds with what the literature suggested. Also, the accessibility of materials and methods was stated as a problem in the literature before. In the interviews, though, it was mentioned as a motivator when materials and methods are easily accessible instead of a barrier when they are not. The controversial topic of repair aesthetics was confirmed as well. Participants agreed that a repair should look good, and visible repairs are mostly seen as positive. However, it was also mentioned that some people often opt for the initial look of the product when they repair something. Also, participants stated they think products are generally not designed to be repaired. Another exciting aspect is that participants see repairing themselves as a sign of self-reliance to be more independent from companies. For the price, participants mentioned a low price as a motivational factor to repair.

Although the interviewees made different statements about the communication of repair, it should be considered that repair should also motivate them to talk about it with others. While participant #1 stated that, after talking about it in the interview, she wanted to repair her broken backpack, participant #5 actually sent an image of her repaired backpack a few days later. In the interview, she already mentioned that it is nice to talk about the story that a repair creates. And participant #2 in the interview also said that whenever he repairs something, he tells people about it and shows it to them.
Another aspect that did not become directly clear from the categories was that it could be beneficial to repair any damage on a backpack instantly when it occurs to motivate further repair in the future. Participant #5 thinks that if a backpack is new, the urge to repair it is higher than with an older backpack. Moreover, participant #4 talked about his backpack being broken already for two weeks. After having contact with him a few weeks later, he still had not repaired it. Linking that to the statement of participant #2, who said, *"I fixed it five times now, why should I throw it away now? Like, how can the next rupture or so keep me from repairing it again if I have already taken the time to do it five times?"* following assumption can be made:

When something breaks, the earlier it gets repaired, the more likely it is to be repaired again. Participant #2 also mentioned in the context of repairing his jacket that you bond with it after it is fixed. Also, the literature suggested that a repair creates a stronger bond with an object (Terzioğlu, 2021). So, starting with it as early as possible could positively influence the backpack's lifetime.
A different topic that sounded more like a positive side effect rather than an explicit motivation to repair was the environmental aspect.
Furthermore, the category 'lack of confidence' showed that knowing how to conduct a repair can give people more confidence.
In my opinion, another important point from the research is the aesthetic of repair. In the literature review, it already became clear that repair aesthetics is a controversial topic with different opinions. The interviews supported that. But they also gave interesting insights into the aesthetic, in general, being essential. And if a repair is aesthetically not pleasing, it can further function as a barrier to repair. Therefore, a promising direction to go is creating a repair that is visually pleasing and recognized positively by the user and the people around.
The user journey gave interesting information for the further process of the project. As it shows, there are three situations that stand out. The first one is that participants tend to have a positive 'can-do-attitude' toward repairing at the beginning of the process and a positive feeling of being proud of what they achieved after completing a repair. In contrast, they tend to have negative emotions (anger, frustration) during the process.

Discussion:

The interviews produced valuable insights into the motivations and barriers of people to repair, especially backpacks. Specific insights on that were not found in the literature. Therefore, the research results supported the project's further development. For further research, inviting only participants with backpack repair experience could bring more profound results focusing on backpack repair. The question, then, could also be more directed toward backpack repair. Also, interviewing more participants could bring a greater variety of opinions and insights.

TAKE AWAYS

The field investigations helped to understand better users' motives to repair and the damages the damage types that occur on backpacks. The findings and conclusions help to specify the problems that pave the way for a final concept. Additionally, a personal aspect was to gain more experience in interviews.

· The research showed that 23 of 25 people have a broken backpack at home, meaning there is potential for repair.
· Although expected the other way around, the most common damages were ripped fabric (62%) followed by broken zippers (23%).
· In the interviews, it became clear that important factors are the time and effort required to repair and the accessibility of materials and methods.
· Participants mentioned a low price for a repair as a motivational factor.
· The interviews revealed that the aesthetic of repair plays an important role. Interviewees had different opinions on what a repair should look like, making it an interesting topic to consider.
· Research showed that the aesthetic of the repair should be pleasing
· Surprisingly, the participants mentioned the symbolic value of repairing as an act of self-reliance as an important factor.
· Although expecting environmental concerns as an essential motivation to repair, it seemed participants perceived it more as a side note or additional benefit.
· The user journey helped reveal that the repair process is mostly seen negatively, while the start and finish are the moments people experience positive feelings.

Problem Definition

Discover

Define

Problem
Definition

Develop

Deliver

This chapter describes the problem definition and the requirements for a design solution. The literature review and field investigations gave insights into the problems that exist for users in repairing their backpacks. These are used to form a problem definition with requirements that, afterward, are the base for a brainstorming session to generate different solution ideas.

Prøblem Def!nition

As investigated during the project, for backpack users, the problem of not repairing their backpacks is based on several factors. A relevant issue with not repairing is that users face problems in successfully making use of the techniques needed for repair, especially when they have little experience. Also, repairing is often perceived to downgrade the aesthetic value. The interviews supported that. It became apparent that a repair that takes too long will decrease the motivation of users to repair, and the process of repairing itself is often seen as frustrating.

Generally, in the current state, it is problematic that most backpacks are not designed to get repaired. Examples like the Ortlieb or PackBag show that they make efforts, but their repair strategy is based on exchanging bigger parts instead of fixing the broken spots on the backpack. Some brands, like Patagonia, Vaude, or Ryzon, offer repair services or tutorials on how to repair. However, the provided services often are not clearly understandable and have limitations, like high prices, limited skills, or regulations limiting the repair range. Also, the repair tutorials cover very basic exercises like changing a buckle, where no extra tools are needed. These are also only provided in a rudimental manner and by a few companies but by far not the majority, which makes a coming change toward user-repaired backpacks less likely.

Therefore, the goal is to develop an affordable product that will support users – that have little repair experience – in repairing ripped fabric on their backpacks by teaching them repair techniques they can enjoy, and that ensures that the repair can aesthetically be valued by the user while making it worth the time needed.

The requirements that evolved from synthesizing the most important insights from literature and field investigation are as follows:

From the literature:
The concept should...
· *Use the aesthetic of the repair to create meaning for the user*
· *Make the repair worth its price*
· *Be easily accessible for non-experienced users*

From the interviews:
The concept should...
· *Make the repair worth the time needed*
· *Educate repair techniques for a feeling of self-reliance*
· *Make tools and materials for repair easily accessible*

The product or service should offer an easy, accessible, and affordable way for users to repair ripped fabric on their backpacks and teach them repair techniques – in an enjoyable, playful manner – they can make use of for future repairs as well as giving them a chance to adjust the aesthetics of the repair to create a stronger bond with their backpack.

The focus on ripped fabric was set because it is the most occurring damage on backpacks.

3D modeling and physical prototypes are used to embody and develop the concept.

Ideation

After narrowing down the analysis phase toward the requirements stated in the previous chapter, the next step is to diverge again and start generating many ideas. In a brainstorming session, multiple ideas and concepts for a design that fit the requirements from the last chapter were created. Building on the defined requirements, the design outcome needed to align with these and offer a way to improve the current situation for backpack repair.

Brainstorming

The first stage of the process was intended to think of many ideas that connect to at least one of the stated requirements. Therefore, a brainstorming session acted as a facilitator in the ideation process by generating various ideas.

The problem statement served as guidance for the scope, and the requirements were turned into 'how might we' questions based on the IDEO design kit method for better facilitation toward brainstorming (IDEO, n.d.-a):

· How might we use the aesthetic of a repair to create meaning for the user?
· How might we make the repairing process worth the time needed?
· How might we make the repair worth its price?
· How might we educate repair techniques to give users the feeling of self-reliance?
· How might we make the repair easily accessible to the user?

Procedure:
Therefore, the requirements were listed. Three participants took part in the brainstorming session to increase the number and variation of ideas and possibly build on them. The brainstorming rules by Roozenburg and Eekels were used for optimized work efficacy (1995).
The session was set for around 60 minutes, including a short introduction to the project, so participants knew the context. After that, the first part began with participants sketching out and writing down their ideas. Thereafter, every idea was discussed and often opened up additional ideas that built on the presented ones. The first part was intended to freely think of any ideas that went in the direction of a product, tool, service/website/app related to user behavior. It was meant to get a high quantity of ideas in different directions that can be chosen from.
For the second part, the focus was set on the user journey that emerged from the interviews. Three points were interesting for the brainstorming: the beginning (where users tend to feel positive and confident about

conducting a repair), the repair process itself (where users had more negative feelings expressed in anger or frustration, for example), and the successful completion of a repair (where users were proud and happy to have finished the repair). Then, again, the ideas were presented, and new features that evolved were discussed.
After the brainstorming session, all ideas were reviewed and bundled into themes (Appendix – Brainstorming). By evaluating the requirements that the ideas met (Appendix – Brainstorming) and combining them to fulfill all of them, three concepts evolved from that.

Concepts

The concepts from the brainstorming were combinations of different themes that emerged during the session. As a result, three concepts from different areas were chosen, which are presented in the following.
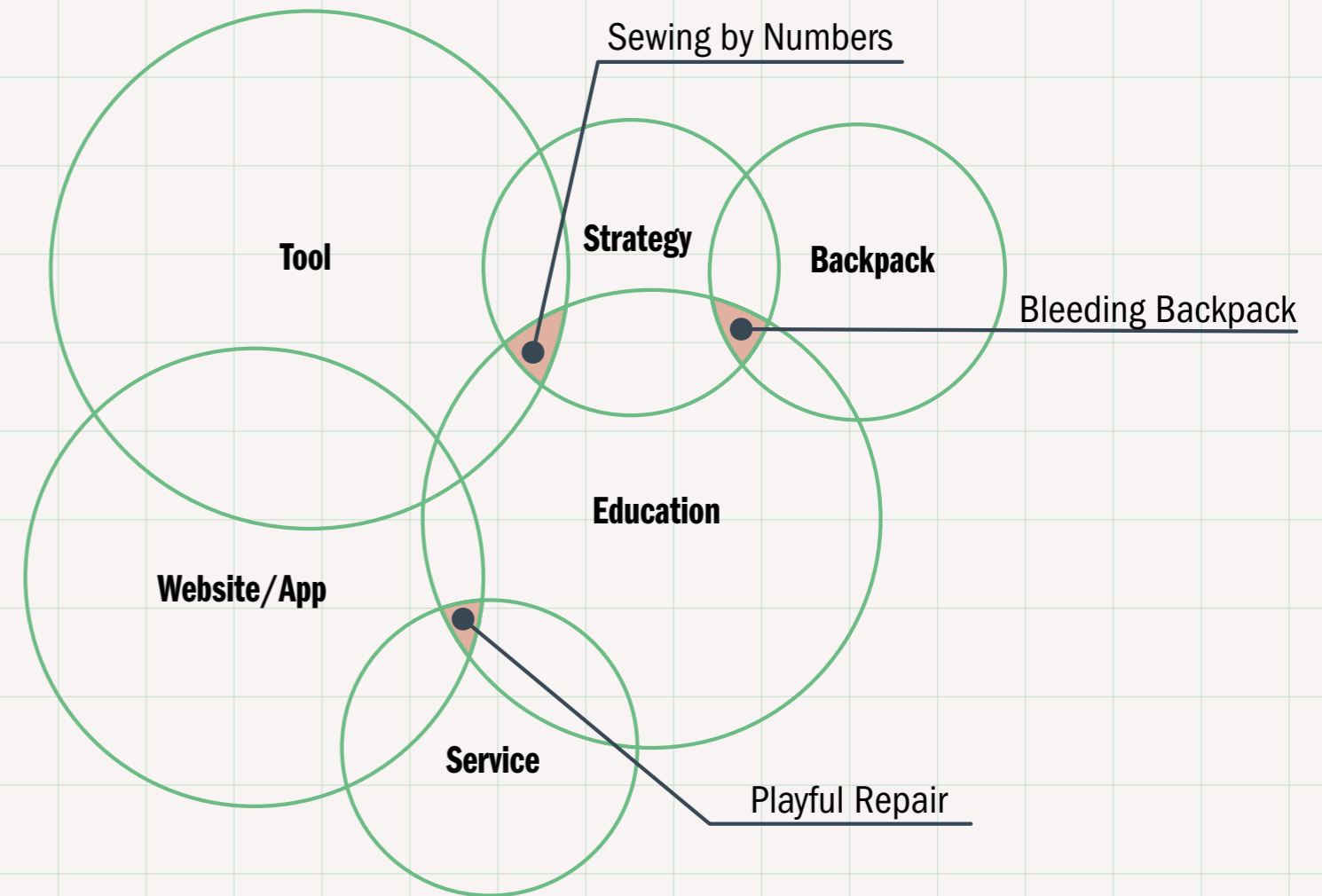
Figure 15 – Theme Clusters Of Brainstorming Ideas

Playful Repair:

The playful repair concept is an app that helps the user choose their repair aesthetic better, getting access to the right tools, materials & techniques and making it enjoyable through gamification elements in the process. The use flow lets the user choose a preferred repair style, get the proper tutorial for their needed repair, and which tools and materials they will need for that. In addition, a database helps to determine better the required tools and materials (glue, yarn, materials, colors) based on the brand, model, and material. Through different levels during the repair process, the user has multiple small successes that make the process more rewarding. Photographing the process in-between allows the user to see a before/after of the repair.

The business model relies on either purchasing the tutorials, a subscription to get access, or selling the tools and materials needed through a store in the app.

Requirement check:

· Use the aesthetic of the repair to create meaning for the user: By choosing the repair style, the user makes their own decisions during the process. The individual style also creates a stronger bonding between the user and the backpack.

· Make the repair worth its price: By being able to buy the products needed for repair, users have the choice if they want to pay the amount. A pay-per-tutorial or subscription model could also give users freedom of choice while maintaining revenue.

· Be easily accessible for non-experienced users: Tutorials give step-by-step instructions for non-experienced users

· Make the repair worth the time needed: Through gamification and rewards, the repair is an enjoyable experience. In-between goals give small success feelings as well.

· Educate repair techniques for a feeling of self-reliance: The tutorials teach a variety of techniques for repair.

· Make tools and materials for repair easily accessible: The app says which tools exactly are needed. These are not directly sent when downloading the app but can be bought via the app.
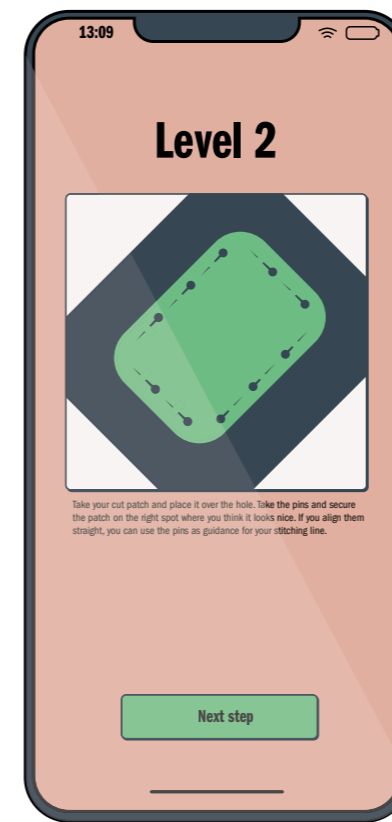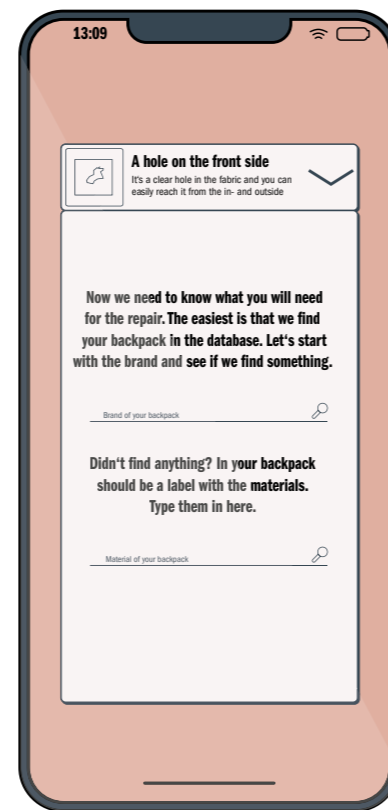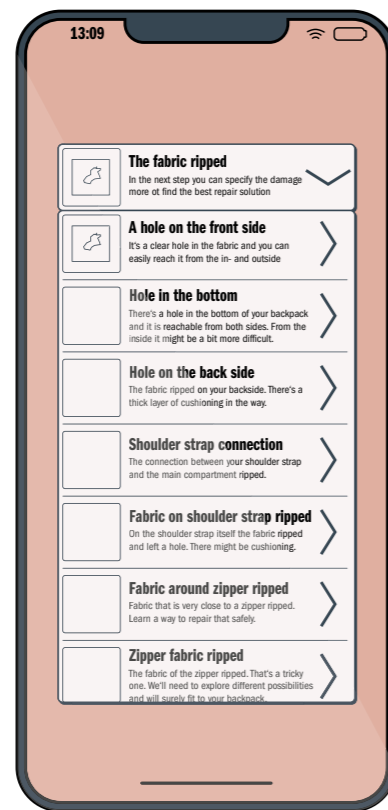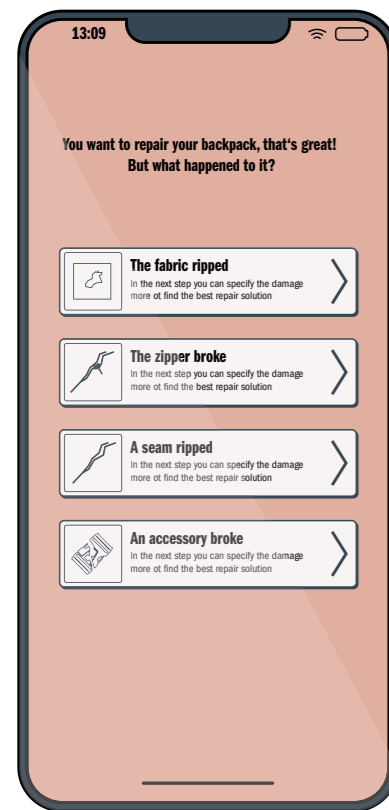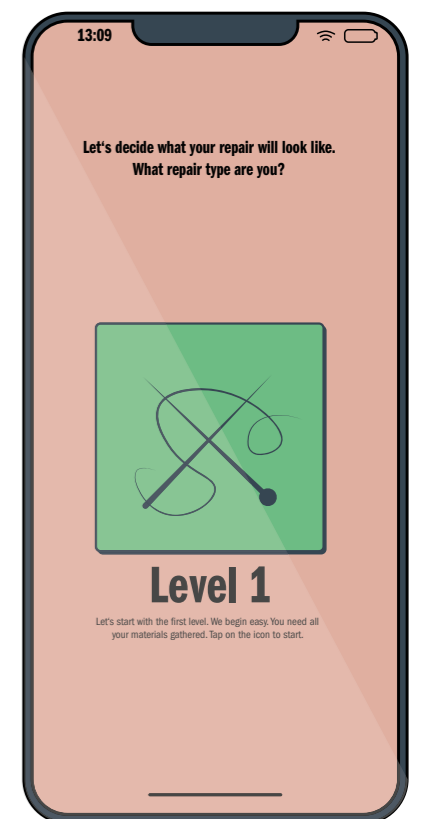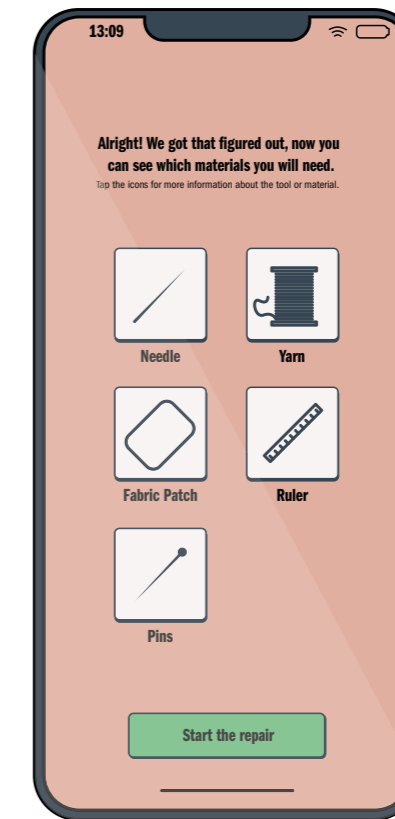
The Bleeding Backpack:

The bleeding backpack is a concept that metaphorically shows the injuries that occur during its lifetime. A 3-layer multicolored material indicates the urgency to repair the 'injury.' The outer layer is the standard visible fabric of the backpack. Underneath it is a green layer that shows up when the outer layer rips. If that one also rips, the occurring red layer indicates that a repair is needed as soon as possible. The time until a repair is required can be adjusted through different thicknesses/strengths of the layers.

Once a rupture happens, first aid is needed. Essential tools for repair, like a needle, thread, and a patch, are included in the backpack already. The patches are visually referring to Band-Aids to complete the injury analogy. They also show that the user takes care of the backpack. These patches can be sewn on the backpack where the damage is located. A QR code inside the backpack links to further explanations on how to conduct the repair.

Requirement check:

· Use the aesthetic of the repair to create meaning for the user: By communicating the vulnerability of the backpack visually as a first aid process, following the process of human first aid, the connection to the backpack is more emotional and, therefore, stronger.

· Make the repair worth its price: The repair material is in the backpack included. Therefore, the price is mainly paid for the backpack itself, making the repair a positive add-on that does not feel like paying extra.

· Be easily accessible for non-experienced users: Tutorials linked to the QR code give step-by-step instructions for non-experienced users.

· Make the repair worth the time needed: Also here, the emergency communication makes the repair more emotional and, therefore, the time to repair worth spending. Also, the patch concept is meant for more minor, fast repairs.

· Educate repair techniques for a feeling of self-reliance: The tutorials teach different techniques and give tips for repair. Users will know repair techniques for following projects as well.

· Make tools and materials for repair easily accessible: The backpack includes patches for repair and the needle and thread for sewing.

"3-layer safety technology"

Mid layer
indicating a need for repair soon...

Inner layer
indicating urgent need for repair

Outer layer
Standard outer fabric for looks and functionality

Different thicknesses can influence how fast which layer will show up

Your backpack got hurt? Here is a first aid instruction
1. Take a plaster from the side.
2. Tape the wound of your pack
3. Use needle & thread to stitch the plaster on the fabric and secure it.
4. Your buddy is good to go again.   pull one out here →

Scan here for more tutorials & info

Sewing by numbers:

The sewing by numbers builds on the idea of making the positive moments stay in mind. Instead of making the negative feelings more positive and evening out the emotional journey, the idea is to improve the positive moments. Because humans tend to remember peak moments, negative ones, as well as positive ones, better than the whole process, more positive memories of the activity might be achieved by improving the positive peaks (Heath, 2022).

The concept is a patch with the stitching technique printed on a top foil to educate the user on repairing. The printed process makes sewing by numbers easy to follow. The precut stitching holes make the repair easy to conduct, and the look of it is smooth and even. A foil on the repair patch is pulled off at the end of the repair to reveal the final work. The idea is based on the unboxing process of TVs or smartphones. It recreates the rewarding feeling of this procedure. The pleasurable feeling of having bought something new helps to make the repair more valued by the user.

Different patterns and color codes can be used to teach different sewing techniques or to individualize the aesthetic of the repair if wanted. In addition, they come in different sizes to fit various sizes of damage.

Requirement check:

· Use the aesthetic of the repair to create meaning for the user: The self-made repair gives meaning to the user. By repairing oneself, the user experiences a self-reliant feeling. In addition, the easy-to-use design of the patch ensures a trouble-free repair procedure.

· Make the repair worth its price: The patch is a simple, small, yet effective product that is not expensive to produce but easy to use.

· Be easily accessible for non-experienced users: Tutorials give step-by-step instructions for non-experienced users directly on the patch, making it a hands-on learning experience.

· Make the repair worth the time needed: The indications on the patch are made easily understandable for a fast and enjoyable repair.

· Educate repair techniques for a feeling of self-reliance: Different patches can teach different techniques as an initiator to learn sewing.

· Make tools and materials for repair easily accessible: All tools needed for the repair are included

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FOIL TO PULL OFF

INNER REINFORCEMENT LAYER
USE IT IF THE BACKPACK MATERIAL ALLOWS FOR IT. DO NOT USE WHEN YOU NEED TO STITCH THROUGH PADDING OR OTHER THICK MATERIALS.

PACKAGE

EXPLANATIONS
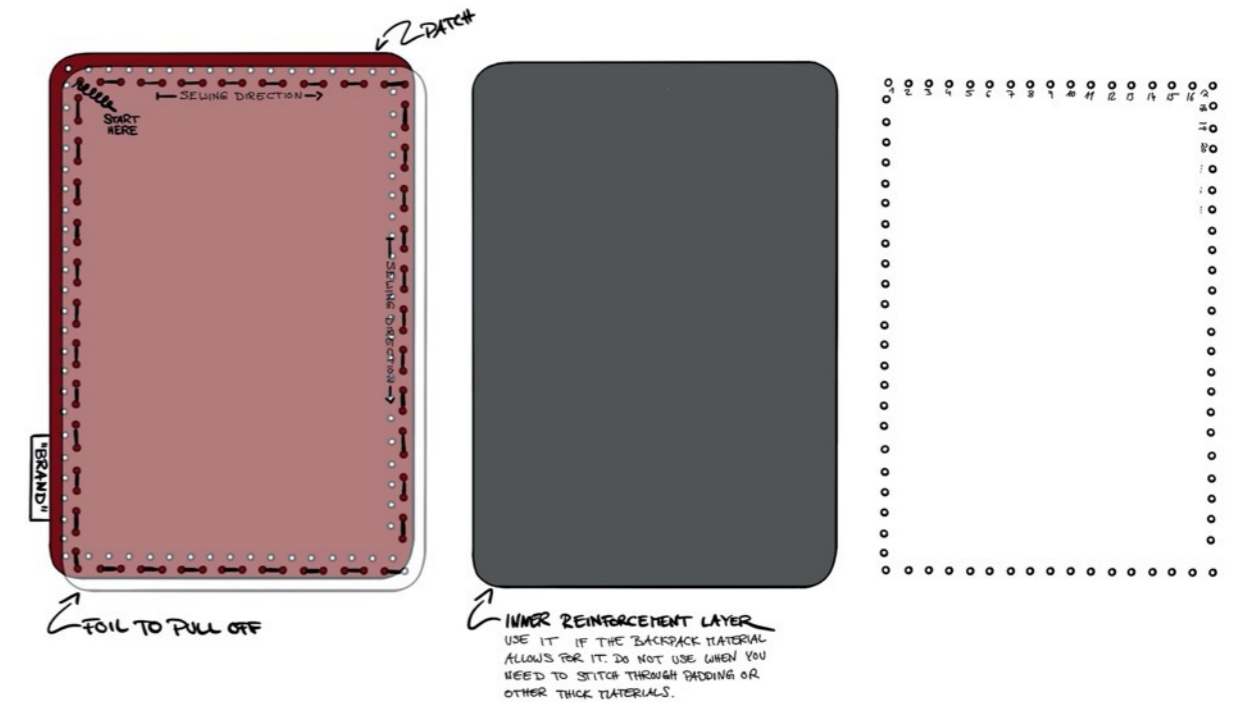
Product Concept Evaluation

The three concepts were evaluated through a concept evaluation with participants' feedback. The last concept, 'sewing by numbers,' was favored by three of five people. One participant mentioned that he could imagine combining the 'playful repair' concept and 'sewing by numbers' could work well.

Furthermore, a Harris profile helped visualize the concepts' advantages and see which one has the most promising result. Weighing the importance of the categories was assessed by discussing and ranking them together with three participants.

	--	-+		++
Aesthetic meaning				■
Accessibility			■	
Priceworthiness			■	
Worth the time			■	
Education				■

	--	-+		++
Aesthetic meaning			■	
Accessibility			■	
Priceworthiness		■		
Worth the time			■	
Education		■		

	--	-+		++
Aesthetic meaning			■	
Accessibility				■
Priceworthiness				■
Worth the time				■
Education			■	
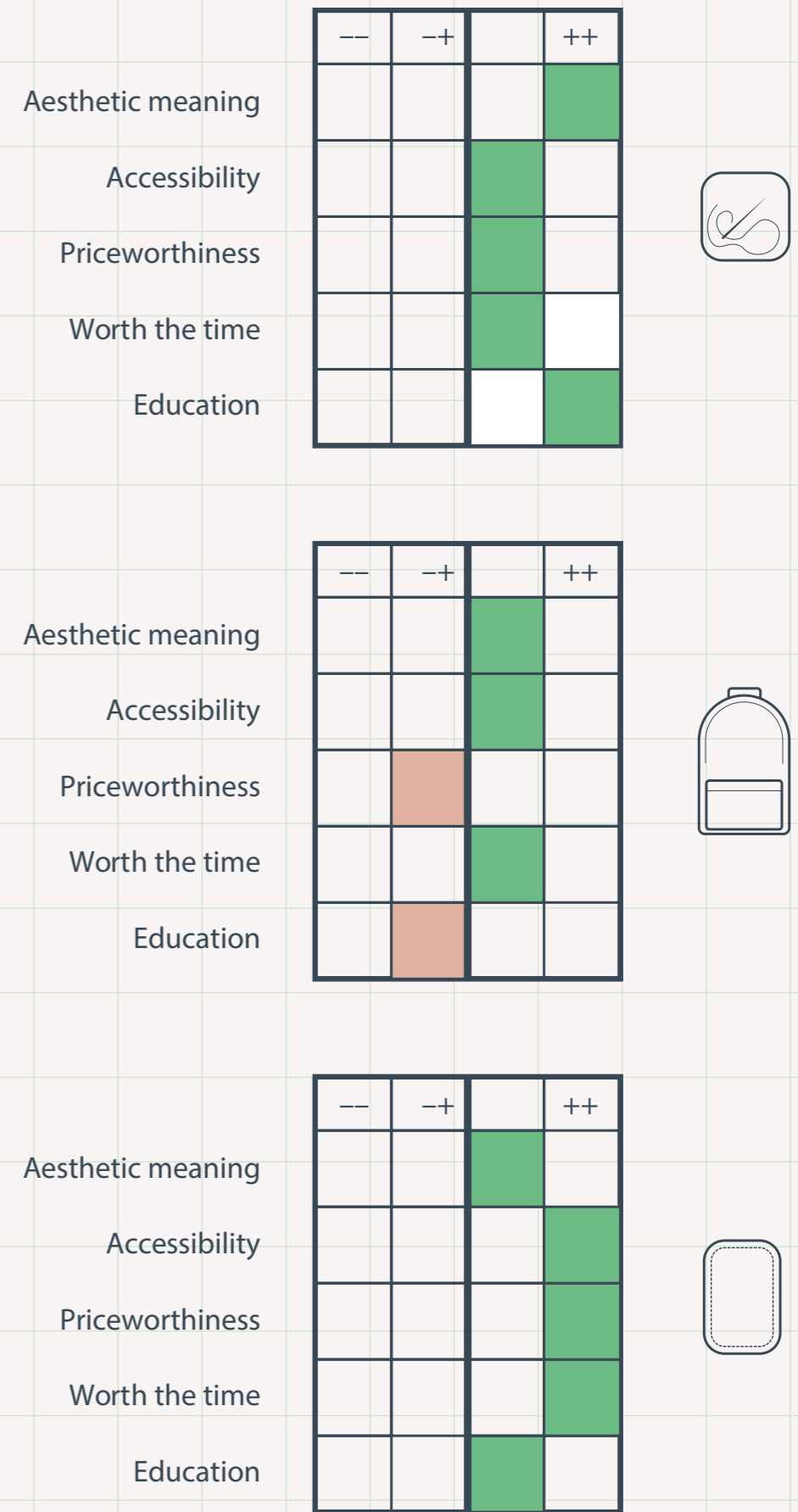
Figure 16 – Harris Profile

Concept Development

Discover

Define

Develop

Concept
Development

Deliver

After deciding on the concept solution, further design refinement was needed to make it feasible. This chapter describes the prototyping, development, and testing of the concept. The procedure is described, and the changes were made to continue with the product's business planning for further refinements toward the final concept state for the project.

First Prototyping

After deciding on the concept, the first step was creating quick prototypes to get a feeling of how the idea could come to life and work. Figure 17 shows the first prototypes to test the patch's functionality. The main conclusions from this, before the next step of user feedback, were:

· *The foil on the patch needs to be as flexible as the material itself.*
· *Also, the foil needs to be easier to pull off*
· *The holes for sewing need to be cut out clearly for easier stitching.*
· *A specific type of stitching needs to be chosen, which will be indicated on the foil on the patch*
· *A solution for how to start and end the stitching needs to be found.*
· *Create clear indications on how to use the product.*
· *A smaller size of the patch*

Therefore, the second prototype, used for the first user evaluation, was refined to match the above-stated conclusions. The patch size was 100 x 60 mm. A running stitch was chosen as it is an easy technique to car-

Figure 17 – First prototype tested

Figure 18 – Prototype laser cutted

ry out and a classic type of stitch with good strength (Cooperative Extension Service, n.d.). The revised model can be seen in Figure 18. It has the stitching lines printed on the flexible foil that can be pulled off after finishing. On the patch are printed instructions (sewing direction, where to start, a reminder to make a knot in the thread, an explanation of the stitching line) and a logo. The holes were laser cut for an even distribution that makes the seam's aesthetics pleasing and makes stitching by hand easier.

Product User Evaluation

After finishing the first prototypes, the product user evaluation was set up to get insights from participants on how the product is perceived, what works well, and what needs to be improved (Zijlstra, 2020).

The critical points tested were functionality, understandability, and feelings. The session was meant to gather information on how users handle the stitching of the patch and if it works in the supposed manner. Also, the goal was to find out if users understand how to use the patch and where problems might occur. The focus points for the testing, therefore, were:
· *How do participants perform stitching the patch onto the fabric?*
· *Do participants understand how to use the patch?*
· *What information do they need in order to understand it?*

Figure 19 – User testing with the prototype

· *Which feelings do the participants have towards the product concept idea?*

For the testing, the prototype (Figure 18) was given to two participants, in separate sessions, together with a short explanation of what it is for. It was not laid out in detail, so participants still had to figure out how to use it. Nevertheless, general information on what the patch is for and in which cases it can be used was provided. The participants were then asked to sew the patch onto a backpack/piece of backpack fabric, and the time they needed was tracked. During the process, the participants had to explain how they perceived the process. At some points, they were asked which feelings or experiences they had at that point. Also, pictures from the process were taken (Figure 19, 20).

Afterward, participants were asked to summarize what they had been saying during the test and to add thoughts and comments left. From both evaluation sessions, the following insights were gathered:
· *It needs to be made clear that the foil will be pulled off at the end.*
· *The patch needs to be adhesive to be fixated on the fabric to stay in position during the repair.*
· *The instruction print needs to be bigger for better*

readability.
· *The distance between stitches might need to be increased for easier sewing.*
· *The instruction and start of sewing should be positioned on the top left of the patch as it relates to the natural reading direction for languages with the Latin alphabet.*
· *A durable solution to secure the thread when finished sewing is needed.*

Generally, the idea and the product were taken on positively. Participants enjoyed the easy guidance of the sewing and the even look of the stitching line afterward.

Especially the revealing moment when pulling off the foil was perceived as positive. Participants confirmed

Figure 20 – Revealing moment during user testing

the concept's intention, that pulling off the foil gives the feeling of unboxing a new product. Both participants needed just under 20 minutes to finish the repair.

Continuing Prototyping

After the product user evaluation, new prototypes were made to translate the gathered insights into practice. The revised prototypes included the following new features:

· *Pre-cut holes with a diameter of 1 mm, adapting to the diameter of the sewing needle.*
· *4 mm distance between each hole, allowing easier sewing.*
· *Graphic icons indicate the steps for repair, including an icon to pull off the foil as the last step.*
· *The logo was made smaller to create space for the icons. Their reading direction is from the top left to the bottom right.*
· *The starting point to sew is located on the top left as well.*
· *An additional hole was added to secure the thread when finishing*
----

2. Product User Evaluation

With the improved prototype that incorporated the feedback from the first evaluation, a second product user evaluation was set up to validate the findings from the first round and look for further refinement points.

This time, the intentions were to validate the prototype's changes and explore new points for improvements and changes. Therefore, the primary attention of the session was set on the following:
· *How do the participants take on the improved features?*
· *How well do participants understand how the patch should be used?*
        · *How are participants performing compared to the previous prototype?*
· *Which feelings do participants have during the process?*

The setup was the same as with the first session. Two participants were given the prototype in separate sessions. Again, they were given general information on what the patch is for and in which cases it can be used.

The participants had the same task to sew the patch onto a backpack/piece of backpack fabric while the time they needed was tracked. Also, here, the participants had to explain how they perceived the process. This time the focus was set more on how participants handle the beginning of the sewing and the securing of the thread at the end. Pictures from the process were taken as well (figure 21, 22).
The insights gained after a quick recap with the participants are summarized as follows:
· The instructions need to be more detailed to be better understandable
· Little elements that show the progress could motivate the user
· If the needle is already threaded and a knot in the thread, this facilitates the process for the user
----

Figure 21 –Revealing moment during second testing

Figure 22 – testing with an adhesive back of the patch

Business Planning

Develop

Deliver

Discover

Define

The business planning describes the strategy around the product. The following analyses are meant to work out the competition of the product, the target group, and a business case. Finding the commonalities with other products is important to highlight the differences that make the product stand out and target the right users. The circular business canvas marks the starting point of the analysis.

Naming:

Lastly, the product concept needed a name for the branding and further business planning. After a short brainstorming, the name Ripp'd was chosen. It reflects the literal description of the damage that the product solution can repair. The term Ripp'd has a rough sound that describes the damage in its meaning and reflects it phonetically. Furthermore, the name is easy to pronounce, even in different languages, and easy to remember. Finally, using the apostrophe creates a unique spelling that creates its own name instead of a literal word.

Circular Business Canvas

Repair is an important strategy in the CE and, therefore, already fulfills the circularity part through the product itself. However, the business model should also reflect these strategies and values. Therefore, the 'circular business canvas' by Nussholz was chosen (2018). It functions as a starting point for further planning the business behind the product solution.

----

	collect & reintegrate (substitute primary materials)	First sale (with prolonged use)	Collect & reintegrate (organize take-back)	Enable material recovery
Value proposition				
Offer	Using recycled materials for patches and thread; using production leftovers/material excess from backpack production	Repair patch with guidance, needle & thread	Take-back for backpack recycling	Material recovery of backpacks, patches, and plastic
Value proposition	Use of low impact resources for a repair product	Easy to follow, accessible repair experience; Give feeling of having something new by repairing; potential for the user to bond with the backpack; feeling of doing the right thing	Voucher for next purchase	Recycling of old backpacks and patches for new products
Customer segments		Private individuals who want an easy & engaging repair experience; private individuals who have no experience in (sewing) repair	Customers; backpack users	
Relationships customers/partner	Collaborative/transactional with recycling facilities	Transactional/ community based	Transactional with customers; retail for take back	Collaborative with backpack brands, recycling facilities
Value creation and delivery				
Key activities	Relationship management (what does it mean?)	Production management; supply chain management; Product development; sales; shipping	Motivating return; collection of material for new patches	Support EOL management
Key resources/capabilities		Recycled materials; patents; employees; brand; community		
Key partners	Production factories; recycling facilities; backpack brands	Production factories; backpack brands; retailers	Retail and recycling facilities	Recycling facilities; backpack brands
Channels	Recycling facilities	Website; social media; retail	Retail	Recycling facilities
Value capture				
Costs	Resource costs	Production; advertisement; operations	Partnership deals; shipping (?)	
Revenue flows		Paying customers; collaborating brands; retail	Partnership deals; shipping (?)	

Figure 23 – Circular Business Canvas

4C Analysis

For the final concept, the 4C analysis facilitates the brand's positioning. It is based on four pillars 'competitors,' 'company,' 'customer,' and 'context' (Hultink, 2021). For sources of the analysis, see appendix – 4C Analysis.

Competitors:

The competition is product oriented and divided into four categories. The first, the inner circle, is 'product form competition.' It refers to similar products with similar features and values.

Here, a competitor is 'Noso Patches.' Compared to other repair patch offers, they promote them amongst other products as suitable for backpacks and have different styles and images on the patches. Some of them are designed by artists that create unique designs. Other brands in that category sell patches with images embroidered, which might create a more emotional repair experience than other patches. However, all these products are mainly meant for gluing instead of sewing and often are pretty thick, making it challenging to sew through them. This is a major difference between the design solution and the competitors. The other is the way the experience is created. While Noso uses different shapes and styles for their patches and also offers collaborations with famous brands like 'The North Face' or 'Deuter,' which is a strategy intended for Ripp'd as well, they have a glue-on product. Ripp'd, on the other hand, works by sewing a patch on. The pre-cut holes make the sewing easier and guarantee a smooth aesthetic, as every hole has the same distance. Pulling the top foil with the sewing instructions off afterward creates a revealing moment of a new product. While sewing takes some time to finish, gluing is a faster method to conduct. Conversely, glue often needs extra time to dry, while sewing repairs are ready to use when finished. Also, sewing can be more versatile regarding uneven surfaces on the backpack.

The second is 'product category competition' and includes companies that work in the same product category. Brands like GearAid or ZPack offer repair tapes and patches to glue, focusing purely on functionality. These patches are mostly not explicitly targeted at backpacks but often work for backpack repair as well.

However, when gluing, it often becomes apparent that the products do not work for every type of material. This needs to be checked beforehand.

Thirdly, 'generic competition' is about the competitors that fulfill the same needs, in this case: repair. Here, also repair services need to be taken into account. Brands like Patagonia, Vaude, or Bever offer repair services. But they do not process every type of repair, can be cost-intensive, and might take more time than doing it alone. Other competitors that come in are brands that offer repair products as well but in different markets or categories. iFixit, for example, offers repair kits focused on electronic repairs like smartphones or laptops.

And lastly, 'budget competition' is about the competitors that work in the same price range but do not necessarily solve the same problem as the design solution. These are companies like Hornbach or Hema, which offer products for DIY projects and other types of crafting. For some people, this might be a substitute to repair, as it can give the feeling of having something new as well and also creates a personal attachment by putting in labor by oneself.

Company:

A SWOT analysis revealed important aspects of 'strengths,' 'weaknesses,' 'opportunities,' and 'threats' to the brand. The analysis is based on the product concept to better visualize the company aspect of the 4C analysis. The company's strengths are based on the concept of integrating a new way of experiencing backpack repair. This is planned to be patented as stated in the business model canvas. Therefore, the product idea will remain unique for the time the patent is valid. The product is a low-cost investment for production but also for the customers compared to buying a new backpack and is an easy and safe way to start sewing without negative surprises. It is also expected to be more durable than glue, as well as more versatile. It can be used on uneven surfaces and sewn on almost any surface. By teaching the user sewing techniques and using this for repair, the main idea is to bring users toward more self-reliance. Another critical part of the brand is collaborations. By collaborating with other brands for production and marketing strategies, value can be maintained and increased by a growing awareness and attention of new customers.
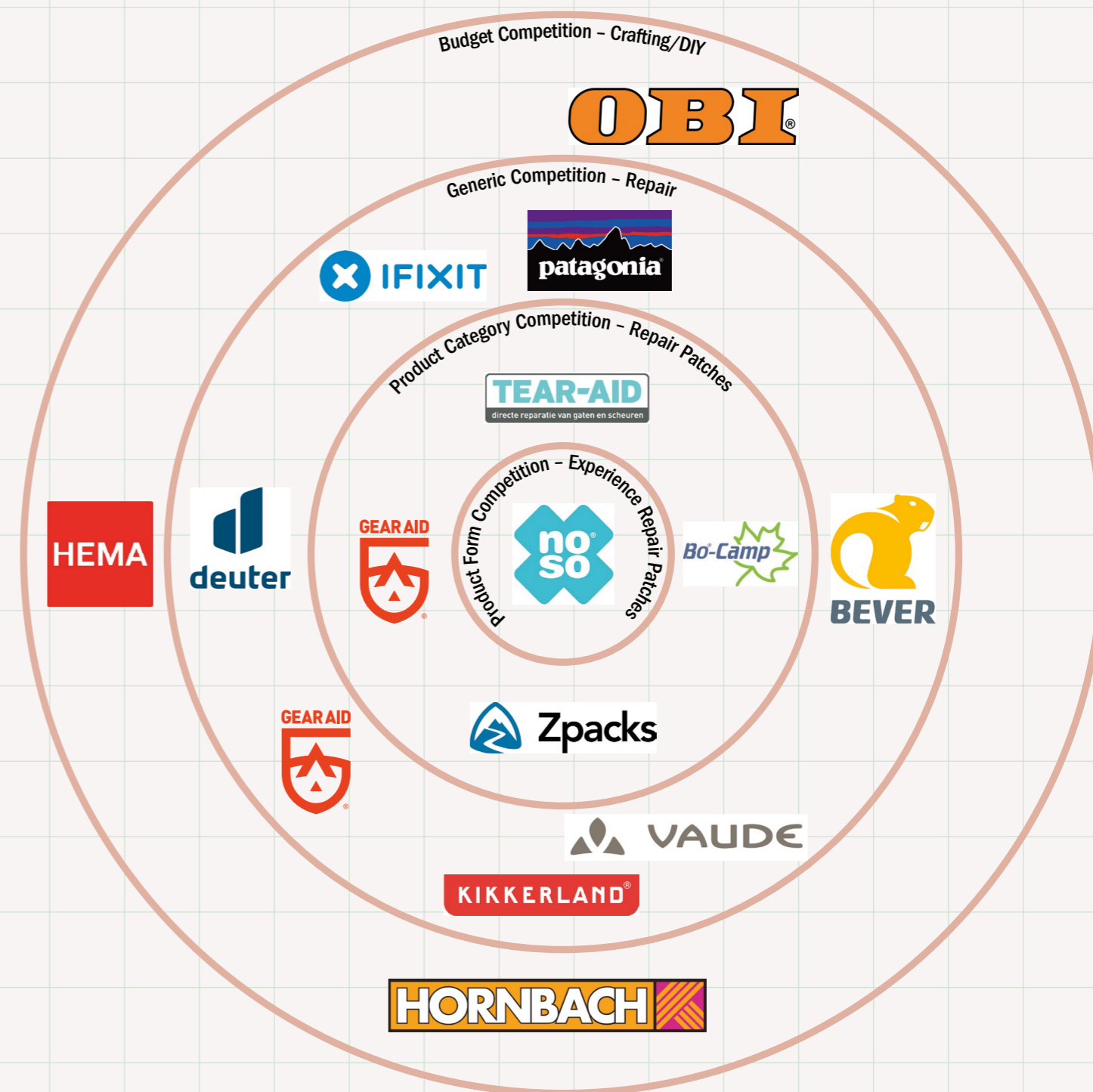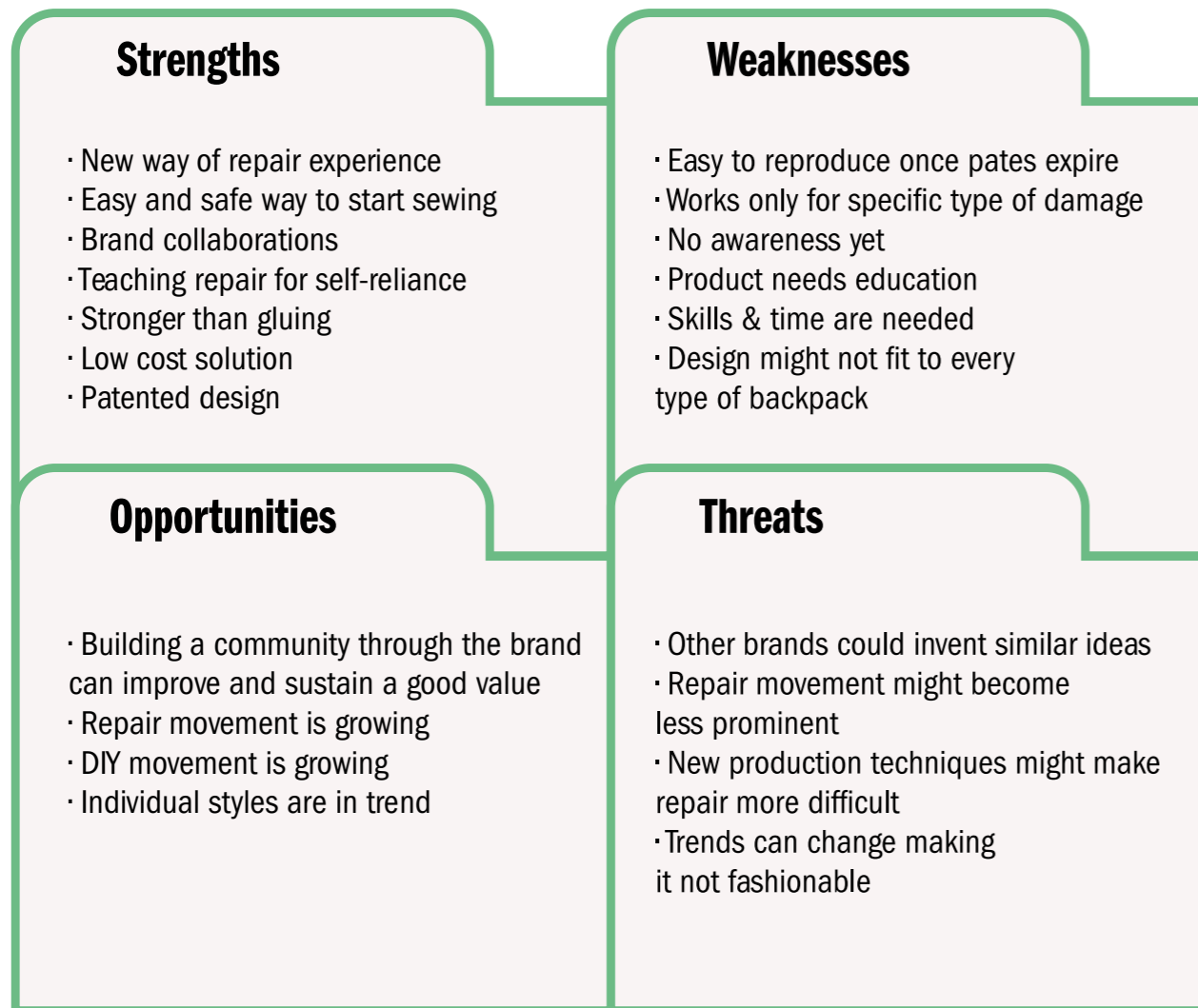

Figure 24 – Competitor analysis

SWOT Analysis Figure

Strengths

· New way of repair experience
· Easy and safe way to start sewing
· Brand collaborations
· Teaching repair for self-reliance
· Stronger than gluing
· Low cost solution
· Patented design

Weaknesses

· Easy to reproduce once pates expire
· Works only for specific type of damage
· No awareness yet
· Product needs education
· Skills & time are needed
· Design might not fit to every type of backpack

Opportunities

· Building a community through the brand can improve and sustain a good value
· Repair movement is growing
· DIY movement is growing
· Individual styles are in trend

Threats

· Other brands could invent similar ideas
· Repair movement might become less prominent
· New production techniques might make repair more difficult
· Trends can change making it not fashionable

Figure 25 – SWOT analysis

Weaknesses of the brand are that the product is easy to reproduce by competitors once the patent has expired, and it works only for a specific type of damage. In the long run, the brand can prevent this by developing new products that facilitate other types of damage. Also, expanding to new markets, like clothing or other textile products, could be possible.

The opportunities for the brand lie in the growing movement of DIY and repair. This creates a bigger awareness of the topic and accumulates more people that are potential customers. This could be used to create a community around the brand that shares experiences, modifies products in their own ways, or that customers cooperate with each other via a brand-based platform. Threats to the brand might be a decreasing repair movement, for instance. Other brands could also invent similar ideas that do not fall under the patent, and new production techniques might make the repair more complicated. As mentioned before, this can be prevented by constantly developing new products and building a loyal community around the brand.

Customer:

During the market and 4C analysis, it became apparent that outdoor companies often focus more on sustainability and repair than other brands. And the outdoor industry has been growing in the last few years (Gaille, 2018). It is, by definition, closer to nature than many other industry fields and, therefore, has a higher interest in engaging in environment-friendlier practices. Another important industry to consider is the DIY market. It has also been growing in the last years and has a similar motivation behind it as repair. The rewards are the feeling of doing something by oneself, creating a closer attachment to objects compared to buying something off the shelf (Ayres, 2020). Another relevant field is the growing awareness of the climate crisis and people being more motivated to engage in environment-friendlier practices (Eichhorn et al., 2020). The target customer group of the product, therefore, is behavior based. It aims to reach people that are close to nature, like being outdoors, and feel at home when being outside. They are crafty people that like to build new things, explore ways of doing something themselves, and do not want to replace products as soon as they are broken. These people not only have a genuine interest in being active and crafty themselves but do care about the environment. They want to act on it and think the little things can also make a difference.

The age of this target group varies in customers between 20 to 40 years and are capable of physically conducting the repair. People engaging in environment-friendlier practices, DIY projects, and outdoor activities can be found in various age groups, so the product is also suitable for younger and older people. The channels for advertising and targeting, though, are more focused on online platforms that reach a customer group in the age range stated above. The branding collaborations and the eco-consciousness of the product might reach the younger base of the target group. These people are engaging more in climate issues, like the Fridays-for-Future movement and they are also more drawn to modern styles like big brandings or trends like vintage and used-look clothing. Besides these factors of the target group definition, another critical factor is based on functionality. That is about people who want the advantage of a repair stronger than gluing or cheaper than letting it repair by a store.

Context:

The context for the product solution is based on current trends that are important to the business and on the 'five forces model' by Porter that visualizes the influences within the brand but also the impacts on the industry.

Two current megatrends are the rising importance of individualization and neo-ecology. The first one depicts the desire of people to develop their individual personality and self-fulfillment and create an image that transports this individuality to others (Zukunftsinstitut, n.d.-a). Environment-friendly practices and repair can be part of this character-building process to show others how they care for nature and are aware of the issue. Patagonia is a brand that successfully makes use of this strategy. People wearing Patagonia show that they care about the environment. Also, Ripp'd can make use of this strategy. The second megatrend, neo-ecology, is about the shift from eco-friendly practices only being a lifestyle towards a societal movement that has a growing impact on how people live. It influences new technology development, the everyday life of people, and political decisions (Zukunftsinstitut, n.d.-b). Consumers' increasing awareness and interest in more environment-friendly products is also essential in the sustainability market. It contributes to the likeability of customers being interested in practices like repairing. Additionally, hardware stores have been gaining much success, especially during the Corona time. The interest in 'making' grew during that period (Eisenwarenmesse, 2021).

Conclusions:

From the 4C analysis, several insights were gained into the business planning for the brand as well as the product. The main insights found for the company were that Ripp'd's strengths lie in a low-cost, easy, and effective product for users, increasing their self-reliance by teaching them sewing as a repair technique. The growing DIY movement, the rising awareness for repair, and the megatrend of individualization and sustainable consumption, which were identified for the context, build opportunities for the product. However, there are also critical points that need to be considered. Once the product's patent is expired, it is easy to reproduce, and other companies could adapt. And when trends change, repair might not be favored anymore. Although the competitive risk by the budget competition is not expected to be high, it might be possible that potential customers either decide to choose other projects they want to work on themselves instead of using Ripp'd or buy the tools needed for backpack re-

pair in these stores and do it without the support of the product.

Also, people who do not want to repair themselves might choose a service that repairs backpacks. These people, though, are not the brand's target group. However, potential customers interested in doing it themselves could be convinced when it is pointed out that the patch is faster and cheaper than letting it be repaired.

The second and the inner circle are characterized by adhesive patches and use glue as a repair technique. They are not specialized for backpacks but, in some cases, are suitable. While most products focus on the product's functionality, Noso brings it a step further. The risks for Ripp'd are that Noso offers patches with individual motives that can be glued on. That means, by using these individual motives, Noso also offers a product that can create a higher emotional attachment. Gluing it on also takes less time to conduct the repair. After adding the dry time for the glue, sewing takes longer but still is an easy and fast way. Therefore, Ripp'd needs to find a way to point out the aspect of a more durable repair and the self-reliant act of learning repair skills. Also, customers interested in crafting and making something themselves need to be targeted. These points could differentiate it from its competitors.

Based on the analyses, the following aspects and improvements must be considered:

· The feeling of self-reliance from learning sewing needs to be more present to differentiate from other brands. Focusing on the experience and how easy it is to learn sewing could achieve this.

· A strong user base must be created. Building a community on- and offline can help.

· The higher durability of sewing must be made clear to the customer.

· Other competitors, like Vaude or Deuter, can, at some point, become partners when collaborations are initiated.

Business Case Plan

A business case was set up to determine the financial viability of the design solution. Therefore, the expenses and revenues were calculated, and the prices were

Cash Flow Planning	Year 1	Year 2	Year 3
Sales revenues	81.735,00	122.602,50	272.450,00
Equity capital	4.000,00		
Sum payments-in	85.735,00	122.602,50	272.450,00
Start-up costs (see capital needs planning)	6.350,00		
Launching costs (see capital needs planning)	3.680,00		
Personnel costs (incl. non-wage costs)	45.000,00	60.000,00	100.000,00
Variable costs (production)	8.100,00	12.150,00	27.000,00
Retail Share		36.780,75	81.735,00
Office rent	12.000,00	12.000,00	12.000,00
Marketing	10.000,00	15.000,00	20.000,00
Travel	1.000,00	1.000,00	1.000,00
Insurances	100,00	100,00	100,00
1% for the Planet	817,35	1.226,03	2.724,50
Sum payments-out	87.047,35	138.256,78	244.559,50
Over-/underfunding	-1.312,35	-15.654,28	27.890,50
Balance previous period	0,00	-1.312,35	-16.966,63
Free cash flow	-1.312,35	-16.966,63	10.923,88

Figure 26 – Cashflow planning

based on estimations. For more details, see the appendix – Business case plan.

As an income source, the business plan plans to sell the patches through a business-to-customer model and later through retail and brand collaborations.

The relatively high jump in sales between years two and three is due to strategic brand collaborations, further explained in the section 'roadmap.' This results in a noticeable jump in profits as well.

The production costs for the product are expected to be under 1 €. The sale price, though, can be positioned relatively high compared to the production costs, which creates a high margin. This is because the competitor prices from the 4C analysis are taken into account, allowing for higher prices. Noso, for instance, offers products in the range of 8 – 14 €. GearAid is cheaper at around 4 – 13 €. At the lower price end are, for example, non-brand clothing patches that cost around 3 – 4 €. The price range of Ripp'd is set between 9 – 13 €. Three different sizes are at first available: size S (8,99 €), M (10,99 €), and L (12,99 €). This price is positioned at the mid to higher end for two main reasons. First, next to the production cost, other costs like salaries also need to be included. This adds up, making a higher price necessary. The second reason is that the product should communicate quality and durability. Next to the product itself, a higher price is expected to make people perceive the product as of high quality. This high quality not only needs to be reflected in the product but also in the packaging that comes with it. This is further defined in the subchapter 'development progress.'

As a circular business engaging in an environment-friendlier practice, this should also be reflected by the business case. With consequences in the production costs: The sale strategy intends to make sales across Europe via online sales, while retail sales are planned in the Netherlands and Germany. The Netherlands and Germany have many Repair Cafés suggesting a high interest in repair products. Also, these two countries are among the top nations in Europe that travel the most (Capital, 2022). Therefore, it can be expected that the target group of outdoor people that like to travel can be reached well. Additionally, Germany has

the highest population in the EU, with over 83 million inhabitants, making it a big market to enter (European Union, n.d.).

Starting with the European market also means producing there. This minimizes transportation routes and ensures higher security in fair working rights and payments. The chosen country for production is Portugal due to its big market in textile production (Textile and Fashion Industry in Portugal, n.d.).

Another point is to engage in environmental practices, namely 1% for the planet, an organization where companies commit to donating 1% of their yearly revenue to environmental causes (1% for the Planet, n.d.). Although this will be stated on the brand's website, it is not meant as a marketing strategy. Therefore, it will not be used for marketing but for transparency reasons. The plan expects the brand to be profitable in the third year, as displayed in Figure 26. It shows cost factors that need to be considered and the revenue based on the expected sales (see appendix – Business case plan). The sales revenues are based on the average expected sales, combining the worst-case and the best-case scenario. On average, 9,000 patches need to be sold in the first, 13,500 in the second, and 30,000 in the third year to become profitable in year three.

Brand · Positioning

The brand positioning facilitates building the personality and purpose of the brand that is communicated to the customers and the outside world. Therefore, a brand DNA visualizes these aspects. Additionally, points of parity and points of difference support the brand to stand out against its competitors.

The brand DNA model is based on three key aspects: 'purpose,' 'positioning,' and 'personality.' These represent the brand in how it will be communicated. It is built on additional research, the 4C analysis, and insights from previous literature research and user behavior. The model can be seen in Figure 27.

Purpose
We see that the rising consumption harms the environment and makes people feel lost, therefore, we believe that people need to rediscover self-reliance in accord with nature.

Brand DNA

Positioning
For makers and people who want to act, 'Ripped' offers repair products for backpacks that are easy to use, reduce consumption while giving the excitement of a having a new product and gives users the confidence to be more self-reliant.

Personality
Confident, encouraging, active

Figure 27 – Brand DNA

Purpose:
The core elements of the purpose are:
· The attention toward more environment-friendly lifestyles
· The positive effects of repairing by oneself on the environment and the users themselves.

They combine the value of repair as an environment-friendlier act by preserving the lifetime of a product and the emotional benefits of crafting and doing something good.

Positioning:
The purpose is partly reflected in the positioning statement as well. It also includes the functional benefits of the product itself and the emotional benefits.
· Makers and people who want to act reflect the crafty as well as the environmental-focused target group.
· 'Easy to use' refers to the functional benefits of a hassle-free and successful repair experience.
· The excitement of something new is in regard to the effect of pulling off the foil in the end.
· The confidence of self-reliance is what also has been mentioned in the purpose. It is about giving users the confidence to act upon their values.

Personality:
The personality, therefore, should align with the purpose and values and resonate with the target group it communicates to. The characteristics 'confident,' 'encouraging,' and 'active' represent a positive, hands-on mentality. It makes the user relate to these attributes they assign themselves as well. As a group that wants to act upon new consumption behaviors and feel more independent, Ripp'd is a partner that supports them in their goals.

Points of parity and difference:
To distinguish the concept from other products, first, it is vital to understand the points of parity. These show the commonalities of the main features and values with other products. The compared products are the competitors from the 4C analysis.
· *The repair will create a new look for the backpack*
· *The repair conveys the feeling of an environment-friendly act*
· *Collaborations with other companies for marketing purposes*
· *A low-cost repair solution*
· *Suitable for repair beginners*
From the 4C analysis, different aspects were mentioned as essential to consider. These are the ones that distinguish the product from others to stand out to function as the unique selling points.
· *Gaining self-reliance by learning sewing to repair*
· *Having a more holistic experience around the repair*
· *A versatile product repair patch*
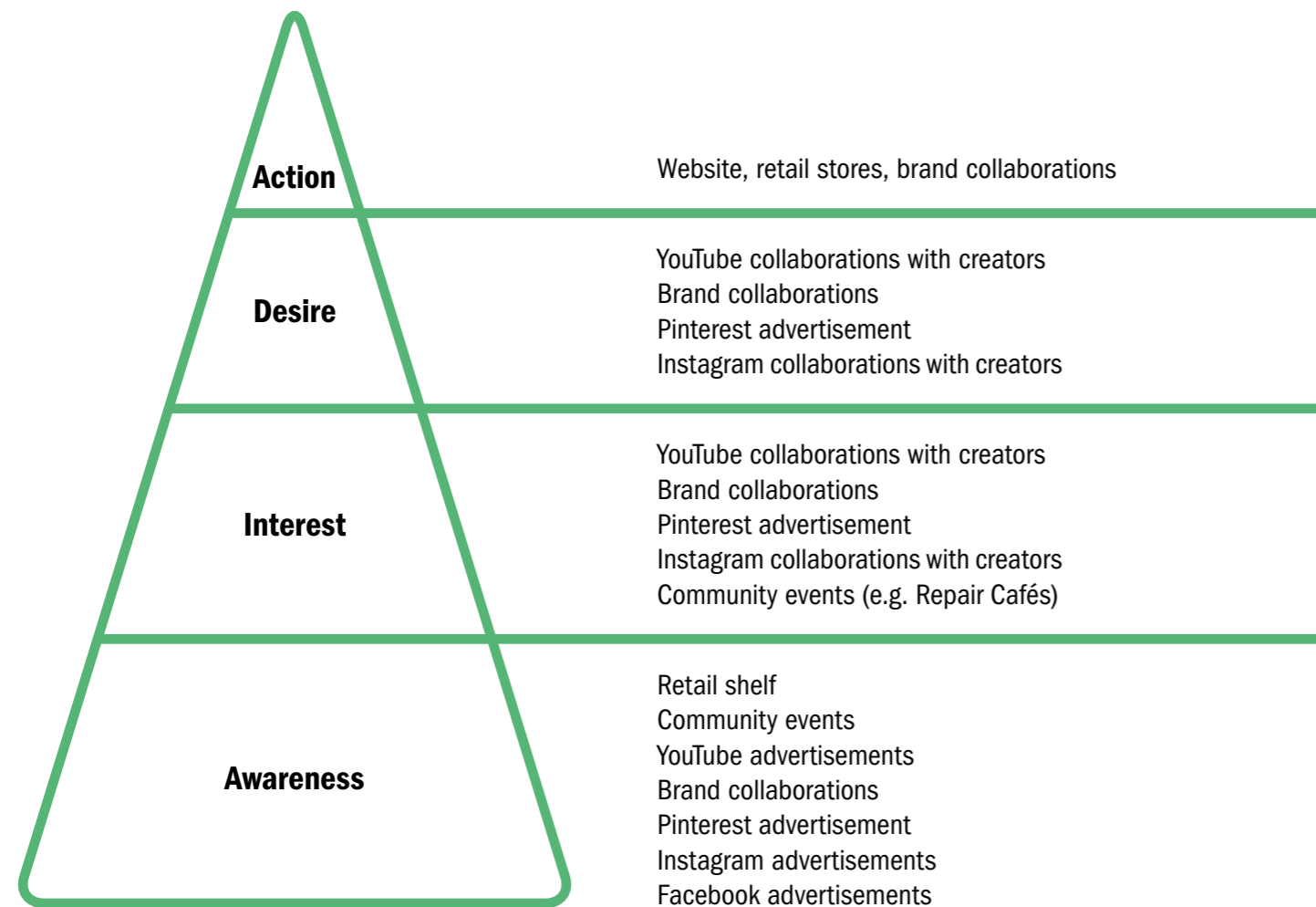· *Sewing as a durable technique for repair*

Action	Website, retail stores, brand collaborations
Desire	YouTube collaborations with creators Brand collaborations Pinterest advertisement Instagram collaborations with creators
Interest	YouTube collaborations with creators Brand collaborations Pinterest advertisement Instagram collaborations with creators Community events (e.g. Repair Cafés)
Awareness	Retail shelf Community events YouTube advertisements Brand collaborations Pinterest advertisement Instagram advertisements Facebook advertisements

Figure 28 – AIDA model

Marketing Strategy

AIDA model:
The AIDA model shows the key touchpoints to communicate the brand to potential customers. The four aspects, 'awareness,' 'interest,' 'desire,' and 'action,' use different platforms to build a customer base. The insights from the 4C analysis and business case support the choice of channels. Therefore, the focus lies on cost-efficient channels used by outdoor enthusiasts, makers, and people engaging in DIY.

Awareness:
To gain awareness, several online platforms are used. YouTube, Facebook, and Instagram advertisements will attract users' interest in the brand and what the product is about. It is meant as the first step to be remembered by users. Also, the product should be available and used in repair cafés and similar events. Here, people can become aware of the product and show interest in it when seeing how it works. Brand collaborations come in later but will act as a facilitator to create awareness. When in combination with a different product and a well-known brand, people will become aware of it more easily. By putting a patch in the backpack of the collaborating brand, people who buy it will become aware of the product and develop an interest in it. A similar strategy is planned for retail spaces. Although planned for later as well, when the product is on the shelf, people passing by will get aware of the product by simply seeing it.

Interest:
For the next step, YouTube and Instagram are used again. This time though, collaborations with creators are meant to give more insights into the product to create interest from the customer. They can see how the product works and is used. As mentioned in the previous step, repair cafés and similar events are meant to create interest similarly. People from Ripp'd then come to events and show the product in use. These steps are important to show the making aspect of the product and that people can easily repair something themselves. As mentioned before, brand collaborations are used in the same manner to create interest. Pinterest,

a platform that shows a lot of DIY content, is also used. Between the search results, videos of the product in use are shown to catch the users' interest — especially when searching for repair-related things.

Desire:
To create desire, similar actions are taken as in the previous step. The same collaborations with creators from the mentioned platforms are meant to create a desire for the product as well, especially for people watching who are inclined toward doing things themselves. Brand collaborations are also meant to create a desire for the product. Here, the point is more the branded patch. People having the chance to get a patch with their favorite brand on will create a desire for them and become more attached to Ripp'd as well.

Action:
Taking action is the last step, which is buying the product. At first, this is planned via the webshop on the website. Later, when in retail, customers can buy the patches in stores or combination with a backpack of a collaborating brand.

Community:
Next to the channels for communication, a community is also important for the product. From the analyses, it was concluded that a community could help to make the brand stronger. Therefore, online galleries on the website will be set up, and a forum where users can show how they repaired their backpacks. Also, on the Instagram channel, videos will be posted regularly of users' that customize their backpacks using Ripp'd. The idea behind this is to create awareness and make users proud of what they did. Sharing these experiences can make the rewarding feeling of repair stronger.

Slogan:
From the previous analyses, it became apparent that the aspect of self-reliance that comes with learning the skills for repair needs to be made more prominent. Next to adjustments on the product, this can also affect the strategy. Therefore, a slogan that functions at the same time as an attitude can help to transport the feeling of the product.
Therefore, the slogan 'sew it up' was chosen. It rep-

resents the factual content of the concept and goes further by implicating an attitude of creating something oneself. Combined with the brand name Ripp'd, it also implies that a rip or something broken is not bad but a chance to create something new.

Collaboration Roadmap

A roadmap was created to visualize the brand collaboration steps. Therefore, a strategic roadmap was chosen, as it is meant to briefly communicate important steps for the brand's future plans.

In the first year, the focus is mostly on getting a grip on the market by gaining awareness and selling patches. The marketing strategy plays a vital role in this. Internally though, the relationships with material suppliers of recycled fabric need to be built for stable production in the future.

The second year brings more changes. The plan is to start the retail business and acquire potential stores selling the patches. From the previous business planning, the goal is to find stores that suit the target group. The focus is on outdoor, sewing supplies, and DIY stores. The first stage of collaboration is between existing backpack brands and Ripp'd. Patches are made from material excess from the production of the collaborating brand and display the own logo in an artwork together with the collaborating brand's logo. While the patches are generally produced from recycled materials, excess material from production is a second source. In textile production, cutting patterns are often not using all the material in production. In the clothing industry, around 15% – 25% of materials are wasted (McQuillan, 2020). Using this excess to produce repair patches not only gives it a new purpose to otherwise wasted material but also a financial profit for the collaborating brand. They can create financial value for materials that might get landfilled otherwise. In terms of marketing, it taps into the trends of more

conscious consumers who care about their consumption behaviors and want to make a difference. It shows that the brands engage in environment-friendlier practices and are willing to take action for change. Also, it gives users a chance to act themselves. It can create a positive perception by customers when brands enable their customers to act.

For Ripp'd, the advantage is being associated with an existing brand. This gives both awareness and trust in the brand, as the brand values from the collaborator would be related to Ripp'd or projected onto the brand. Especially as a starting brand, this can open opportunities to establish itself in the market.

Additionally, it would mean using original material from backpacks with the original colorways of the brand, giving more quality to the patches sold. Thereby, customers also know that they have original, high-quality materials.

In the third year, the collaborations are planned to be extended. The focus is on creating new products and services for different repair situations that are economically viable. Collaborating with other brands could lead to innovations for repair that reveal new repair approaches that are profitable in the long run.

Regarding retail, the collaborations are intended to create collection systems for old backpacks for customers. These will be sent to the recycling facilities and used to produce new material for patches. Also, new approaches and systems that implement repair in retail space are developed.
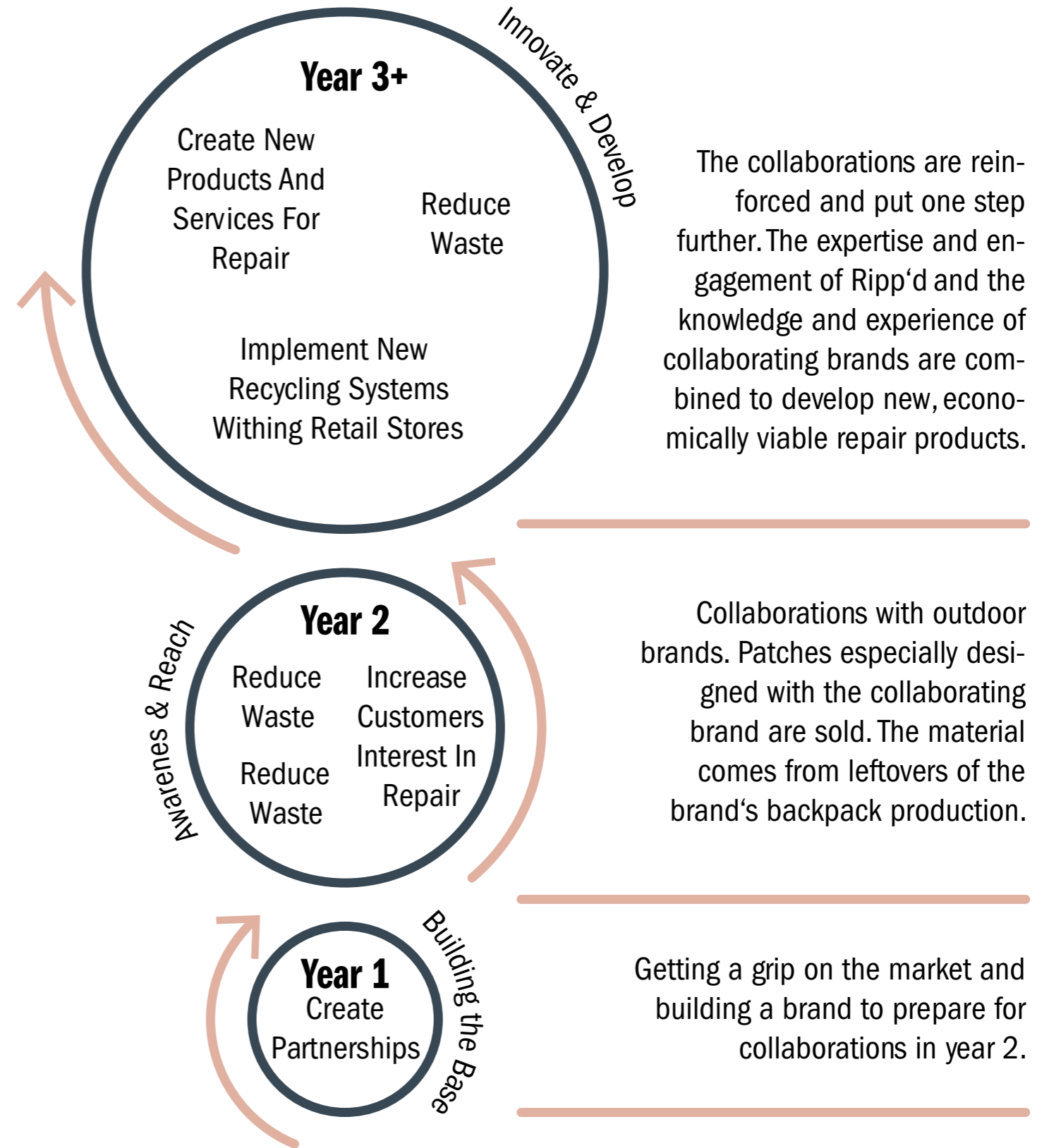
Figure 29 – Strategic collaboration roadmap

Year 3+
Create New Products And Services For Repair
Reduce Waste
Implement New Recycling Systems Withing Retail Stores

Innovate & Develop

The collaborations are reinforced and put one step further. The expertise and engagement of Ripp'd and the knowledge and experience of collaborating brands are combined to develop new, economically viable repair products.

Year 2
Reduce Waste
Increase Customers Interest In Repair
Reduce Waste

Awarenes & Reach

Collaborations with outdoor brands. Patches especially designed with the collaborating brand are sold. The material comes from leftovers of the brand's backpack production.

Year 1
Create Partnerships

Building the Base

Getting a grip on the market and building a brand to prepare for collaborations in year 2.

Further Development ...

After the business planning, several insights were gained. It became clear that the aspect of self-reliance needs to be put more in focus to work as differentiating factor. The factor of individualization was picked up from the context to convert this into practice by creating a community that shares their repairs that create new aesthetics of their backpacks.

Also, a more holistic experience that underlines the aspect of learning a skill was picked up. Therefore, a packaging was created that motivates users to repair, explains it in a manner that is expected to be easy to understand, and includes the community aspect. Different models for packaging were tested (figure 30).

The final one was chosen for two reasons. First, it was important to have a portable size that can also be stored in the backpack in case people buy the patch in advance. Second, the idea was to extend the repair experience from the patch to the packaging. While the patch has the feature of the revealing moment when the foil is pulled off, the packaging has an unboxing experience that reveals every step on its own. It guides the user along the process to make clear how the product is used.

Additionally, text was added on the patch's foil that indicates milestones for the user during the process and color marks it.

Figure 30 – Packaging prototypes

Final Concept
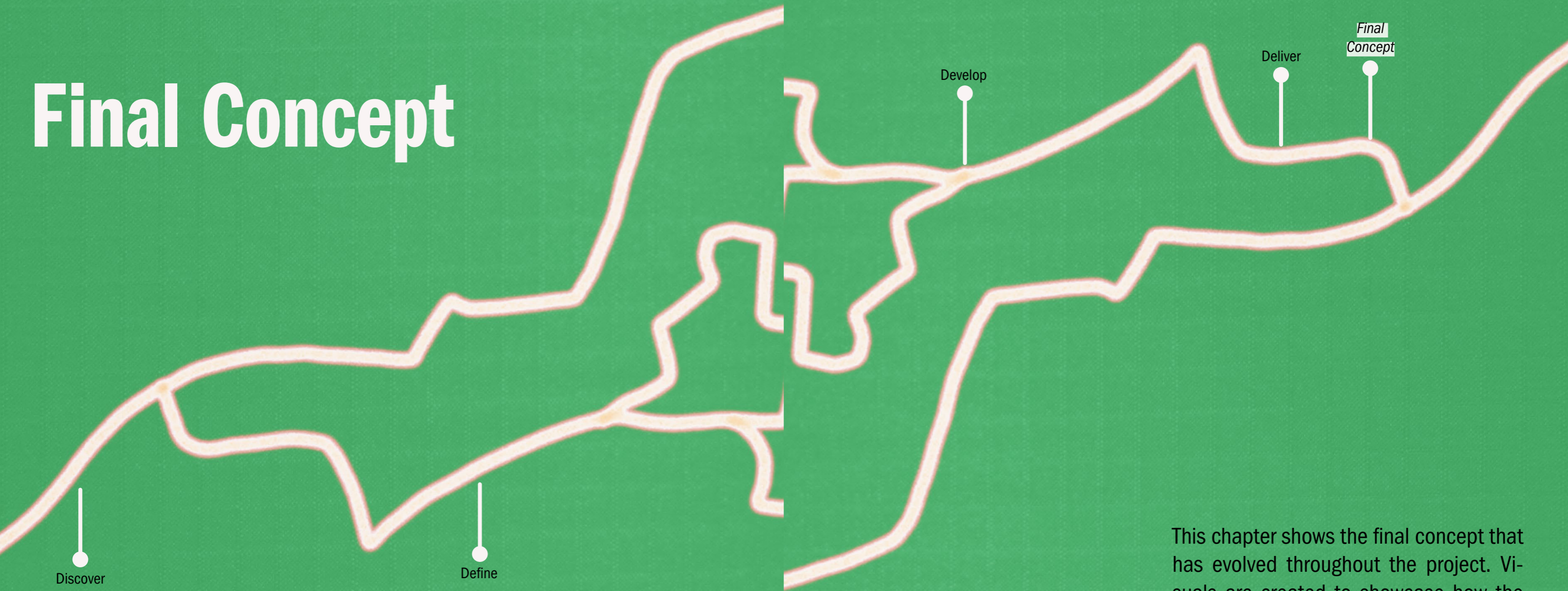
This chapter shows the final concept that has evolved throughout the project. Visuals are created to showcase how the product looks like and how it is packaged. Furthermore, the strategy around the concept is briefly presented.

The Patch

The final product that evolved in the project's process is a repair patch made for an accessible introduction to learning how to repair backpacks. It comes in three sizes for different damages. The following images show different variations of the patch and technical drawings.

The product uses original backpack materials that are water repellent/waterproof, like Cordura and Nylon.

A strong yarn intended for thick materials and a suitable needle for it is included.

The product comes in small packaging, so it can be easily stored in a backpack or elsewhere. Also, for transport and shipping, this is easier. It fits without problems into mailboxes and can even be sent in an envelope. Furthermore, the packaging has more detailed information and instructions on how to use the patch. For instance, a general explanation of the running stitch is found on one of the packaging's pages, which can be ripped off and kept for future projects.

ripp'd

Sewing direction

← Start sewing here

Go get it, you're almost there ↘

Great! You're halfway through! ↗

1.

2.

3.

4.

5.

6.

ripp'd

ripp'd (dark/navy version)

Sewing direction

Start sewing here →

3.   6.

2.   5.

1.   4.

Go get it, you're almost there ↗

Great! You're halfway through!

---

ripp'd (brown version)

Sewing direction

Start sewing here →

3.   6.

2.   5.

1.   4.

Go get it, you're almost there ↗

Great! You're halfway through!

---

ripp'd (teal version)

Start sewing here ↗   Sewing direction

1.   2.   3.

4.   5.   6.

Go get it, you're almost there

Great! You're halfway through!

60 mm

100 mm

Size M

4 mm

1 mm

37,5 mm

Size S

60 mm

4 mm

1 mm

10 mm

160 cm

Size L

4 mm

1 mm

Figure 31 – Technical drawings of the patches

Figure 32, 33, 34 – Packaging of the patch

Requ!rements

	Met	Explanation
Use the aesthetic of the repair to create meaning for the user	Yes	The sewn on patch creates a new look for the backpack. Achieving it by oneself underlines this. Sharing the results with others strengthens the effect.
Make the repair worth its price	Yes	The prices of the patches are comparable with competitors' prices. The experience of learning a skill and revealing a 'new' product gives additional benefits.
Be easily accessible for non-experienced users	Yes	The product especially targets users that want to learn repairing, has all needed tools included, and is easy to use.
Make the repair worth the time needed	Yes	With around 10–20 minutes time needed, the repair is in a good range. The DIY aspect gives additional value to the user.
Educate repair techniques for a feeling of self-reliance	Yes	The patch gives an easily accessible introduction to sewing and repair.
Make tools and materials for repair easily accessible	Yes	The product includes all tools needed for the repair and is available online and in stores.

Figure 35 – Checklist of the requirements

Features

The final product and its features are derived from the iterations of the design process. The product was developed through prototypes and user testing and further refined by the business planning to build a viable brand concept for the product. The main features of the product are:

· The product is made to allow users an easy introduction to learning repairing.
· The pre-cut holes make it easier to sew through thick materials and ensure a smooth aesthetic.
· A foil on the patch has instructions printed on it. It will be removed afterward and creates the experience of revealing a new product, creating excitement for something new.
· The packaging picks up on the user experience and guides through the process. The reveal experience is continued here.
· The patch gets sewn on and is a durable and versatile product for repairing fabric rips.
· For customers, the patch is desired because the product gives confidence and conveys a can-do attitude. The target group is already interested in repairing and crafting but needs guidance along the process. The product leads the user through the repair and teaches a new skill. The users are looking for the experience of accomplishing a skill with their own hands, supported by the product.

Brand

The brand targets people who want to act and enjoy crafting and creating things on their own. These people are interested in environment-friendlier practices, DIY projects, and outdoor activities. Therefore, the brand must convey confidence and positivity to act and be encouraging. The combination of packaging and patch is meant to fulfill these demands. Potential customers are targeted through social media, retail, and community events. In order to create a loyal customer base, a community is vital for the brand. By sharing, tagging, and giving the stage to customers and creators, customer can share their repairs, experiences, and knowledge with others. Additionally, social media is used to create awareness of the brand. Examples of this would look like are presented in the following figure.
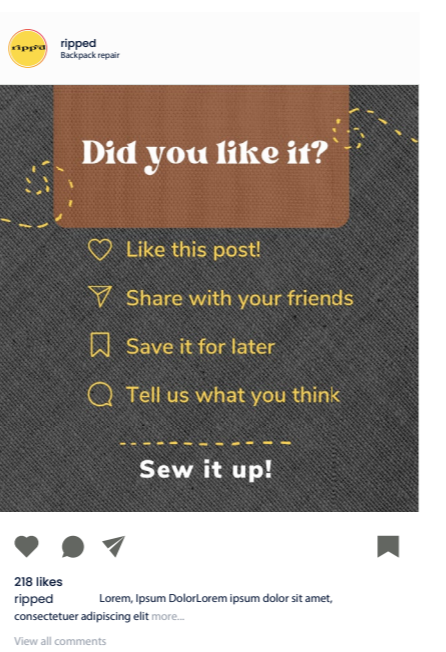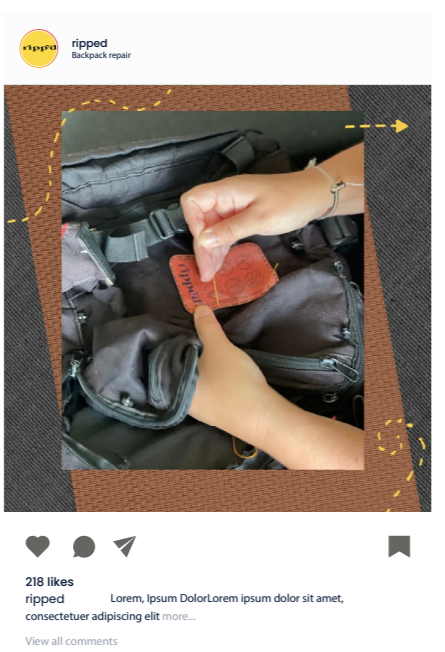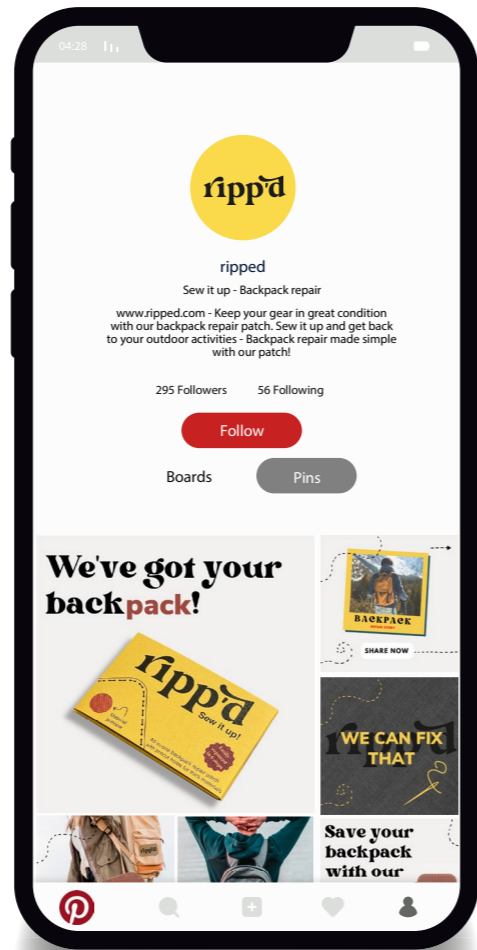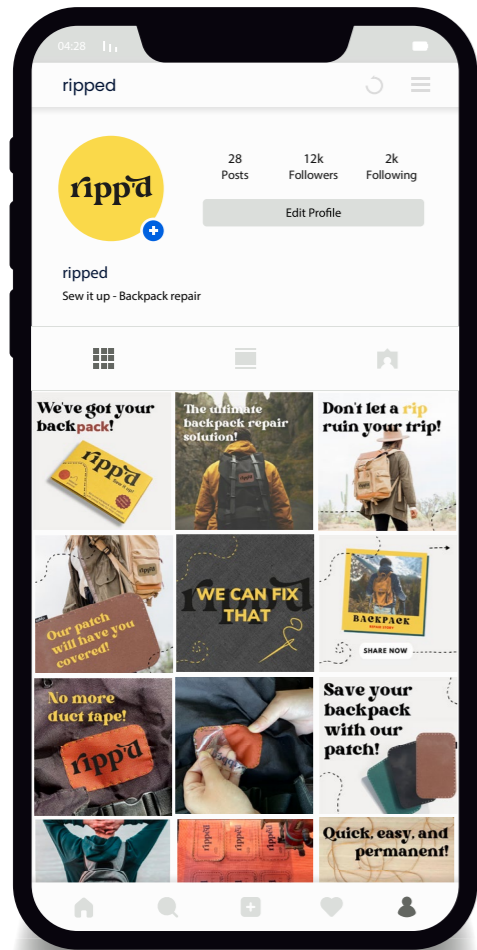
Figure 36 – Example posts for community building

Closing

Discover

Define

Develop

Deliver

Closing
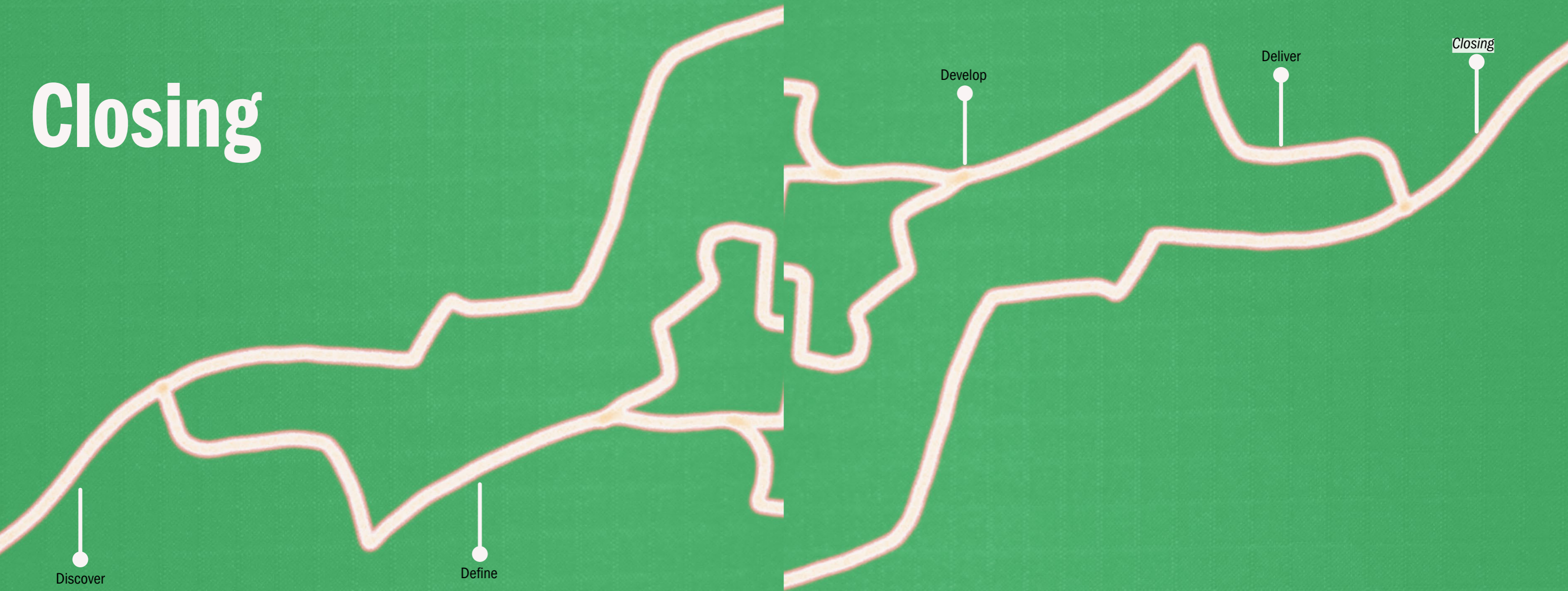
Conclusion ✦✦

Repair has gained traction in recent years but is still under-represented in the larger public. Repair is always an interplay between users, producers, and the broken object. They are intertwined as users need to act for repair, producers need to offer services and allow for repair, and the products need to be designed accessibly for repair.

For backpacks, the repair possibilities currently are relatively low. Especially when users want to repair backpacks themselves, it becomes challenging. Many damages need special machines or knowledge, and the materials are thicker than with clothing, for instance.

The research question for this project was how to make self-repairing a backpack more accessible and motivating for users. It was split into three sub-questions:
1. What damages occur to backpacks?
2. What are the barriers for users to repair their backpacks?
3. What motivates users to engage more in repair?

The literature review showed that research on repair has been done but revealed a gap in research on backpack repair. Therefore, research on broken backpacks, user interviews, and expert talks were done to get in-depth information on that.

The research on broken backpacks gave insights into the damage types and their occurrence on backpacks. It revealed that ripped fabric was the leading cause of backpacks breaking, followed by broken zippers.

To understand why people do not repair their backpacks, it was essential to understand what hinders and what motivates them to do so. Therefore, the repair motivation barrier model was chosen to research the causes. The insights from the literature research gave good starting points on the motivations and barriers for repair. The interviews proved most of the points found in the literature, for instance, the importance of aesthetics, effort, and time or the monetary price of repair. It gave additional insights like the symbolic value of repair, the accessibility of methods and tools, and that repair is perceived positively by the participants instead of having a negative stigma.

Additionally, the user journey provided insights into the emotional experience of the repair process.

Based on the research insights, a design solution for ripped fabric on backpacks was chosen. The solution is based on the interview insights to create a product that motivates users to engage in repair. The final concept of a repair patch addresses the issues of the aesthetic of a repair, the educational, the financial, and the effort aspect, as well as the desire for self-reliance, and taps into the emotional process that was discovered through the user journey.

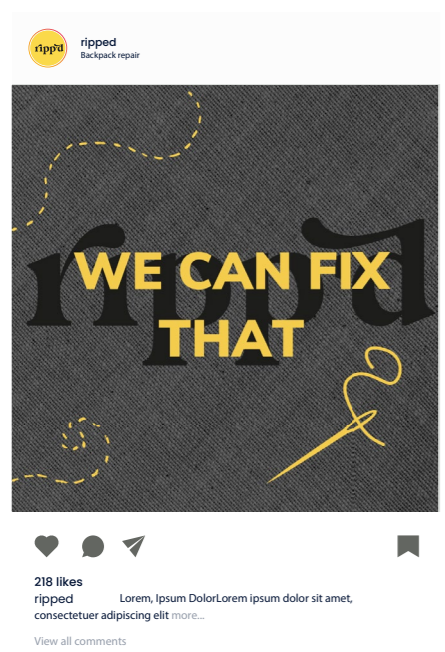The initial goal of a tangible solution that embodies the research findings was put into practice through prototypes in multiple iterations with user feedback to validate the concept.

The business planning was set up to refine the final concept and determine the product's viability. A 4C analysis gave insights into working out the product's strengths and the brand's right target group. This was incorporated into the brand positioning and the marketing strategy.

Limitations & ★★ Recommendations

While developing a product that motivates users to repair during this project, the given time was limited, and room for improvement and changes will always remain. Also, the time schedule did not always work out as intended. Conducting and analyzing the interviews took longer that expected and organizational incidents caused a delay in the initial planning.

Regarding the project's outcome, a holistic approach was made by developing a physical product as well as a brand strategy around it.
With more time, these could have been developed further to make them ready for market entry. For example, the prototypes proved the concept to be working but finding producers that can put them into practice, finding the suitable materials, and finding the methods to produce the product are the next steps that would need to be considered.

Also, the brand strategy would profit from further user testing to see how the target group perceives the brand, for instance.

Also, for the research, there were limitations in the project. Although the interviewees did have experience with repairing, and some also with repairing backpacks, for future research, participants with more extensive experience specifically in repairing backpacks could give more detailed insights.

Researching damaged backpacks was possible by building a database of images of people's broken backpacks. With more time available and access to relevant facilities, researching discarded backpacks could give more detailed insights into the damages that make people throw away their backpacks. Interviewing people specifically on that could also generate other relevant information about why they discard them, next to the damages.

In general, there is much potential in this topic. Repair is becoming more popular, but the offer still is relatively low. For future projects, the focus could be set on different areas—this project aimed at user behavior and introducing users to repairing. Nevertheless, the design of backpacks is another promising direction. Designing backpacks that are made explicitly for repair could open up new possibilities. Also, on a strategic level, it is crucial to investigate which business models could work with a repair-focused backpack brand, and the marketing strategies that communicate it to customers are also essential. Especially in textiles, fashion and trends often make up a big part of consumers discarding products. Finding ways to make repairing more fashionable or create experiences that give the feeling of something new through repair, like the Ripp'd patch, could boost repairability for backpacks.

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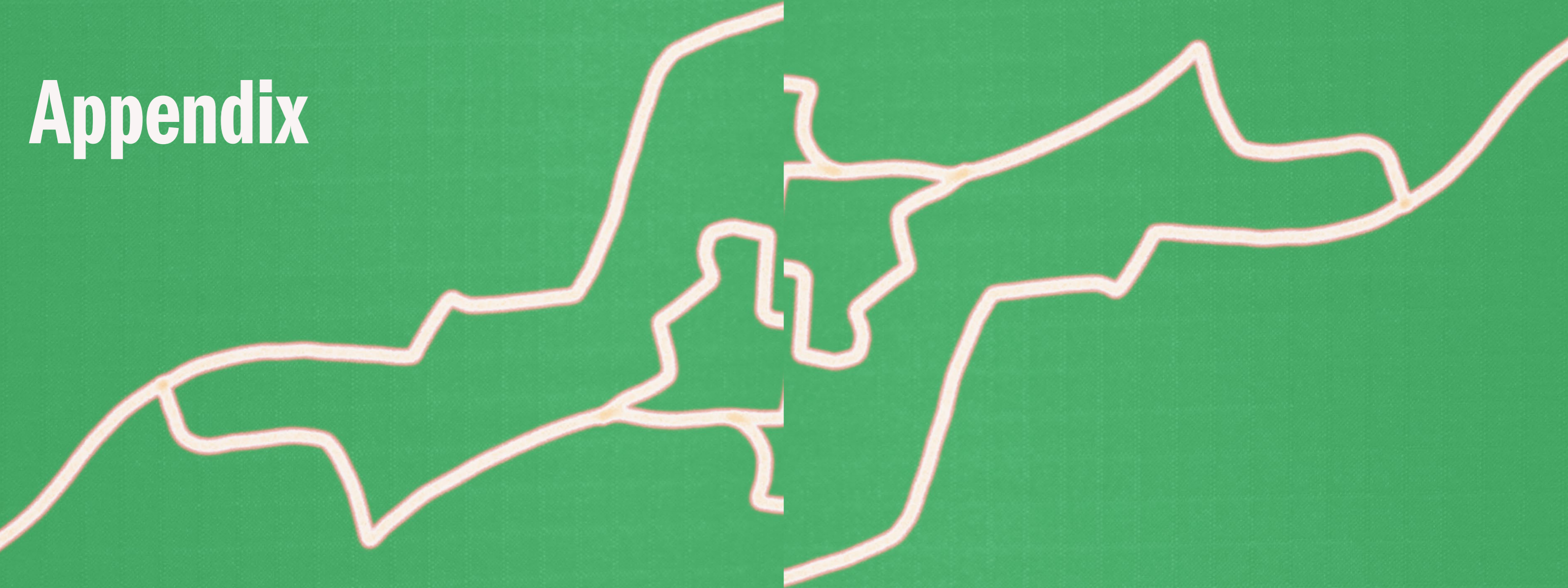Diddi, S., & Yan, R. N. (2019, September 26). Consumer Perceptions Re-lated to Clothing Repair and Community Mending Events: A Circular Econ-omy Perspective. Sustainability, 11(19), 5306. https://doi.org/10.3390/su11195306

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Appendix

Making it easier for users to engage in repairing their backpacks   project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple.
Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date   01 - 04 - 2022   01 - 09 - 2022   end date

INTRODUCTION **
Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet
complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the
main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Unfortunately, the fashion and textile industry is famous for having a notably negative impact on the
environment. This needs to change but still, fast fashion is on the rise. One way to face the issues of the
current consumption system is the circular economy. Recycling is an example within it, that got very
famous. To reduce a products impact even more though, other strategies opt for prolonging its lifetime. A
reason being that it needs less energy to recover material and is less logistical effort. The reparability of a
product is an important part of the design for the circular economy. While in sectors like electronic
consumer goods repairability is often a complicated process, this is different for the fashion and textile
industry. When looking at how clothing or backpacks are made, the construction is more obvious. You can
see the seams and know they are stitched. And when it's broken you can rip them open and sew new cloth
in, stitch it together or simply glue a patch over it. However, it often can be too much effort to take the time
to repair. And if you let it be done, it might be too expensive.
Also, users need to have the know-how of repairing and also the machinery (sewing machine) for it. While
the first is easily accessible through the internet, it is still an effort to do so. Individual repairs in textiles are
not that common. This leads to the conclusion that one of the reasons why repairability for clothing and
textiles is not happening, is consumer behavior, not just the product alone. The question and problem
definition, therefore, is, why that is the case and how to change this.
The central focus here will be on the product of a backpack. Firstly, that is because reasons to repair can
come from different motivations and are also dependent on the type of product. Secondly, the idea is to
cumulate the findings from the research into a prototype to exemplify the strategies. A backpack, in the
area of fashion and textiles, therefore is suitable as it serves both functional and emotional purposes.
Functional, because it is a means to transport things and emotional, because it is often used as a
statement to express a personal style or identity. Also, it is a more complex product compared to a t-shirt
or sweater. Opportunities to integrate repairability seem more promising.
For the TU Delft, the project can be interesting in the context of the circular economy. As I would also like
to join the Circular Design lab, there is an interest in extending the work on repairability. Especially, in the
clothing and textile area, the TU Delft is not that much involved yet, which adds a valuable aspect to the
topic.
A more indirect stakeholder in the project is Vaude, a German outdoor specialist. They agreed to have a
few meetings where we can review the project and progress. I can profit from their knowledge and they
can get insights from my work, as repairability in backpacks and other products is a topic they are strongly
engaged in. So, it is not working for them but a mutual exchange of knowledge and progress.
Moving towards a circular economy, repairability plays an important part. It becomes more and more
common to offer repairability services by companies or to help users in their repair of products. Besides
Patagonia, who engages in that almost since the day they were founded, other brands do that as well. The
retail chain Bever for example also started to offer repair services for customers. It can be a viable part of a
business when companies engage in repairability. In the area of selling spare parts or offering services but
also can it improve the perception and image of a company of the customers. As the reason to repair can
differ with each product category, focusing on a specific product can give new valuable insights into how to
improve this product. Additionally, it can be interesting to find different target groups in the area of repair.
Not only in regards to their motivations but also their aesthetic expectations of it.

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PROBLEM DEFINITION **
Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

In the context of the circular economy and the issue of repairability, I want to focus on the product of backpacks and how to improve their repairability. It is a rather complex product that gives it more potential and opportunities to be repaired compared to standard clothing. Also, it is a higher investment, so users might have a bigger personal motivation to engage in repair.

Backpacks differ a bit from the area of clothing but I have not found a lot of sources that specify this product. Although I expect a lot of the motives and behavior to be similar in their principles, it is an interesting area to conduct research and start filling this potential gap.

When it comes to repairing clothing, there are several reasons why users don't engage in it. From my current standpoint, the central issue is the effort that it needs to conduct a repair. It holds users back keep their current products and fixing them instead of buying new ones. There are multiple facets to the effort being too high. Known factors that negatively influence the engagement in repairing are the financial aspects (e.g. product was so cheap that the repair is not worth it; repair itself costs too much; investment in machinery/tools is too high), the lack of skills/knowledge (not knowing how to repair and having the craftmanship to do so; not being aware of the possibilities in repair), the missing resources (machinery/tools are needed to be able to repair), the time it takes (for the actual repairing act) and the low emotional relationship people have with a product (don't take care of the product; don't use it properly; want to have a new one because of new trends; a negative connotation of repair). That means the underlying factors could make the effort to engage in repairing a backpack currently too high. Through the project, I opt to find ways to make these factors notably easier so that the effort is really low and repairing a backpack will be more likely.

ASSIGNMENT **
State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, … . In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Design a prototype that minimizes repair effort for the user and therefore motivates them more to engage in it, by applying design principles. These should be the outcome of literature research and user feedback from prototyping.

The challenge of the project will be to research the different motivations and reasons to (not) repair, find more information, and organize and specify the different groups and needs (e.g. people that already engage in repair; people that want to but do not do it yet; people that do not like the aesthetic of repair; people that do like that aesthetic). Focusing on one group, the findings shall be evaluated into strategies and applied to a backpack prototype.

For the research, I want to start with existing literature on consumer behavior in the context of repair. Based on that I plan to conduct interviews to get information on the opinions and behavior toward repairing their backpacks. After structuring the outcome the path that seems the most promising will be chosen, followed by implementing design principles from the results of user feedback and possibly little workshops in an early prototype.
Ideally, the results lead to a prototype of a backpack that has the design principles integrated. But if it appears that the research shows that other solutions that move more towards, for example, a service direction meet the user's needs better, that should be open to adjustment.

PLANNING AND APPROACH **
Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date   1 - 4 - 2022   1 - 9 - 2022   end date

Project week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Calendar week	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Research																						
User interviews									Holiday								Holiday					
User feedback																						
Midterm meeting																						
Evalution interviews																						
Prototyping																						
Green Light Meeting																						
Finalizing report & prototype																						
graduation																						
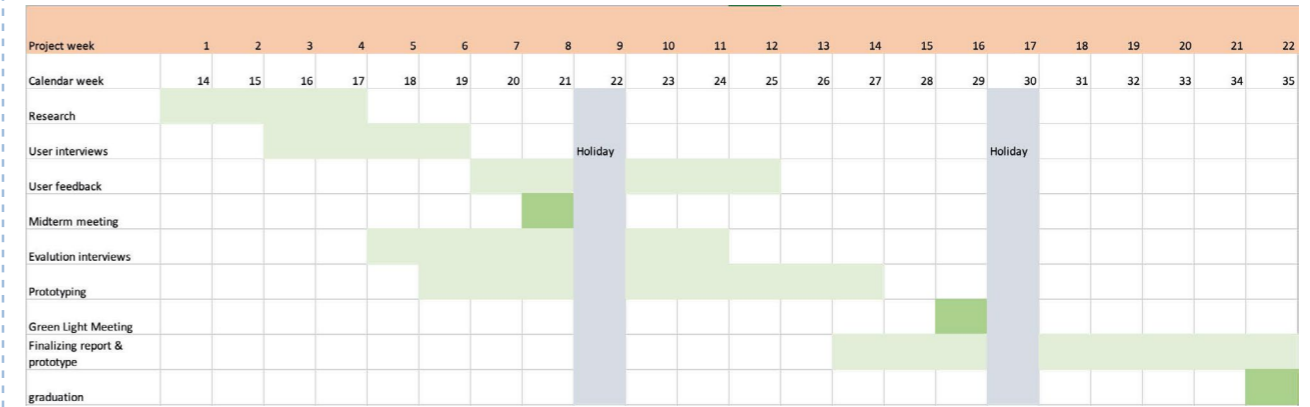
For the process, I want to diverge in different directions with literature research to dive into the topic and get an overview of the many aspects in the context of consumer behavior, repair, and the clothing/textile industry. Building on the literature review I want to perform interviews to get a deeper understanding and insights from personal perspectives. These should be broad in the types of behavior in the beginning (people who do repairs/don't want to repair/want to repair but don't know how) and, after a few interviews, be narrowed down again in a specific direction. From there, I want to begin early with the prototyping while creating design principles from the research. Through the prototyping, I also want to get feedback from the users to validate the prototype. In case the process gets stuck or the results are not valuable enough to continue, it should always be possible to take a step back and rethink what has been done so far.

I was always interested in clothing, accessories, and gear, and since my bachelor thesis and the internship have also been in the context of design and sustainability. So, for me, it was clear to continue that direction in my master thesis. It combines art and science, meaning that they are products that need to be functional in order to protect, warm, or support humans but also are sensitive to the emotions people connect with the aesthetic and meaning of the product. Also, it is a product area where prototypes are fairly easy to realize, so you can have ideas and directly create them or further develop them.

I'm also looking forward to applying the methodology I learned during my master's, especially in regards to user interviews. This is something I haven't learned that much during my bachelor studies, so it is exciting trying to make use of it in this project.
Also on the prototyping side, I want to get more knowledge in textiles and production techniques to better understand the processes and reasoning in that business area. Bringing these two sides together in the project is something I wanted to do for some time now.

A challenge for me will be to manage the whole project myself in terms of organizing this highly independent work. That is a challenge that will probably keep me busy but I'm looking forward to facing it. Therefore, I want to try making personal 'weeklies'. So, that I can create a plan for the week and create time slots for different activities.
Also, setting specific goals for specific time frames should help me to have smaller steps in-between that guide the process for me (e.g. weekly goals, topic-bound goals).
Additionally, I would like to have small reflection time slots, preferably at the end of a week, to reflect on what I've done so far, how it is going, what the next goals or steps should be, and how to approach it the best.

History of the Circular Economy

Looking back on the history of the CE, there is not a certain year or author to determine. Often the model of philosopher Pearce and the author Turner is described as the start of the CE's popularity (Wautelet, 2018). They published it in their 1990 book 'Economics of Natural Resources and the Environment.'
Pearce and Turners' model includes a benefits orientation. Activities within the CE serve a benefit, whereby they can have positive or negative influences. It is important here that the benefit is not only material based but also can be immaterial. An example is a forest whose wood serves for the manufacturing of products but also hiking through it or having a picnic can have recreational benefits (Wagner, 1997).

According to the Ellen McArthur Foundation, an organization that specializes in developing the CE, the history of the CE is a steady refinement of this concept, leaving traces back to the 1970s (Ellen MacArthur Foundation, 2013).
During this time, the American professor John T. Lyle initiated a project to develop a society in which everyday life activities shall be built based on the boundaries of available, renewable resources without harming the environment. The concept is called 'Regenerative Design' and shall be applicable to any imaginable system, no matter if it is a product, manufacturing, or even lifestyles (Ellen MacArthur Foundation, 2013).
Sometime later, Walter Stahel develops the 'Performance Economy.' It is the idea of an economy in circles or loops and its impact on job development, resource savings, and refuse prevention. Furthermore, the longevity of products and their sale in the form of services instead of ownership are in focus (Ellen MacArthur Foundation, 2013).
The CE got internationally famous through the 'Cradle-to-Cradle' system by the German chemist Michael Braungart and the American architect William McDonough at the end of the 1990s. In their model, they differentiate two loops: biological and technical. Non-durable goods like packaging are assigned to the biological loop. That means their ingredients should be

on a natural basis and biodegradable. In this manner, they can be recirculated and serve as fertilizer for renewable resources.
The technical loop includes products for longer usage and with a complex composition. Materials within this loop should be reused constantly while ensuring their consistent quality. For the scenario of a washing machine, it could mean that it does not work properly anymore due to several damages. The still-functioning parts are taken out and used in other products, while the not working ones get recycled and serve as secondary raw material for new products.
Cradle-to-Cradle is based on eco-efficacy. It means the development of technologies, behavior, or products that are non-harmful or even have a positive impact on the environment. In contrast is eco-efficiency, which builds on a constant improvement of environmentally harmful technologies. Instead of a CO2-free car, eco-efficiency would optimize the gas usage of the engine to reduce emissions (Braungart et al., 2014).

Repair by backpack brands

26 Brands that produce backpacks were reviewed based on their offers for repair. The companies included were based on two factors. The first one was the most relevant brands named by the Fortune report on backpacks (2022), and the second one was the backpack brands from the research on backpack damages. When searching for the largest backpack companies by revenue, there was a lack of results. The analysis is shown in figure 37.

Brand	Repair service	Home repair support	Spare part shop	Search for 'repair' on website	Note
Nike	Not found	Not found	Not found	No result	
Under Armour	Not found	Not found	Not found	No result	
The North Face	Not found	Not found	Not found	No result	Repair found on the US website; only when googling it, not on the website itself
Everest	Not found	Not found	Not found	No result	Repair only as part of warranty; not applicable when broken due to wear & tear
Samsonite	Not found	Not found	Not found	No result	Repair is possible via the store were product was bought
Swissgear	Not found	Not found	Not found	No result	Repair only within the warranty; warning that repairing by unauthorized persons can affect the warranty
Herschel	Not found	Not found	Not found	No result	
Patagonia	Yes	Yes	Not found	Leads to repair page	
Tortuga	Yes	Not found	Not found	-	Repair is possible in US and Europe
Osprey	Yes	Not found	Yes	No result	Repair and spare parts are available, details only accessable after creating an account though
Adidas	Not found	Not found	Not found	No result	
Wildcraft	Not found	Not found	Not found	No result	
Dakine	Not found	Not found	Not found	No result	
Vaude	Yes	Yes	Yes	Leads to repair products and news articles	Repair tutorials very basic for task that need no tools
Deuter	Yes	Not found	Yes	Leads to various pages about repair	
Ortlieb	Yes	Not found	Yes	Leads to replacement parts and return form	
Fitz & Huxley	Not found	Not found	Yes	-	Spare part shop is very limited, mostly cords
Forvert	Not found	Not found	Not found	-	
Head	Yes	Not found	Not found	No result	Repair only within the warranty; warning that repairing by unauthorized persons can affect the warranty
PacSafe	Not found	Yes	Not found	No result	
Völkl	Not found	Not found	Not found	No result	
Kipling	Yes	Not found	Not found	No result	
Basic Fit	Not found	Not found	Not found	No result	
Carhartt	Not found	Not found	Not found	No result	
Hyperice	Not found	Not found	Not found	No result	
Eastpak	Yes	Not found	Not found	Leads to warranty page	

Figure 37 –Repair by backpack brands

Broken Backpacks Data Sheet

Backpack Nr.	Brand	In use (0=yes; 1=no)	Ripped fabric	Broken zippers	Ripped seams	Broken accessory	Exhausted elastic material	Wear & tear	
1	n.a.		0	0	0	0	1	0	0
2	n.a.	n.a.		0	0	0	1	0	0
3	n.a.		0	4	0	0	1	0	1
4	n.a.		0	1	0	0	1	0	0
5	Forvert		1	1	2	0	0	2	0
6	Forvert		1	4	2	0	0	2	0
7	n.a.		0	0	1	0	0	0	0 X
8	Forvert		1	3	3	0	0	0	2
9	Dakine		0	0	1	0	0	0	0
10	Head		0	0	1	0	0	0	0 X
11	Vaude		1	0	1	0	0	0	0
12	PacSafe		0	0	1	0	0	0	0
13	Völkl	n.a.		3	1	0	0	0	0
14	Kipling	n.a.		1	1	0	0	0	0
15	n.a.	n.a.		0	0	0	0	0	3 X
16	Basic Fit		0	1	0	0	0	0	2
17	n.a.		0	0	0	0	0	0	1
18	Fitz & Huxley		0	0	0	0	0	0	1 X
19	n.a.		0	0	0	0	0	0	1 X
20	n.a.		1	1	0	0	0	0	1
21	n.a.		0	0	0	0	0	0	1
22	The North Face		0	0	0	1	0	0	1
23	Vaude		1	4	0	0	0	0	2
24	n.a.		1	1	0	0	0	0	0
25	n.a.		1	1	0	0	0	0	0
26	Dakine		1	2	0	0	0	0	0
27	n.a.		1	1	0	0	0	0	0
28	n.a.		0	1	0	0	0	0	0 X
29	Carhartt		0	1	0	0	0	0	0 X
30	n.a.		0	1	0	0	0	0	0 X
31	Adidas		1	2	0	0	0	0	0 X
32	n.a.		1	1	0	0	0	0	0
33	Hyperice		1	3	0	0	0	0	0
34	-	-	-	-	-	-	-	-	0
35	n.a.		0	1	0	0	0	0	0
36	Eastpak		1	0	0	1	0	0	0
37	Dakine		1	0	0	1	0	1	0
38	n.a.		0	0	0	0	0	1	0
	Not in use:		15	38	14	3	4	2	16

Total amount of backpacks 37
Total (including ear & tear) 77
Total (excluding wear & tear) 61

Figure 38 – Backpacks From Damage Research

Failure						
Per damage	Ripped Fabric	Broken Zipper	Ripped Seam	Broken Accessory	Exhausted Stretch Material	Wear & Tear
Amount:	38	14	3	4	2	16
Of which failures	24	13	3	4	2	1
Of which still usable	14	1	0	0	0	15
Of which failures	63,16%	92,86%	100,00%	100,00%	100,00%	6,25%
Of which still usable	36,84%	7,14%	0,00%	0,00%	0,00%	93,75%
Detailed damages:						
Zipper fabric ripped	1					
General ripped fabric	22					
Handle/shoulder strap	6			1		
Back panel	3					2
Bottom part	6			1		4
General torn fabric						9
Zipper						1
Mechanism not aligned		5				
Slider broke		6				
Teeth part broke		3				
Main compartment				1		
Worn out buckle material					1	
Broken buckle material					3	
Exhausted elastic material					2	
Total backpacks:	32					
Total damages:	61					

Figure 39 – Distribution Of Damages On Backpacks

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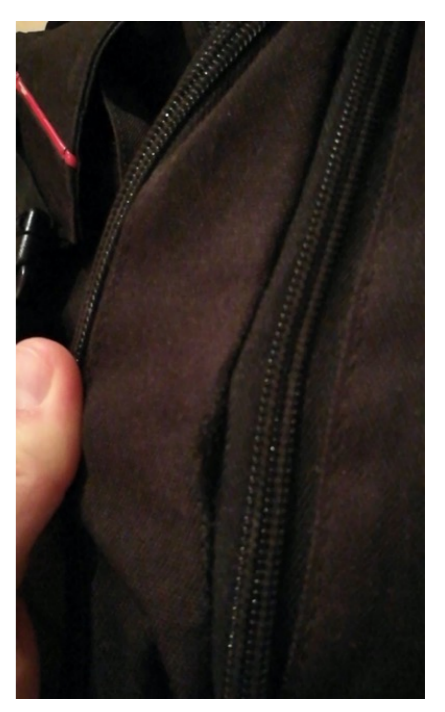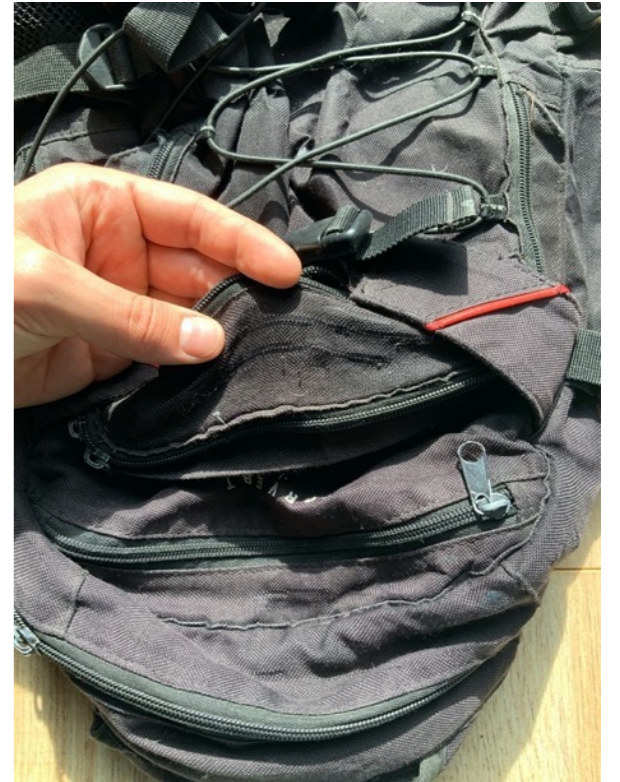
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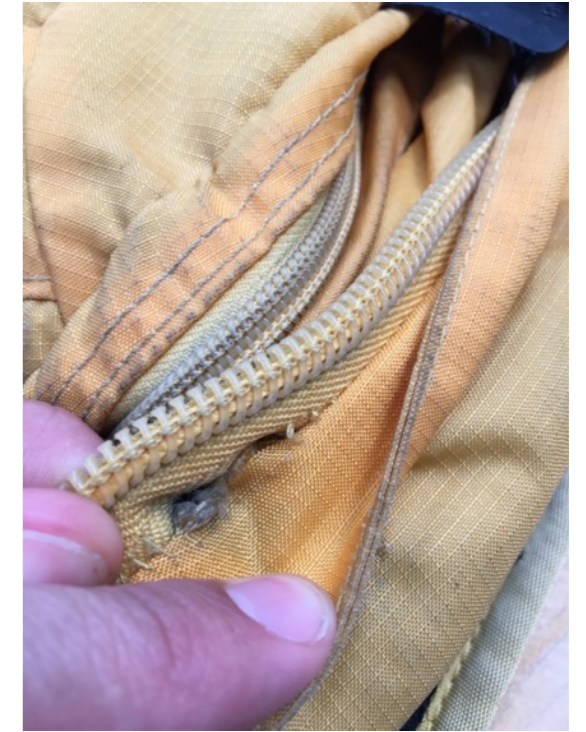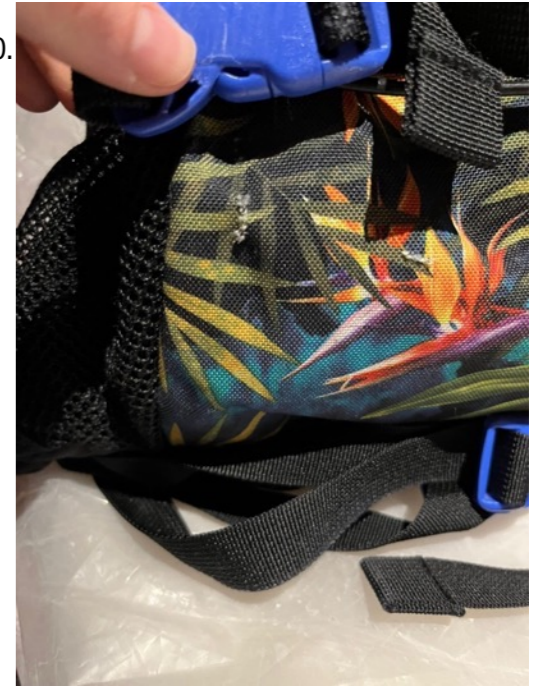
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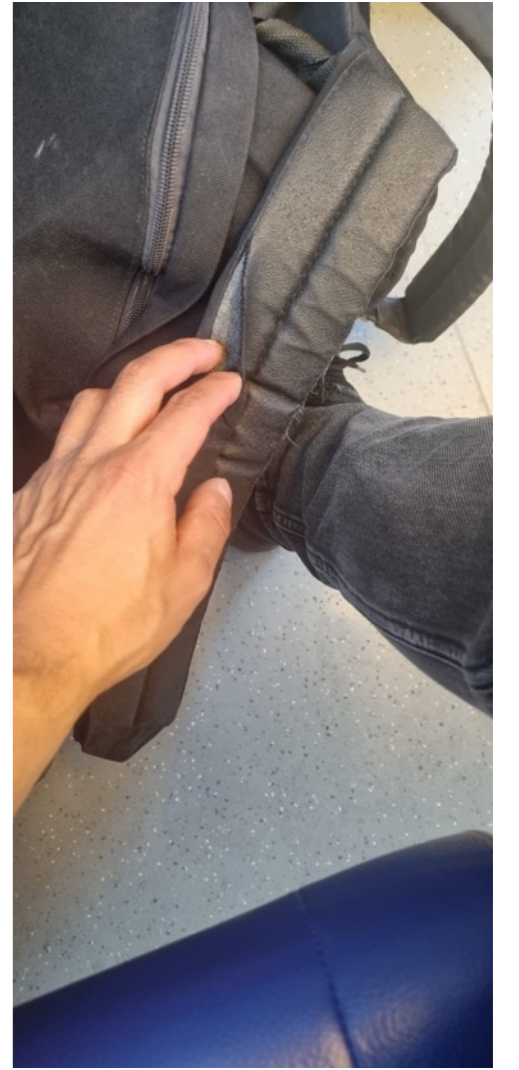
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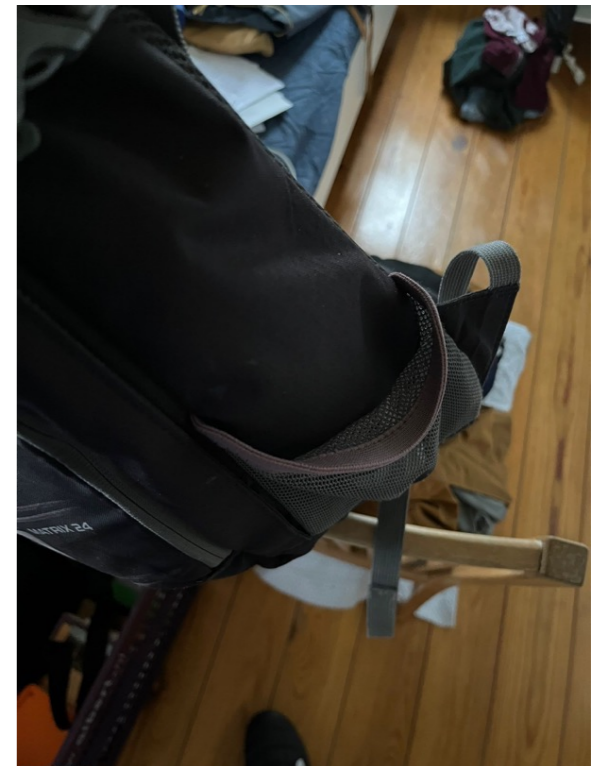
Interviews

Interview guide

- Repair in general
- Experience
- Workflow
- Knowledge resources
- Educational process/history
- Encountered problems
- Motivations
- Backpack repair
- Expectations
- Motivation
- Perception
- Communication of repair
- Backpacks in general
- Aesthetic
- Activities
- Damage experience
- Consumption & usage behavior

Interview Questions

Repair in general

- The first part will be about repairs in general. So, I assume you already did bigger or smaller repairs and have some experience in it. Maybe you had something in your household that was broken or things that had emotional value for you. Can you give a few examples of repairs that you did?
- From these examples, think of the most rewarding one. What did you feel when you were working on that?
- When you think back, how did you get into learning to repair things?
- Can you tell me about your favorite tools and techniques to use for repairs?
- When you did your first or one of the first repairs, what were your experiences in finding the right resources?
- Can you tell me about problems that you en-

countered during your/that repair(s)?
- How did you feel during that event?
- How did you solve the problems?
- (How did you get motivated to repair things yourself?/What motivated you to repair (your backpack) yourself?)
- When you repaired your (insert example given before by interviewee), what did you think until you decided to repair it/what was your thought process?

Repair of backpacks

- Now I want to get a bit more specific and talk about the repair of backpacks. As a start, can you tell me first what associations come to your mind when thinking of repaired backpacks?
- What is your personal opinion of repairing backpacks?
- Imagine you are about to repair your broken backpack. Maybe there is a hole in the material or a zipper ripped off. (Now you have already gathered the information on what to do, and you have all the tools needed, so you are ready to start.) When I join you while you repair that backpack, what will I observe?
- Imagine you want to repair your backpack; how would you describe the optimal experience of it?
- (Are there specific tools and techniques involved? What can you tell me about your favorite ones?)
- In general, what do you think needs to happen to make it more likely that you repair your backpacks yourself? (Maybe ask if there are factors that are important)
- (Which factors do you think need to be present for you to stay motivated to continue repairing your backpacks in the future?)
- How do you think is repairing your backpack different for you from repairing other objects?
- (Imagine you repaired a noticeably big hole in the front of your backpack.) What expectations do you have of the aesthetics/look of your repaired backpack?
- Now I would like to shortly step away from the act of repair and look into the image of backpack repair. Could you please tell me how you perceive the image of repairing backpacks in the public/society?
- What is your opinion on how companies should

communicate repairs of backpacks?
- How would you expect them to handle this topic?
- How can repairing your backpack be communicated best to make you aware of it?

Backpacks in general

- When you buy a new backpack, what do you think of its aesthetics and function?
- Is there anything that is more important to you regarding these two factors?
- Please think of the last backpack you had that broke. What did you do with it, and how did you come to that decision?
- What was your thought process?
- Can you remember which parts broke first and which followed?
- Can you tell me about the backpacks you have and the occasions you use them for?

Is there anything that you would like to tell or last thoughts you want to share?

Interview transcripts

Interview #1

Marlon   00:02
Yeah, maybe as a little introduction. I mean, I already told you a little bit about project but in general, yeah, I'm really looking. I mean, it still comes from also from my Bachelor studies that was engaging video repair and stuff. So I can turn that off. Yeah, so I wanted to continue with something with repair. And also for backpacks might be a cool thing, because I wanted to be in the area of textiles and stuff. Like, it's more complex product than shirt, for example, or hoodie. So, so there's more. So the idea is a bit yeah, to now see, like, maybe first get a grip also on how people, what kind of backpacks people have, see a little bit, how they, how they deal with their backpacks, but then also combine it with repair. So, Yeah, see, why do people repair it? Or why do a lot of people walking with and kind of, maybe get a grip on where the the reasons lie? So Don't set

yourself under pressure, you can take the time to think but I mean, from we already talked about it a little bit. So I know that you already did some repairs. And so the first part would then be more about repairs in general. And maybe just think a little bit back on repairs you did. Yeah, I don't know, in your household, maybe appliances or anything. Yeah. Something that had emotional value for you just maybe give a few example you can think of

#1   01:46
well, it's not really like that. First things that come to mind, which I do most often is not really repairs, but like adjustments. So like, taking in bands or like, making shorts it's a little shorter, or pants a little longer. Right. So like to make it a little bit more nice for me to wear. Yeah, that's something that's, you know, that I think it's important, you know, if you have a piece of clothing that is really good for you. That's what I've done in the past. Like, closest by. Latest, latest latest things I've done in recent times. Yes, yes. And let's think repairs when it was broken? Think I've done many repairs, but I'm not sure which ones. So like pants like when they rip or something. Yes. So it's like if I've loved a pair of jeans for example, and then it tears apart I've had like this Oh yeah. And then I repair it and then it's just like how do you say that like kind of working Yeah, we're working wear

Marlon   03:15
but also after you repaired it it becomes like your work your work wear?

#1   03:20
Yeah, I mean, it's work like Office bit like when I paint or make something with boots or in the garden or something. Other stuff... I've never repaired bags, to be honest. Other like... maintenance does this count? Maintenance like for example, I have pair doc Martin's and then sometimes they become really dry you know and I never do like regular like maintenance and then sometimes I think they become so dry it's starting to rip here you know, like the leather and then I think like oh let's wax it in you know that's I'll do sometimes. Or my kitchen you know the wooden tabletop. I need to oil. Oil that once in a while I do that. I have a feeling like

there's more but I'm not sure.

Marlon   04:34
Yeah. I mean. Also during the talk is that comes more to your mind like just let it out. But, oh,

#1   04:45
like, for example, sometimes I think a lot of my socks, you know, they get holes in them. And then I think I could make this and then I just throw them away. Then I think My Grandpa Grandma wouldn't be proud of me I think yeah it's just not worth it or something you know and then I think that I'm not going to do it. Oh yes and I also have always have like a pile of clothing which is or like how do you say that that it needs to be ironed? Or like their sustaining is which I need to take my bag for to get it out? Or you know, something I made but did not finish yet you know, like one bit of detail and then I think it's all on a pile in the back of my room and it's like ah I need to do that and then it never happens. Yeah, yes. Last week I had a week off then I had a half a day for that pile.

Marlon   05:54
Yes. And did you work something off?

#1   05:59
Yes, yes. So like I rent some and I got stains out

Marlon   06:05
cool. So I mean, maybe then when we take the example of of your jeans said that it rips and you repaired it. Can you kind of think what the rewarding part of it was when you think back to how you repair what makes you...

#1   06:26
of the repairing itself?

Marlon   06:28
Yeah

#1   06:32
think not really the repairing but more like that. I feel like this is such a good piece of clothing it served me well. It will be such a waste you know, if I throw

it out nobody will wear it because there's a hole in it you know, and it will get in landfill and not that I never throw anything out guilty but it's you know if it's a piece I've loved it's like yeah it's just yeah, it's not worth that waste or something

Marlon   07:08
Yeah, okay, so maybe I want to describe the feeling you have when you think it's a piece of love to throw away?

#1   07:19
It's like huh... The first idea was guilt you know, you know, you did nothing wrong you know, that I'm not sure if that's it. Then also something like maybe it's I hoped I wanted it to be not broken. Like oh, now I can not wear it to you know more formal things or something. So that's actually negative. But when I wear it as workbpants then it's like very comfy work pants

Marlon   08:14
that's nice

#1   08:15
yeah

Marlon   08:20
yes, so then maybe a little bit back in time think of your starts in repairing something can be the jeans can be anything other maybe you did doesn't need to be the first thing you repaired but maybe can you somehow think back how you got into repairing stuff

#1   08:49
repairing stuff, I need to have some examples from the time but I think like okay, back in my parents house when I was there it was like the two two sides. One side was you know, you needed I needed to be able to fix my own bicycle tires. For example. You know, there was something like yes, you need you need to be able to do this like sort of basic skill or something or like

Marlon   09:19
from your parents?

#1   09:20
Yeah, like my like my dad was like, You are Dutch, you

know? And so sorry, I am so you see what that is it's surreal. Okay.

Marlon   09:43
I'm gonna take pictures.

#1   09:46
Yes, but so that's one side and then the other side. They like bought a new camera every year because there was something broken or something we had like a closet full of You know, devices never used or one holiday, it's like, and then I, you know, moved out. And I was like, I'm not going to be like that, you know, I just want to have a few good things, which will last, you know, and also because of the, you know, movement of conscious a little bit more consciousness bla bla bla. So but like all the stuff I, I own you know, I also put a lot of pressure, but like, when I was okay, example, this is not about repairing, but like when I buy something new, like sunglasses, that's what like, last week, I've had, I first had a pair of expensive sunglasses, but I just never wore them because I didn't like the style of it. Like, Oh, that's such a shame, you know, because it's a good pair of sunglasses, but I just don't like them. And then I feel like yeah, what does it matter if I like them if it's just functional, but then I never wear them. And it's just wasteful. Okay, so I sold that. And I Googled for hours on the perfect pair of sunglasses. And now when they arrive, I'm sure I will be so you know, careful with them. Like, I will buy a box for them you know, that's a you know, if you really like a specific item, you are going to be kind of you know, I've other items were much more less careful with, you know, when I find my sunglasses at HEMA, let's throw it in the bag, you know, and I wouldn't, I would never repair that. Yeah, even though when I you know, Google for hours and the drives and it would break. I would certainly let it be fixed somewhere. You know, that's sort of maybe...

Marlon   11:59
what do you think where the difference comes from? From some things you wouldn't repair and just throw away? And some things you would?

#1   12:10
Yeah, for sure. Price. You know, but it's also like, ex-

pensive sunglasses that I sold now. They were not so precious for me. Even though it was costly, you know? Yeah, I mean. Yeah. Just if I'm Yeah, loving is a very broad, unspecific word. That's yeah, that's for you to figure out. Which I love Yeah. Okay, which is functional. So like polarized glasses or like a good jeans. You know, if it's from Levi's, it's better than from h&m, right? Well it feels that way but I'm not sure if it's even better. Yeah, I think so. But and if I just think it's, it looks good. Yeah. Yeah. And that's not so purposeful, but it's the truth.

Marlon   13:14
All right. Yeah, maybe. Let's get a get back little bit to the repairing. Especially now, also still a repair in general. What our favorite tools are taking the things you like, for repair? It really can be I mean, you're already now gave it an example. You can fix the bike wheel.

#1   13:44
Yeah, yeah.

Marlon   13:45
So there is more.

#1   13:46
Yeah. Yeah.

Marlon   13:49
Any tools, I mean, can be anything like sewing machine. Can be screwdivers can be...

#1   13:56
so I think for projects, it's very, you know, different case. But I think for tools you know, I think for example, sewing machine, I just like it because I am comfortable with it. I know how it works, done a lot with it, I can fix it if it breaks even the machine to fix things. You know, that's different from you know, kits to repair your tire. I know how it works, but if something goes wrong, I am not sure where to go, you know, according to what I've learned, because otherwise I'm helpless. You know, one time I was fixing my tire in front of the house, like it was summer it was hot and I was you know, wearing short pants and stuff and then all of these guys came are you okay should I help you and I was like, What the fuck no get out and then something went wrong and I

could not fix it and I felt so stupid. You know, I felt like the girl who could not fix her tire, you know? And then I just feel stupid. And then I'm ah nevermind. Next time I just bring it to the bike shop. I Just don't want to feel stupid in the process.

Marlon   15:22
Yeah. Can you remember what went wrong?

#1 15:27
Something with the ventil(dutch)? Like, you know the air point. Then it just like there was a balloon inside. You know, so I could not put it back in the wheel itself. Okay, because it was too thick there. I'm still not sure what's happened there. But this was years ago.

Marlon   15:57
Doesn't matter. Really? Doesn't matter how long ago

#1 16:00
now, but like, I'm not sure how I fix it then.

Marlon   16:03
Yeah. Okay.

#1 16:09
Other examples? Not sure.

Marlon   16:23
Yeah. But the back tire one is actually a pretty good one. Because now you've already told… maybe you can elaborate a little bit more on how you felt during when you had those problems? Like?

#1 16:41
Yeah, like when I'm going to repair something. I feel really like how hard can it be? You know, I, I am a strong woman. I can do this. I don't need no man. I will fix it. You know, even when drilling something in the wall or something I'm not sure. So when, you know, when I can do it, like, guys bring their pants to me, and I fix it. And then I feel like, oh, I fix your beds. You know, this is that's good for me. Because I can do it. I feel comfortable. confident with it. It's when they say like, Oh, can you fix my tire? Then I'm like: Yes! But not with you looking? You know. So then I feel sort of. Yeah, less

confident, I think. And then. So if it's yeah, that's sort of that sort of fear something like very deep down. But there's a bit. Yeah.

Marlon   17:50
Can you can you tell what the fear is?

#1 17:52
Can I tell what's furious? And just, you know, that's one of the reasons that it's so like, learning to sew was kind of frustrating process. Because you know, a lot goes wrong in the process. But it's super good to feel empowered. You know, when you can make a piece from scratch that feels so good, you know, you feel like, oh, my gosh, I did it. And people can see it. And it's just like I made it. Okay. That's the opposite of it.

Marlon   18:30
Yeah.

#1 18:33
So getting over that tiny bit of fear. It's, actually kind of cool. So it would be like, I feel like it's sort of foolish if simple repairs don't work. You know, and then I feel like it will probably be me. It's my fault or something. I'm just stupid or dumb, or something, I'm not sure. And then I feel like that's just something we are, we are in this society ,Marlon, this society we are not used to that anymore. You know, our life is so comfortable, so easy. Everything is you know, they drive to our house with beers. You know what I mean? So it's too easy, man. That's something I you know, I feel sometimes you feel a little bit distanced from like, being a human. You're in your house, watching TV all day. Well, not all day, but you know, the feeling of being so. You know, so, you know, everything can be taken out of your hands and then taking that power, human thing back your hands and like I'm gonna repair this and then you think like, Okay, I'm going against the stream. But nevermind, I want to repair this and then does it go right? And then you think ah well, I'll just book a repair man. That doesn't exist I think but ah metaphorically.

Marlon   20:20
Yeah, I know what you mean. Yes.

#1 20:23
insightful?

Marlon   20:24
Definitely. I will tell you after the interview.

#1 20:28
Very neutral.

Marlon   20:30
I don't want to push you in directions now. But yeah,

#1 20:34
you're doing better than me in the interviews. I was like, Ah, yes. Yeah. Yeah.

Marlon   20:48
I mean, you, you kind of already talked about it. And I think what like, I would like to know what motivated you to repair. But I think you already covered that quite well, but what now what would interest me maybe as a follow up? You said that sewing for example, the learning it was frustrating. What kept you going?

#1 21:12
It's interesting. My thesis is overlapping a little bit here. Yeah. Yes, yes. It was part of my that's why I thought a lot about it so I can answer more easily. But yeah, it was also about motivation for people to go sewing and stuff. So that's, I think, I think it is because repairing is, for example, repairing is needed, you know, something is broken, and you have the urge to fix it at that moment or week, or, you know, there's some or urgentness to it, you know. And when you start sewing, nobody says that you need to be done with projects. It's like you do it for your free time. It's an open choice. If you don't like it, you could just stop and you know, it's sort of a safe space, where you're just in your own room. And if something doesn't work out, it's like, yeah, sad, but yeah. You know, okay, no top, Okay, yeah. And when you can't fix your tire, you can not go to work, you know?

Marlon   22:35
I mean, you can still use a Felyx, but then you're...

#1 22:42
Yeah, that's what I mean

Marlon   22:43
...suddenly dependent on a third party? Yeah. No, yeah. But I get what you mean. Yeah. All right. Now a little bit more specific. So now, I will talk about repair of backpacks. Doesn't matter if you have no experience in it yet. But maybe just really, as a start to think about repair of backpacks. Can you tell some associations that come to your mind? What do you think when you think of it?

#1 23:17
I think but I'm not sure if other people have the same but I've my backpack is like one of the only items that I just wear or use almost every day for like, seven years or something like quite a long time. And it's still kind of, you know, there's, it's not new anymore, but it's it's decent, and then nobody will say Oh, old backpack or something. It's just like, good. And I feel like there's a lot of stuff that can benefit more from me repairing it.

Marlon   24:02
Okay. Also, regarding to the backpack.

#1 24:06
Like when I, you know, that's kind of a durable thing already. Like, there are lots of other things that are less durable in my life.

Marlon   24:17
Okay.

#1 24:19
That I would rather throw away than repairing so you would have more, how do you say that, like achievements? More difference, you will make more difference or something?

Marlon   24:35
Okay. Yeah.

#1 24:36
You know what I mean?

Marlon   24:37
So, kind of think about another direction of more pri-
oritizing.

#1   24:42
Yeah, but I'm not I'm not sure what's like a clothing but
there's so much you know, and it's such a big topic. So
I understand like that it's too much. Yeah, but people
are in general No... Maybe not per se here. Here are
people a bit more conscious and stuff. But I think like
in general in like society, people are just don't fucking
care Yeah, that would be so cool if people care a little
bit more without feeling guilty. That's another thing. Oh
yeah, but no. Okay, backpacks... interesting. No, I'm
not sure if this is useful, but it's an interesting thing.
I have a good backpack. Yeah. Then I thought like for
going on the traveling and stuff, I need a smaller back-
pack for day trips and stuff. Because this is like my
laptop backpack. And I have one from The North Face.
So it's a good one. But I'm like, it's so sporty, you know.
I want something more casual. And then I'm looking
for buying a new one. And then I think this #1 this is
not good. So there is something that I'm not sure I just
don't care enough I think. Yeah, even me. Here. Just
say, yeah, so with backpack. Okay, for example, there's
a hole like this in like the top. You need to send me a
picture. Okay. Yeah, it's also here, but I did bring it I see
it. And I'm saying so still works. Yeah. Not big enough
yet. Maybe I was I was I would fix it then but has not
happened.

Marlon   27:00
Yeah. So that's interesting because then it would be
maybe also... no let's say first how would you balance
let's say functionality and aesthetics in a backpack?
What about the importance? Do you know what I mean?

#1   27:21
I think yes. I think functionality above all but like I can
say that with the smaller backpack, there's a difference.
You know, so but I'm still looking for sort of the same
thing. Also black you know, matches with everything,
is good for your shoulders. You know, it's big enough
to take like, a festive blanket. Bottle of water or some-
thing. I'm not sure. Yeah. But um, oh. I am so fucking
specific. You know, I got you know, it's you know, yeah.

With everything. So it's I'm not sure if I'm representa-
tive. Yeah, but I think I think functionality and then the
studies but even though it can be a break, make or
break thing

Marlon   28:40
Maybe, now, let's let's think of, let's say, Oh, we can
take your backpack. You just told me there's a hole in
it. So now you want to repair it. And then I will join you.
Can you maybe take me a little bit through the process
how you would repaire it? What would I observe?

#1   29:03
You would see me and maybe googling if there's a if I
just can use regular threads or that there's like some-
thing stronger? I think there's something stronger. I
think I have them but not on the spool like on a... that
would be first thing, then I would maybe buy it and I
would come home. Put it in my sewing machine. Just
put it on there big zig-zag stitch with small spacing. Just
go over it a few times. That's it.

Marlon   29:48
And then happy.

#1   29:52
Yeah, I will put stuff in it and go walk with it. Show it to
the world.

Marlon   30:02
Yeah. And what do you think for that experience? How
would it be the optimal experience in terms of that it's
for you enjoyable or motivational as well.

#1   30:21
I think in this case, there's not much needed because I
am quite confident with the process already. But I think
for other types of stuff, where I'm not confident with
process... let's use the tire. You know, then it would be
like, Maki is a good example of this, you want to learn
something, you... Maki answers everything, by the way.
You wanna learn something but sewing is not some-
thing people, you know, expect you to be able to do.
Like fixing a tire. It's like, you know, direct like sewing
you can be very, you know, details and we can make
videos and text and illustrations and stuff, and be very

happy. And you did it. You made it! How cool! this looks
so nice! But like, with a tire like. Yeah, maybe you have
to do it with the tire. Maki for tires. Like, because you
wanna take away the aspect that you were expected to
be able to do it or something. Some threshold? Yeah,
like maybe steps that say what you need to do is not
enough. Yeah. Right. That's like, Okay, do this. Do this.
You know, yeah,

Marlon   32:15
I think I get what you mean.

#1   32:17
Yeah. That's also like, oh, yeah, that's a good example,
actually. I am very much feeling resistance when You-
Tubing stuff don't work, for example, in a camper van,
we bought, there's a heating system, and we could not
figure out how we turn it on. We could not figure it out.
Try it. And then I'm like, Okay, nevermind, we'll sit here
in the cold. And then my boyfriend is like, no, you're
just going to watch a YouTube video. Then I see him
clicking like three videos old, like these people, which
don't explain it well, or the wrong model, or this or that.
And I'm like, I'm getting tired even hearing about it, but
that's just me, like being very impatient. No, I just want
some somebody telling me personally coming through
the door. You know what I mean? I would rather you
know, with a sewing problem, I would rather call Laura
to ask as my my expert assistance. What the fuck I
need to do than Google that. 'Cause I'm so impatient,

Marlon   33:43
Okay. So then back to the backpack. Just...

#1   33:50
Sorry, I'm very extensive.

Marlon   33:51
No, that's all right. What do you think makes it more
likely to actually repair your back? What needs to hap-
pen?

#1   34:09
it needs to break more. The hole needs to be bigger.
Like the urge needs to be you know, higher then I think,
okay, this can not go on. Otherwise it will be just awk-

ward to walk around with this, you know. You know, and
then then I also don't want to spend another, I don't
know 80 euros on a new backpack. So I'm like this
one, I'll fix it. No. Yeah. Sad I just want to say something
nicer but that's it.

Marlon   34:50
You need to say what you think.

#1   34:52
Yeah, but I know I'm also a designer.

Marlon   34:56
Yeah. How do you how do you see that repairing Your
backpack is different to other objects. On what's the
difference there? I mean also to clothing I mean it is
a different product product. How do you think would
there be a difference?

#1   35:17
Maybe because I feel less guilty because it's already
so durable and I am using it for a long period of time
already for with... like my clothing rotates a lot more
you know yeah stupid but yes you know and then I think
like if something that I love breaks and I don't wear
a lot of or like love a lot of pieces I oh you know and
then where when I do I'm like, hah, this is my perfect
jeans I can never find that anymore ever elsewhere you
know? Or is that a good answer? Yeah, and I'm but I'm
not sure if it's true. Is it true Yes. Yeah, but yeah like I
think less guilty Yeah, maybe like clothing that I feel
guilty or about I'm like, I cannot buy another jeans you
know, with a backpack I'm like, maybe when it would
have multiple holes on all sides then I would think okay,
backback you served me well. Maybe it's time for you
to go you know if it's more like multiple stuff, or like
things. For the one hole, it would be like okay, you can
go this will be well you can do another seven years. But
like for multiple things...

Marlon   37:14
I get that.

#1   37:19
When I go home this evening. First thing after this I will
fix this backpack. Maybe you just have to go to every-

one to give them guilt about

Marlon   37:33
I have a last few questions.

#1   37:35
Okay. Good, because I think it's also another kind of guilt. Yeah.

Marlon   37:45
But now, like step away from the act of repair in the into the image of backpack repair and how you perceive that image of repairing and if you can tell, especially in the area of backpacks in the public or society so how do you perceive that around you?

#1   38:08
A popular topic. But I think like repair cafes and stuff are like you know, popping up and I think it's such a cool concept. But I'm not sure, still not sure how, you know, do people go there? Like do they really do it like and then it's just like any repair. Are there people capable to repair it? You know, I'm not sure what feeling it is. But I feel a little bit hesitant about repair cafés but I think it's a good initiative. Repair other like products. I get so angry. Because, you know, what's the term for it like, you know, this linear economy... doesn't... you know, cannot sustain you know, it's just not logical with resources and stuff. If companies have to earn their income through selling new products every time it's just so weird, right. You know, that's also you know, circular towards a circular economy where we talked about this extensively. But like, so, of course, companies will make their products to not, you know, endure, yeah. And then I think yeah okay, so what am I going to do about it as a consumer, I can repair it two times, okay. You know, you really have to buy from the very purposeful brands to, you know, get around that system, but even with Levi's jeans, okay, one year warranty, and then it's only if it's not your fault, but our fault. Okay,

Marlon   40:17
But how do you think should companies communicate the repair then of backpacks?

#1   40:22

Yeah. I think like, which one was it? I think it was Patagonia. Communicate like, had a campaign like, don't buy a new.

Marlon   40:38
Yeah, don't buy this jacket.

#1   40:40
Yeah. And then I was like, yes! Some, you know, company go against that. That I think like that.

Marlon   40:53
Okay. Yeah.

#1   40:54
You know, you can earn trust. If you tell people to do it themselves, but that's is contradicting with their benefits. So I'm not sure I can do it, or you have to make like a movement. Now, we gotta get against all those companies. Let's repair it. Yeah. Then I think it will be like, Oh, yes. This cannot go on.

Marlon   41:32
Okay, yeah. So...

#1   41:34
alright. Oh, yeah. I think also, there's, like, I'm not sure. I've seen it, but like, trends of repairing but with a really bold color or something. And clothing and stuff. I follow these accounts, you know, and that's also, you know, based on the Japanese were, were they correct their plates filled with gold or something. So it's just so nice, if you like, good rethought ideas. Or, like, you have these stickers, you know, for like teens for their pimples, is just like, tiny gold stars, and they put on their pimples. And it's very cute. And I'm like, This is so such a nice idea. You know?

Marlon   42:23
Yeah. Okay, nice.

#1   42:27
And then I think like, that's rethinking what is wrong? But I'm not sure if I would do with myself because, you know, you grew up at (not understandable part)?

Marlon   42:38
Yeah. That's interesting. Yeah, so maybe last question. Following up to that, then how for your backpack, how do you think would need to be needed to be needs to be communicated the best so that you're repair it? What kind of kind of communication do you need that you think yes, I want to repair my backpack?

#1   43:17
I actually think that the functionality of repairing it, is not enough. Okay, bit broken or not broken. For my personal life, it's not such a big difference. But I think when you would combine it with some thing bigger, like, some movement or I'm not sure, that would not be like that specifically for backpack but maybe, maybe it can be sort of the start. I'm not sure but like if there would be like something like some movements that you feel another kind of pressure social or purpose miss or resistance, something more than just me having a perfect backpack. Now because I want to be, how do you say that, a better person doesn't sound you know, it's too big but like a person that doesn't have broken stuff. That fixes stuff, but in my house, also, things are broken. And it's not neatly organized some things and I'm like, Yeah, that's just life.Yes.

Marlon   44:47
I think that's a really nice ending. Yeah, I mean, if you have any last thoughts you want to share...

#1   45:01
I think I did not know I had too much to say about it so I think this is okay

Marlon   45:08
Well, yeah thank you very much

#1   45:10
Yes no problem.
Interview #2

Marlon   00:00
So maybe as a first introduction, I mean you know a little bit about my master thesis. So about repairing backpacks, especially now the direction is more looking... how to make the introduction to repair much eas-

ier and more engaging for users. So also in the way that the product design is focused on that, but also to see how that can be communicated. So now in general, the interview is made a bit about getting some information on your experiences will prepare also, maybe in combination with backpacks, as far as that's possible. And also, about yeah, your your opinions, your your feelings, your motivations, a little bit of everything around the repair. So the first part would be then really about repairs in general. So it's not about the backpacks. But I assume you already did some repairs, in general.

#2   01:20
Yeah, I repair everything that I try to repair everything that breaks where I think I can fix it. I love it. That's why I have a 3d printer that's why I know how to sew

Marlon   01:33
Perfect. Because now my first question is if you can give a few example of repairs you did and that can be everything something in your household. Something you had emotional attachment to

#2   01:44
Yeah. Well, usually if my... I repaired quite a few jackets, when something ripped off or got loose, or the suture came off, then I sewed it back together, or buttons came off... ah interesting, that I say I repair so much and then I can't think of things that I repaired. Yeah, things like a shower head or something... Oh, yeah, a good example. One of our fruit blenders the button to turn it on and off, broke off because it was an injection molded plastic part and the inside just snapped. And then I remodeled it in the computer and printed it in, in PET. And now we have a perfect replacement knob that looks exactly like the old one just a bit more rough on the surface. But, works just as before. Yeah, my backpack. Oh, my computer screen started making as if I turned it on, it would only flicker really, really annoyingly so like, two or three hertz, you could really see it going on and off and on and on and on and off. And the flickering will become quicker and quicker and quicker until it eventually reached the 60 hertz normal flickering. But that could take one or two minutes. So I could not use my screen for that time. It was it annoying and it made a really high pitched noise when it was

on. And then I found... on YouTube I found a perfect video about this particular model on how to replace the capacitors. Audit capacitors for three Euros, I think, actually a whole pack so I can repair 50 more monitors. I screwed it open, I replaced three capacitors that were already blown up. And since then works like day one. So I turn it on, it's on. I turn it off, it's off.

Marlon   03:58
That sounds good. I mean, that's already a few examples. So maybe can you think of the most rewarding one?

#2 04:05
I think the monitor because I saved I saved something I had I wanted I was thinking of buying a replacement or what should I do with it? It's a big ass monitor it's already I think 10 years old so it's also a lot of material compared to modern monitors. So I was really upset that it in theory it worked but just these tiny little things that were not dimensioned big enough or large enough or doable enough, make this make this whole product a scrap product. Yeah, so it felt really rewarding when I fixed it. I turned it on and it worked like on the first day. So, yeah, I think that's that's the most rewarding experience so far.

Marlon   04:45
Can you explain or what did you What did you feel or what was the rewarding part?

#2 04:51
that I that I suddenly had something just as brand new again for for a fun experience where I took something apart, which I love, I resoldered something which I love even more. And I only spent three, three or four euros on buying capacitors, which I can just have to use for other products. Yeah. Yeah, everything worked out very well.

Marlon   05:15
Nice.

#2 05:18
One more example is our vacuum cleaner. Which has this rolling ball in the front. The wheel underneath. And

that just broke off. So it was sliding across the floor. And then I just did the same I modeled a new roller and put it in, in the vacuum.

Marlon   05:35
Is it a cleaning robot?

#2 05:38
No no, just a vacuum Cleaner, but it has three wheels. The big part from the cleaner. It has a rolling... has a role.

Marlon   05:51
Pretty nice. But then, when you so when you're really into repairing all this stuff, so soldering, you know, sewing you know, you told already, you can 3D-print. So that's quite a quite a big range of tools and methods. But, can you think back how you got into that to learn to repair things?

#2 06:16
I think it started with me being 10 or 12 and taking stuff apart, our hand mixer was broken. I wanted to try to fetch the motor from inside, try to do something with it. Or yeah, I think just the curiosity of what is inside products made me understand a bit more how they work. And then at some point, for example, our old mixer, the button where you release the two...8 the whisks kind of got always got stuck inside. So it didn't come out again, you have to kind of pry it out. And then I took it apart. And I found that just a plastic piece of the leg was broken. I don't think I fixed it. But I explained my mom how to press the button. So it would come up, pick up and stay stuck. So yeah, just taking things apart, out of curiosity, I think made me made me also see that many things are just minor things that break and ruin the whole product can be fixed so easily. And you save that you're safe from making buying something new, and discarding something that is actually still working except for the little piece of plastic for example.

Marlon   07:21
Okay

#2 07:23
Or just clothing. The only problem with the jacket is that

the button is missing. Off course, the jacket is less, less usable, less has less value, but you just sew it back on. And then you bond with your jacket.

Marlon   07:36
Yeah, the emotional attachment is a big part too, that's true.

#2 07:41
Also, I fixed it five times now, why should I throw it away now? Like how can the next rupture or so keep me from repairing it again, if I've already taken the time to do it five times?

Marlon   07:53
But was it always the same spot or we're there different?

#2 07:56
No, it was always something else. And I mean, my winter jacket still has a few missing buttons. I have the buttons, I just never sewed it back on. I think it goes both ways. Sometimes I do sometimes I don't.

Marlon   08:07
Nice. But I found it interesting when you have like when you explained that you have this interested in just finding out how things work and seeing it's just minor parts sometimes. Like, that sounds to me that if you don't really are if you're not really interested in wanting to take this thing apart, you don't know that it's a minor thing.

#2 08:29
Exactly.

Marlon   08:30
So how do you think? Is that a part maybe in that people could be more? Now how do you say, more confident and just thinking this can be easily repaired?

#2 08:44
Yeah, I think a big part of someone not repairing things is like I don't dare touching this. I don't know how this works. I don't think I can put it back together. If I open it, then yeah, of course, you always have bad experiences with snap fits that just break off and you can put

them back together as they were before. Yeah, so it's without this interest and this confidence that you are able to fix it if it's broken or you'll at least be able to put it back together and we keep using it in the broken way as it might still work. It's it's very difficult, like my toothbrush is now eight years old, the electric toothbrush not the head. So, eight years old and it still costs I think 150 euros or so new. It's a good one from Philips. And since a year or so the got really loud because I think something is maybe broken or not in the right place anymore. But I don't dare to take it apart because I'm not sure I'll be able to either replace what's broken or even put it back together the way it is. Or repair it actually. So I'm now in this this moment of as long as I don't have money to buy a new one in case I don't get the old one repaired.

Marlon   09:59
Yeah.

#2 09:59
I'm not going to take it apart. So that's also, I think, aspect to consider. If you if you don't have a replacement for it, or if the loss of the product is actually makes an impact, then you you're really unlikely to, to even try it. It still kind of works.

Marlon   10:18
Yeah. Maybe back to the repair and your experiences. From all those things you repaired, can you can you tell a bit about your favorite tools and techniques to use?

#2 10:32
Well I have the most fun in taking a broken piece of plastic model it, remodel it in, in software and print it. So basically just mimicking what has been broken, replace it one to one. But that also takes the most time, I think. And also even for the mixer knob, it took me five or six prints until I got the dimensions right until I got the print quality, just okay. And I had this little second piece of plastic like a shiny chrome like insert that the inset that would sit on the outside and I wanted to fit this to fit in as well. So getting those dimensions right were also was also a bit tricky. Yeah, like my soldering iron, if I can use it for for good.

Marlon   11:24
Can you tell a bit about why those are your favorite ones?

#2   11:34
I think it comes it's a bit the same the same phenomenon, like the power that you feel from welding. Because you suddenly are able to recreate some manufacturing techniques that are not really common, right? Not everybody solders or not everybody can 3d model something, one to one and print it and put it back in. So this yeah, this ability to just fix something that has been produced with big ass machines. And after 5000 design cycles and quality control, maybe not quality control. So much so much engineering, and so many people worked on this, and then you as one person are able to just take this broken piece, replace it, and it works again.

Marlon   12:15
Yeah.

#2   12:17
That's what I take pride in.

Marlon   12:20
Interesting. Yeah, that's that's a pretty nice point.

#2   12:25
So some kind of autonomy from from repair places. And also, yeah, this expertise or experience of 'Oh, I know that basically, you can fix most screens or monitors, probably by just replacing the capacitors'. This is the main thing that blows up. And it's rather easy. You just have to be careful taking the thing apart. Get the right, capacitors switch them out with a soldering iron. That's it.

Marlon   12:54
But then, kind of the next question, can be can be a follow up to that. What's your or what were your experiences in finding the right resources to actually more in the knowledge part to know what to do? I mean, not everyone knows.

#2   13:09

Yeah. But things like soldering or 3d modeling came mostly by just learning by doing. But then apart from that, the big part is just try searching online on I think the most famous places would be I fix it, Reddit, and YouTube, for all kinds of repairs, I think, first place would be YouTube, because there's a lot of visual explanations on how to open something up, close it back together. Or to already see. I think that's also big part to see already how that repair would look like. And then it's actually not that complicated. So if I see someone showing me how to open and close it, I'm very confident I can just replicate it, or I'll be able to do the same. If I don't know what, what, what I'm expecting inside what I can expect inside, I might not dare to do that.

Marlon   14:01
Yeah, so you really need to know that...

#2   14:02
It makes a big difference in confident being confident about it. And then, recently, I've started also just asking questions on forums like Reddit myself, and it really yielded a lot of response of people who are really just trying to help you. So but I think the hurdle to just ask a question in somewhere and wait for someone to respond is, at least for me, it was always a bit higher because I thought someone else has asked us already somewhere. I'm just too stupid to find it, but didn't dare to be told, hey, look, just look here or Yeah, but it's actually big, big communities that support each other in finding out... in helping each other repair stuff.

Marlon   14:49
Nice. Next, now, it would get would get a bit more specific about repair of backpacks, because I know you've already repaired your backpack so that's pretty perfect. But maybe just as a start, can you tell me about some associations you have when you think of repair in backpacks, just what comes to your mind?

#2   15:14
Well, what usually breaks in a backpack, I think is either the straps, or some seam of fabric rip, that's the most common thing I've encountered, maybe a broken zipper. And that's even though it's, it's a backpack that gets used, quite different than a monitor, for example.

In the end, it's also just one place where it breaks and renders the whole backpack unusable. And in the end, it's somewhat even easier to just repair it by sewing it back together by hand, like I don't... the tools you need for this, just the thread and a needle and and that I find also quite, quite cool that with only these frugal tools, you can repair something as complex as a backpack.

Marlon   16:03
Yeah, perfect. Yeah, maybe, I think yeah, that's quite interesting. Now when, when you repair the backpack, maybe you can first tell a bit about what actually broke. Yeah, go first with it.

#2   16:20
So in the main compartment in the bottom, there's just one, one layer of fabric. And this one is merged with the back cover. And then just the seam itself or I think close to the seam, the fabric just ripped. So some parts of the fabric were still connected to the back cover. But just close to the seam on the bottom and ripped. It might have been because I've transported scissors in my backpack. And I suspect, once I saw that one scissor blade was sticking out on the bottom, but I don't know if that was the cause, or if it was the effect. But it dimensionally just ripped along it, I'm happy I didn't put any groceries in there and cycled home to just find an empty backpack at home. But I noticed that in time, and then I cut a piece of very strong fabric to sew over it. But then I've realized that it's actually really thick. The back, the back cover was really thick. And I didn't really know how to attach it. I couldn't use a sewing machine as it's the back was already assembled. So I eventually I just took a strong threat and sewed the bottom fabric and the back fabric back together just a bit shorter. So my backpack lost 200 milliliters of volume now but it's it's it's back together. And so far nothing fell out of it. And I think it's holding up.

Marlon   17:43
How long ago is that now?

#2   17:47
Last year? Or maybe still 22? No, I think beginning of 2021 somewhere, I think. But I had I have had the backpack for since 2017. After four years it ripped. And

since the rip it has been a good year. And that's the only thing that's wrong with it. Pretty much everything else is is holding up super, super nicely.

Marlon   18:28
Yeah. Okay. So when you when you repaired it, then maybe if I would have been there, what would have I've observed? What was the process?

#2   18:45
Good question. Well, first, I tried to understand what exactly ripped and how would be the best what would be the best way to repair it. And I thought it would work best to use extra layers of fabric to support the already ripped fabric. But then I just realized it was impossible, at least for me to sew something like a patch inside the backpack on top of it or outside on top of it. Then I thought well, if it had if it held up for four years, with the fabric that's already in place, I might have might as well just fix it a bit shorter. Do the same thing again. Also, because I have nothing to lose if it didn't work, I could just try it again differently. But, I thought, let's just give it a go. And it worked. I had to I had to think about the threat a bit. I don't remember if I've if it took me quite some time to figure out which thread to use. But I think it was one that I think strong enough. Yeah.

Marlon   19:50
So just from your feeling.

#2   19:52
Yeah, pretty much one I had laying around was like okay, this has enough tension. And then just went through it. I didn't even look up any type of stitch that I could do just, I just made loops.

Marlon   20:04
Nice. Okay, interesting. Can you remember did you encounter any problems during the repair?

#2   20:12
I think I didn't sting myself. It was just a bit difficult to, to force the needle through the multiple layers of fabric, the back of the back cover. That was really difficult.

Marlon   20:25

So apart from that, everything went pretty smooth.

#2 20:28
Yeah. I mean, it's not pretty not at all, but no one sees it. So I think yeah...

Marlon   20:34
I was just about to say even when I look at it, and I don't see that it's repaired.

#2 20:38
Yeah, because it's in the bottom. I was also scared that I would just because I think the reason also why it ripped is because it's under constant friction on my back. And if it's on the floor, so I was also a bit scared that it will just rip again, because of that, but so far, no issues

Marlon   20:56
But then. So maybe when you say it was quite hard to stitch through, there was like the most problem with that repair.

#2 21:05
Yeah, I'd say so.

Marlon   21:06
So the biggest issue...

#2 21:08
Well, maybe before I had a time issue, because I knew it's gonna rip soon. And I already prepared the patch, but never started actually repairing it, and then only one to really rip I was like 'shit! Okay, now I have to repair it.' And then I just did it. And it went easier than expected.

Marlon   21:26
But can you remember how you felt during maybe those two events. The time pressure, but also the needle?

#2 21:35
I think I was like 'ah fuck! Now I need to repair it'. There's no even if I don't have time. I have to try it because I need this backpack every day. And then just then just decided, okay, let's go for the easiest version,

just stitch it back together and see if it holds. So it was a bit of a compromise.

Marlon   21:55
Yeah.

#2 21:55
And I'm glad that I had the time because I always I always like having the time pressure because then I actually just do it and stop thinking about it or messing around. And yeah, and when I saw it, I was relieved that nothing happened like that it didn't rip when I was transporting sensible, sensitive stuff. Yeah. So I was relieved. I saw it. I was stressed that I had to do it. And then I was relieved. I did it. I did it and it worked. And now I'm proud that it still holds up.

Marlon   22:28
Nice! But then, I mean that sounds already like a pretty smooth experience.

#2 22:38
Surprisingly yeah.

Marlon   22:39
I was also surprised I didn't expect that. But how would you describe your optimal repair experience maybe also if you can on the example of backpacks?

#2 22:56
Optimum would be I find the something that's broken in a moment where it it's not crucial. So I'm not out in the fields carrying my laptop. But I'm home back home and see oh, it's about to rip I have to do something and it's urgent enough that I take put away anything else and just focus on repairing it I have all the tools at home I have a thread I have a needle or even a piece of fabric to add and have the time have the 15 minutes or half an hour to to just go for it and fix it and then it works I don't sting myself, it holds up, it looks not too bad and I'm done with

Marlon   23:40
And when you now imagine just getting rid of getting rid of a bit of the imagination that you always need to sew something with a backpack but what would it be, which

tool would be included in that repair experience when it doesn't matter at all?

#2 24:01
What I repair?

Marlon   24:03
No, what the what the assembly of the backpack is that say so it doesn't need to be mean that the backpack is always stitched it's just yeah just anything but every every assembly as possible which which tool would you like to use to

#2 24:22
I like sewing as it's a bit like welding. You're joining two materials in a way that's that is used by big ass manufacturers. But I also wouldn't mind trying to fix like one of those plastic pieces that then hold together like that where the straps go through but there I would be scared a bit that they would hold my printed pieces would hold up as much as the ones they made from injection molding just because it's it's has a un-isotropic material. I would prefer something to rip in a way that I can repair with a sewing machine. I would need access to a swing machine then but I think I know enough people that could that I could get access to. Because I don't really like hand stitching. It never looks good if I do it. I'm never sure if it holds up. It just takes ages. So I'm happy if I repaired it, but the suit the hand sewing I don't particularly enjoy or like it's just nice that you can literally stitch anything anywhere. But the extra process is not so much of a nice thing, but then sewing machine: I'm all in.

Marlon   25:47
That's a different thing. Okay. But what would you think? I mean, you already repaired, your backpack. So the motivation is there.

#2 26:02
Or the need

Marlon   26:03
Or the need

#2 26:03

I think it was, I think it was out of need. But I would have done it anyway, like I would have had the money to buy a new backpack, but still repairing it took me with me take me a lot less time than deciding on a new backpack or buying the same one again. And also. There's a big trade off how much it costs me and how much time I need to just fix this one.

Marlon   26:25
Yeah, because can you think? What do you think would make it more likely that you repair your backpack actually, again, or in general?

#2 26:44
Yeah, I think a big factor is that I don't have to mess around finding a new replacement product because then I would go all... it took me quite some research to eventually settle with this one. Because I like to. I'm a perfectionist when it comes to decisions. So whatever I buy, which is more than a certain amount of money, or which I use really regularly, I take quite some time in finding the product that I really like. And as I did this with this backpack, I'm super happy with it still. There wasn't big of a question if I would repair it, because I was before I find. Well, first of all, I wouldn't buy the same one. Because if I if I already buy a new one, then I would try something new. But then I would have to go through the whole process again, or finding a good new one. So anything was easier than doing that. And especially repairing the one I had, which I was happy with was the easiest way to go.

Marlon   27:45
But how do you actually see the difference between repairing backpacks and other objects? Where what do you think?

#2 28:00
The difference, I think is mostly that it's that most of the times it involves stitching or sewing compared to other products that are not made from fabric. So I've seen this as a bit like two worlds one is repairing fabric style things like clothing and backpacks.

Marlon   28:18
Yeah.

#2 28:18
And the other is preparing hard, hard stuff like furniture, electronics or plastic or metal products.

Marlon 28:33
Yeah. But then how do you? How do you value the difference between the the actions you need to take? I mean for furniture, for example, you need to maybe saw something or to screw something? Yeah. Yeah, with a backpack it's mostly sewing.

#2 28:51
I think the threshold for actually doing it with clothing and backpacks is lower. Because I find sewing to be very, very easy and basic thing that doesn't need much time. And the success rate I think is quite high.

Marlon 29:06
Yeah.

#2 29:07
So and it gives the chance for for personalization. Because if I choose to use another different button for my jacket, or if I use this fabric patch, I would actually change my backpack and make it really my backpack, which I think is always true for repair. If it's if it's on outer things I think it's a great chance to to also change the appearance of something and have it look like you've repaired it.

Marlon 29:33
That's interesting because that would be another thing I would be interested in what's what's your expectation of a repair aesthetic. Like what what did what you prefer? So now you already told me about personalization.

#2 29:49
I think I liked it, but I can't remember a repair I did where it turned out personalized. So with the blender, it was literally the same style. I mean, apart from that, I told everyone I repaired it. And you could see it, you could feel it because you saw the layer printing layers. But I didn't choose for the printing layers, if I could, I would have would have wanted to have as smooth as the original. Yeah, whenever you pair it, I usually try to

have it look like the original. And then just tell someone I repaired it and be like, Hey, look at this.

Marlon 30:34
So then it kind of contradicts with saying you like the personalization that you could do with sewing different buttons or whatever. But then you also want...

#2 30:46
But I don't I just don't do it. So far. Maybe I haven't just haven't found a project where I would do it now. Like thinking of a patch on a jeans, where you deliberately chose a nice fabric or a nice motif that you patch on it. I didn't do that yet but it doesn't mean that I wouldn't.

Marlon 31:04
Like can... do you know? Or can you tell why you don't do it? Or why you chose for making it look like it's new?

#2 31:18
Not really, I think most of the times it was just easier to fix it in the in the in the closest way to original. Because yeah, like sewing the extra fabric on would have been more work. And in this case, I just didn't do it because of that. And for the mixer was the same. The fit like it was easiest to just model the same thing again, not mess around with making this different here. And also, it was just a knob. That was like had quite a few requirements for how you grab it and how it fits in there. So there was not not much time and need to play around with it.

Marlon 31:59
Yeah, nice.

#2 32:00
But I for example I really liked the... shit... not Wabi Sabi not Ikkigai. But...

Marlon 32:13
With the golden...

#2 32:14
Yeah repairing stuff, and making them look like embracing the crack and making it look really nice. I really like this kind of thinking so for for something like a por-

celain plate. I would definitely try to achieve something like this. Yeah. But that's also because restoring like porcelain to the original is near impossible. My parents have some glued plates at home. They look awful. My mom hates them to the guts. Sometimes she she breaks them and says, 'Oops, now we finally got rid of it'. So yeah, in these cases where you where you would see the repair. In any case, I would also try to embrace it and make it look nice. Yeah. But I haven't come across something that where this would be applicable.

Marlon 33:02
Yeah.

#2 33:05
Oh, another example is my phone. Where the back cover cracked. It's also made of glass. And, so this whole this whole thing had a crack all the way through. And I found the exact replacement on AliExpress for like nine euros and even without the EU and CE certified marking so now I have a even nicer looking clean, clean backplate I changed myself and it works exactly like the old one.

Marlon 33:38
Perfect, so you even improved the look.

#2 33:42
Yeah.

Marlon 33:43
Nice. Yeah, well, maybe let's I think we're already at the last few questions. So now maybe just shortly step away a bit from the act of prepare more a bit into the image of backpack repair.

#2 34:05
The image like how this is seen or...

Marlon 34:07
Exactly. So more the perception. So maybe, yeah, can you tell me a bit how you perceive the the societal image of...

#2 34:18
Someone who repairs their backpack?

Marlon 34:20
Perfect would be with context to backpacks.

#2 34:25
Yeah.

Marlon 34:26
Doesn't mean need to. Not really someone who repairs the backpack but more how the topic is handled.

#2 34:36
Yeah, I don't think it's. Like you have these companies. Like I forgot the name of course. Were you have lifelong repair for your backpack. A German backpack company I think. Not Deuter. There is one. Is it Deuter? One, one company that's really rather old that also made a lot of leather backpacks. I think they still have lifelong repair in some way or another. Like I know someone who sent this in 15 years or 10 years later and they repaired it and he got it back and it works again. So that I really like but I also feel people constantly have a new backpack so and I, I imagine a lot of people have broken backpacks at home. So I don't know if that's a big but I think it is a it's quite an interesting topic and has quite some potential to to eliminate backpack waste. Landfills for the backpacks. But I especially, I mean, the backpack has, has a big... Or, I perceive a backpack a lot with autonomy as you just carry what you have and what you need especially you're traveling backpack. You are, you have everything with you, you can go anywhere, you're self sufficient, you're autonomous. And then if you even if you can even repair that yourself, it's like repairing your car. That's the maximum freedom and autonomy you can have. I think because you're not you're not you know, you don't have to rely on backpack stores. You have your own backpack you know how to fix it. Tthere's no hiccup in your journey.

Marlon 36:31
Okay. Yeah. But then maybe when in regards to the companies who sell backpacks. How do you... naah maybe also in general. So, could be companies but also in general how do you think should be repair communicated to make you or other people also more aware of it. In which manner?

#2 37:07
Well, to increase the chances of repair I think it's always good to have websites like I fix it that show you how it's done, how easy it actually is, or at least what you can expect. The right suppliers of the tools and materials you need. But I already feel that repairing stuff yourself is quite a it's not seen as as like poor but more like oh, this this person knows what they're doing and they are self sufficient and they're autonomous and they are capable so I think that there's not a negative stigma on upon repair.

Marlon 37:51
Yeah. Do you think that's your personal opinion or also from others you have...

#2 37:58
80% Personal for sure. I don't know I'm thinking of broken phones and how in the state someone's phone is in at least I think I can tell a little bit about how much that person cares about that product for example or about repair some people have a threshold where like this screen is coming apart and they still use it. Yeah, maybe phones is a quite extreme topic as they are so prone to breaking within two or three years. But then, yeah, then you have these movements of repairing your old clothing again with... patches were 'in' a few years ago, again, I think. You have you have jeans that that are purposely ripped, and I think somewhat repaired to have this repaired look. And yeah, of course many, many, many people are calling for the right of repair. So I think yeah, society's aware of it, or parts of society is. Companies are seeing the value of it as well. Like IKEA is working on bringing out a big catalog of replacement parts and repair parts that you can just order for your furniture and repair. So I think eventually, companies are realizing that there's a big potential to make even more profit even though you're not selling a new product but a replacement part.

Marlon 39:51
Yeah, definitely. Yeah, that was already it. If you have any last thoughts or opinions, things you want to share?

#2 40:07

No I don't think so.

Marlon 40:09
All right, perfect. Thank you very much.

Interview #3

Marlon 00:20
Yeah, so I mean maybe short introduction, we already talked a little bit about the project. So looking into repair of backpacks and kind of see how to facilitate for people learning to repair backpacks. So kind of get a grip, why people repair or why they don't repair. And then see from where I came from there where I can go into in which direction to to create for new or better solution. So yeah, I mean, you as a designer, but also in general, I think you already did some repairs in some way. So I thought you have some experience.

#3 01:11
Yeah, but little with backpacks.

Marlon 01:14
I mean, most people actually don't repair backpacks. I had now one person who repaired a backpack. So that's already something interesting, but yeah, so the first part would then be just about repairs in general at first so to get into it, so maybe just from your from what you remember, can you give some examples of repairs you did like it can be anything at first like household or I don't know something you had emotional attachment to could also be with a job or some repairs?

#3 01:52
Yeah. So I tried a lot of repairs but not always as successful. So one thing that immediately springs to mind is bike repairs.

Marlon 02:08
Okay, yeah.

#3 02:11
I'm riding a more than 30 year old racing bike. So I do bike repairs pretty much every month, or so. And I don't like since I was younger, as well like when you get like a leak tire. First thing is you always tried to

mend it. And yeah, like I've been doing that my whole life. But like textiles, not so much. It's really where I feel like I need a different skill set that I don't have. Like another example that springs to mind is like I have this called again, PlayStation Portable, PSP. Like I always tried that as well like fixing electronics whenever they break. Like, especially with a thing like PSP. It was like, at one #3e it was very expensive. And then after a while, like maybe after four years of using it, so it's out of warranty and one of the buttons went like sticky. It's always getting the signal that is being pressed while it's hot. So you cannot really play games anymore. And then I'll just opened it up. Usually, with with that kind of stuff you don't really know what's going on inside. So just open it up and kind of see if anything is wrong, but you don't, you don't really know what you're looking for. In that case I like I opened it up. I like cleaned everything. Tried to use like contact spray. I don't know what it's, it's probably called the same in English as the spray that would sort of clean and improve electrical contacts. And then I put it back together again and like often it's quite hard to do it correctly. It works like the repair seemed to have worked, but then after like one day or or something it broke again. That's like my general my general you know experience with repairing electronics? I open them because I really want to see how they look inside and what's in them and then try to fix it. Put it back together. And then usually the problems persists. Then at least you've tried. Yeah, like what products are out of warranty? Actually I'm now looking at my my battery drill. I really want to like take that one apart as well because the trigger isn't working properly anymore. Oh, yeah. I'm always trying but also often I'm sort of failing. I feel like more often than not, with like the in house repairs. Especially products they're just not really made to be repaired. You know, like the bike it's been kind of a success like as like as long as you get parts. Like I recently put on like new chain and new brake cables, new brake pads. And now as you know, it's just working as it's supposed to. Whereas most of the products that I will try to fix and also I will if I need to I will use like 3d printed clips or whatever. When I feel like it's usually it's just like yeah, just semi permanent fix you know, if you [not understandable] expecting but then again, it's better than getting a new product. Kind of. Then again, getting a new product is

also kind of nice.

Marlon 05:23
Okay. Yeah, I can understand that. But maybe because you already know talked about like problems you had or like didn't work or something like that. Maybe how you feel during those events when there are problems coming up with the repair?

#3 06:52
Yeah. How I feel? It can be kind of frustrating. Like this thing with the bike. I can show you. Let's see... Do you see like there's a bike wheel and a stand over there. I was trying to fix it because it was out of alignment. Actually, the stand was brought over by a friend. Who had like all this stuff to put new spokes in a wheel but it wasn't working out like it was supposed to. And the videos all show quite simple procedure but in my case like all the spoke nipples are gone they were already tightened to the max and I had no kind of room for adjustment left in it so like all the instruction videos didn't really work and and I was I was getting really frustrated because things were not as advertised, you know? That's like always the thing when doing your own repairs: It's never like in the manual or the video. It's always different. That was actually also my experience when I was like I used to have this old Volkswagen van and then you get this whole manual telling you how to do repairs. But then like every #3e we opened something up it was different than what was shown in the manual. Yeah, and then I got feelings of frustration but in the cases where I worked you know like when I put the new chain on the bike and you just get to go out and ride it. It's actually and it's a really nice feeling. This feeling of accomplishment and I'm just really proud when I'm riding the bike you know, I'm proud feeling that I fixed it. And that's actually after after doing it. But it's like yeah...

Marlon 09:13
Dou you also have in the process like this rewarding feeling or is it more...

#3 09:18
Yeah, well, then it's often with me it's like this. It's a kind of a... it's a loop of feeling anticipation, like in

the anticipation I'm feeling very good about it but then when doing it that's often lots of frustration and cursing going on. And then after that, like when it works or when I when I get it mended then I feel proud. Like in between there's often a lot of frustration.

Marlon   09:52
Okay. But when you think back can you remember how you got into learning to repair?

#3 10:10
Yeah, just doing it guess, just puuh? Like okay, so when I was younger, my dad used to repair everything he could he was like a carpenter and also fixed, usually fixed like on bicycles himself and something like that. So I always had this example. But back then I didn't really do it that much myself. Like I think I started trying it more of myself when I was in university. And then yeah, I was already studying like industrial design. So it was also kind of sparked by curiosity about how these other products were were put together you know, like, if a product breaks, like anything, like from a water boiler to yeah, like PlayStation Portable, or computer. Like goods breaks and if it's out of warranty then I'll just open it up and see if I can do something about it.

Marlon   11:25
Yeah.

#3 11:26
So and yeah, I think that really came about during my studies. Also, kind of out of monetary reasons, maybe and mostly out of curiosity towards how are these products made and how would I design them myself? You know just kind of professional curiosity.

Marlon   11:50
Okay. But when you then when you did the first repairs, can you remember your experiences in also finding the right resources to do so?

#3 12:03
Ah, yeah, that's often it's it's difficult. Of course, yeah, just going on the internet seeing what other people did. And then yeah, that's also like part of the frustration where I'm not able to find exactly the right tools or ex-

actly the right parts. That's actually where sort of the frustration comes in. Now, luckily, like nowadays, we have 3D-printers so we can sort of make our own parts some#3es. Yeah, I like I remember, just thinking, How did anybody do this before the internet? Then it would be you just have to be creative, I guess. But yeah, like, I feel some#3es it's kind of sad or a shame that there's not so much resources being put out there. Like there's little, not a lot of stores that would sell parts for like, things like washing machines or stuff like that. Also not a lot of brands are sharing, like, 3d files or something like that. So that's actually where a part of frustration comes in. Availability of parts and knowledge.

Marlon   13:34
Yeah, yeah. Yeah. I mean, I know that problem as well. But yeah, well, maybe also connecting to the repairs then not not more about the resource or the process but what your favorite tools are to use, like just in general when you when you repair stuff like it doesn't need to be in the context of a specific repair but just in general, which tools you like to use the most?

#3 14:19
Which tool? I can sort of show you. I kind of really like this like [shows box with different screwdrivers, bits, and other parts]

Marlon   14:41
Oh, nice.

#3 14:42
Like my little toolkit of everything screwdrivers with this like. Yeah, screwdriver. I kind of like that. And I also have a fondness for this thing. [shows a textile roll with tools inside] It's sort of a combination... This is my toolroll... I don't really know if I can hold it up to the camera. But this thing, which you can roll up. Like I have a big box of tools but this I just always have lying around somewhere and I can easily take like, big part of the set to a different room or with me to a job or something I actually got the role when I moved out of the house from my dad. So there's kind of a emotional attachment to it. Or this one too, or what's more, this sort of set I also like this. Kind of like it's more one tool but it can do a lot of things you know.

Marlon   16:12
Yeah, okay. Nice.

#3 16:13
And it's kind of good quality. Not the best but it serves well. Yeah, so actually I would like say the sets.

Marlon   16:25
The screwdriver set you mean?

#3 16:28
Yeah or just like not just the one tool because you need to be versatile.

Marlon   16:37
Yeah, Okay, nice. Now, let's get a bit more specific. So now it's more about repair of backpacks. Yeah, maybe just as a start, like to get into it. Can you can you tell me first what what associations come to your mind when you think of repaired of repairing backpacks?

#3 16:37
Ah, first, I think yeah, backpacks, I really like backpacks. I've got a bunch as well. Also, yeah, like, difficult. Like the example I showed you before like my current day to day backpack has this problem with the zipper. And I've been struggling with it after speaking with you still like it's this just small compartment but really important one you know, and the zipper is not reliable anymore. So now I can't put my keys in that pocket where I want to put them and so it's, yeah, it's frustrating and I can't really do anything about it.

Marlon   17:58
Yeah.

#3 18:00
So yeah, I think difficult, but also I think 'yeey' backpacks. Like, in some way, I'm also thinking it shouldn't be necessary. The backpack should be so strong that it shouldn't, yeah, you shouldn't have to repair it.

Marlon   18:19
Yeah. Okay. But do you have plans what to do with your broken backpack now?

#3 18:27
Not really. Yeah, I want to Google it. Maybe reach out to The North Face, see if they can come up with an answer or maybe an advice of where to bring it to repair it. And I'm also really wondering what that will cost me because if it's like let's say more than 40 euros, which seems likely to me because it's going to be a big job, require some man hours, then I would be also quickly interested in just getting in a different backpack.

Marlon   19:12
Yeah. Yeah, okay. But...

#3 19:16
I'm kind of, like enticed by the idea of picking a new backpack. So yeah...

Marlon   19:28
What is what is that feeling of the new backpack? When you when you say that is something new, you're also hyped about?

#3 19:42
Yeah, it's just because I like backpacks because I'm kind of materialistic. Might be, I hope that's also kind of linked to my background as a product designer and as I'm trying to discover products but I also know that like, yeah, just feels kind of nice to get an upgrade I guess. To like, I don't know maybe there's better backpacks to be had or something, or just want to try something new. So, yeah, it's kind of a double feeling like on the one hand, I want to fix this one. Especially since it also was given to me by by somebody that's, like meaningful to me. So it's like, when it's a gift, and there's kind of emotional attachment. But yeah, then there's also this thing about 'ahh, new backpack'!

Marlon   20:59
Yeah, but let's say you go for the opposite. So now you decide to repair that backpack, just as a mind game now. So maybe, could you take me through that hypothetical process how would you how would you go through that? What could I observe if I join you?

#3 21:22

Um, well. Yeah. So I would need to replace the zipper. I don't think it's something I can do myself. I would first, I would like, try to Google if there are some way to realign the zipper without taking it out. Probably cannot be done but I would still like spend like a full evening or two. Just finding out on the internet. Maybe after doing some research, I would ask. I would like asked the question on forum stuff like that. And it seems likely that cannot be done without replacing the zipper. Which I cannot do myself. So I would have to find out, if somebody can do that for me, so I would like... seems still likely I would email North Face and see if they can come up with an answer. After that, it also seems very likely to be that it would be procrastinated up until the point that it would just tire me and I would get a new backpack. If I did not do that, so hypothetical situation then I would find out like a place to bring it so there would be, likely would be Bever like you said last week. I would bring it, they would repair it would be out for like, I guess a week or something. Feels like a lot of work to bring it to the Hague. And then I would have it. Would be a matter of outsourcing it I guess.

Marlon   23:18
Okay.

#3   23:19
Also yeah, I like probably would also try to visit like a cloth repair shop near here. That's what I usually do when like, I need cloths repaired. Usually I keep like, cloths that are damaged in a way that can be mended lying around for like preparing them maybe like once a year I go to I take like four pairs of trousers that are damaged. I go to the shop like usually they're run by Turkish or Armenian people stuff like that. My experience tells me that they wouldn't be able to fix this though. Like I've brought out snowboard jackets and stuff like that. And like doing a zip or something they don't really like and see how this is kind of like a technical zipper, I think it would be hard for them to fix it in an aesthetically pleasing way. So yeah, I would I would visit one of those shops show them see if they could if they felt like they could fix it and what price would be but in the end I would end up like at a specialty shop I think. So, something like Bever repair and stuff like that.

Marlon   24:48
Yeah. I think it's interesting. Maybe what that like you would first go for letting it repair because you think that's like out of your skill set what you said before maybe...

#3   25:05
Also out of my toolset because I don't have a sewing machine and stuff like that.

Marlon   25:10
Yeah, okay. Because...

#3   25:12
I have like the smaller repair kits for for, like fixing a button. But it wouldn't be suitable for for the heavy duty fabrics now.

Marlon   25:25
Yeah. But like if that would be an easier way or if it would be possible to also repair it yourself. Would you prefer that or would you still think it's nicer to let it be done?

#3   25:44
Ah, yeah, I would prefer that but like in this case, I couldn't imagine that being the case like in reality. But if possible, like for example, the bicycle wheel. It's also something that's actually out of my skill set and kind of out of my range of my toolkit. So I borrowed some tools, and I've found like a YouTube video on how to do it. I tried. Though in the end, I couldn't do it, but that was because the weel was damaged before. So yeah, if it was possible, if I felt it was possible, then I would try it like if there's some video on YouTube. I would try to follow along.

Marlon   26:33
And can you tell why that is why you would prefer that?

#3   26:47
Yeah, I would feel like that's kind of a 'drempel'

Marlon   26:54
like threshold or barrier?

#3   26:56
Yeah like threshold to like, sending it or bringing it out. That's actually less work for me. But it still feels like more work, or a bigger task or something. There's a bigger threshold on going to the shop. Like if I can do it inside my own living room with a YouTube video then I would prefer that because it feels like less of a hassle. In reality, it's probably more hours of work for me. Also, because I can sort of control the whole process and if there's like steps being skipped, or corners being cut, at least I would know. I would also keep that in mind while using the product in the future. Knowing that okay, that corner is not stitched on perfectly, I would just try to not not yank on the zipper in a way that it would press that corners. I would just know how to use it and maybe do it again if it fails again. So doing it myself, would be preferable.

Marlon   28:17
Yeah, okay, that's pretty interesting. Yeah. Yeah, maybe no, yeah. A bit back to the backpack repair. Can you shortly say or how would you describe your op#3al experience for the for backpack repairs so that it's like enjoyable and motivational?

#3   28:41
Yeah, so op#3al would be if like backpack brands would have instruction videos. Just showing the process step by step not, not just describing them, but really showing them so you really feel you see, like you can see how it's done. Then I would feel way more confident in my own abilities. Or I would be confident to judge my own abilities. If I can do this, I have the tools for this. So instruction videos and also clearly like available and like labeled spare parts. Because like, for example, my backpack. I forgot the name, where is it? Somewhere around here. It would be nice if like the North Face have on their website, like clearly labeled like top zipper for this backpack. And instead of me having to find out what kind of zipper it is, what length I would need, stuff like that. So yeah, clearly labeled replacement parts, clearly documented instructions. And then maybe also like toolkit or tools you need available for reasonable prices.

Marlon   30:22
Yeah, yeah, true. So I mean, I think a little bit that already gave an answer to what I wanted to know next, but maybe there's something more but what do you think would need to happen to make it more likely that you repair that backpack?

#3   30:47
Ah, yeah, so clear cut replacement parts but especially having an idea about the procedure. So detailed instructional videos would be... Yeah, would be... like right now I feel like it's way out of my league. So I would really need to see how it's done.

Marlon   31:16
Yeah. Okay. And how do you think because you're also you already mentioned that yeah, that like sewing in general or that stuff, you don't have the right tools, like it's a bit of yeah, out of your skill and toolset, which you said. But you did other repairs. So yeah. How do you think is repairing the backpack different from other objects? Not only maybe in the techniques, but also in in your personal feelings or motivations.

#3   31:53
It would mainly be like that, that I felt out of my comfort zone instead of skills. Like especially because I feel like sewing is the required skill and I have bad experiences with that but very limited but very bad experiences. Like I tried to do like three #3es in my life and I failed three #3es. And also very, like I did jobs that were not comparable to this. Actually I feel this would be more difficult because it's way more sturdy materials on the backpack. And also like, yeah, because my skill set is not there, I would also not feel like I could really trust the end result. That is quite important to me because I use this backpack every day. Like I mentioned before, it's like the thing that's damaged is the compartment where I store stuff like my keys or my sunglasses. It's not wise to store them in the same pocket for important stuff I put in there and so. Yeah, it's also not really trusting my own skill set. Trusting like I wouldn't be able to put my trust in the end result. Sorry what's the question again?

Marlon   33:40

Actually, it still makes sense to the to the questions, like how that is different from repairing other objects.

#3 33:47
So yeah, so the perceived importance of the or the needed trust that I would have to put in there.

Marlon   34:06
Yeah. Yeah, okay. Yeah...

#3 34:13
Now I'm thinking like with my bicycle I also really need to trust that it's kind of put together right. It's more clear cut in that case to me.

Marlon   34:23
Yeah, so there you have the trust with your bike. Okay, because of your experience with the tools?

#3 34:30
I guess so. But also like the construction is more. That's also because of my experience, but like when I put a wheel axle into a groove for a wheel axle and I can just see it's seated right and I know I've done it right. Well in my experience when I I sort of know how to like sew a seam, but I really don't know how to finish it correctly in a way that it will stay so. So yeah, that's really part of the skill set. And then the trust in this.

Marlon   35:25
No, okay. Yeah, maybe...

#3 35:30
actually, like, I'm right now thinking like, if they put in, if you have like a repair kit, and they could include something to like lock in some wire. That would be something I would really like

Marlon   35:45
To lock in?

#3 35:47
But when you sew something, when you when you're finished, you need to sort of make a knot or and that's the part I don't know that's the part where it gets too technical for me. So it would be somehow included in

either the toolkit or the instructions, just a really clear cut way to make it sure for me to know that it will be strong enough.

Marlon   36:18
Yeah. I know exactly that feeling as well. Yeah. Yeah. Interesting. That's actually good point. And like, also...

#3 36:29
also, I'm now thinking like sort of comparable repairs that I did like to like materials. I've always used shoe goo, you know that?

Marlon   36:42
Is it? No, I don't think so

#3 36:45
It's kind of a glue that was made for mending skateboard shoes. Like I always like when I'm repairing something that has to do with fabric and I'll just put a bunch of shoe goo over the mended thing to sort of lock it in and kind of know that okay, what if my sewing has failed, is failing, then at least I have the shoe goo, which is always, it doesn't look that nice, but it will hold up you know? It's kind of like an insurance policy.

Marlon   37:25
Okay, yeah. So that Yeah. Oh, that's also interesting. Yeah. But maybe let's shortly also step away from the act of repair, but look more into like the image or how you perceive it. So yeah, maybe how do you perceive the image of repairing best would be also repairing backpacks like in public or society like how is it around you?

#3 38:05
I feel like it's it's kind of a double edged sword, because I'm like in my, my immediate surroundings, I see lots of people for example, riding old bikes. That seems to be kind of trendy right now. But then, again, you sort of don't see people walk around in mended coates or... to me, it would have this this it would have sort of, I would feel good about it. Sort of nice image, but I feel like in the public at large and mainly just seeing people replacing stuff and kind of feel like whenever I'm if I would like walk around in trousers that have this hole

that's been clearly been repaired it would not be good for my image, like people would think something about it. But then again, if I see it on somebody else, and I would be kind of impressed you know, it's hard, I feel Yeah, split.

Marlon   39:24
Okay, interesting. Like this. Yeah. Good point with this this double in... How do you say that?

#3 39:34
Double edged sword or something?

Marlon   39:36
Yeah, yeah, in Germany we also have a different expression, but I don't know if you can translate that into English. But yeah. But yeah, then how how would you think would, would it best be communicated? No, wait, let's let me rephrase it. And how do you think would repair for backpacks then need to be communicated the best so to make people aware of it or to get them into the topic?

#3 40:16
Yeah. Maybe maybe you could kind of present it or combine it with upgrades. Like if you can sort of repair it in a way that's even stronger than it was before or you could maybe add like functionalities with it. That might work because people really like upgrades or getting Yeah. And also like just making sure that the aesthetics of it are good. Doesn't need to be invisible. Yeah, but also shouldn't look bad. That would be like to me that would be really important. If I had this idea that if I did a certain repair then it would still would look really nice. That would be kind of important to me.

Marlon   41:43
Yeah. Yeah, that's also interesting. Maybe now because you talk also of the aesthetic and that it's important to look like also, I mean, when you buy a new backpack How do you balance there the the aesthetic and function like, what's your, your decision process? How do you integrate those two aspects?

#3 42:10
Now they're both really important like as far as buy-

ing a new backpack would take a long #3e for me. I would really like look into function, I will really and then I mean, like it should have like the the right number of pockets at least have like a bottle carry on the outside, it would be very much a plus if there is a possibility to store store an item and I would preferably also try it on so and then yeah it just needs to look right, like it can have all the things but if it doesn't look right I really wouldn't buy it. And also like shouldn't be kind of a standard. Yeah, it should be kind of special or something. I wouldn't want one that everybody has and right now I have one that is seen quite a lot on the streets. And that is kind of a bother to me It shouldn't make a difference, but it makes difference to me. Like I'm happy I have this colorway that you rarely ever seen. Otherwise I can sort of, yeah, I would never buy like a Fjallraven, yeah, what's it called?

Marlon   43:59
Yeah, the Kånken?

#3 44:00
Yeah, I would never buy that. Just because you see it all the #3e. Yeah, like originality, functionality and looks would all be kind of equally important.

Marlon   44:18
Yeah, okay.

#3 44:18
And then Yeah. Looks may differ though. Like there's not one certain style that I would use, or only get to me too crazy... kind of when I buy a backpack, I should sort of see it and then immediately have a love at first sight moment.

Marlon   44:42
Perfect. Yeah. Well, yeah, thanks. I mean there was already a lot of information. So I have only one last question and that is you have any thoughts you want to share before the end? If there's anything left?

#3 45:04
Ah... not really. Yeah like, I said it before and I feel but I feel like for me to start with repairing backpacks more I would really need to have like clear cut information

would be like the the most important thing I guess. Otherwise, no real thoughts. Maybe if something comes up I'll let you know that.

Marlon 45:40
Yeah, would be nice. All right. Perfect. Thank you.

#3 45:46
Okay, I'm happy I could help.

Marlon 45:48
Yes, definitely.

#3 45:51
And I'm very curious to see where you end up. So if you ever have something to share. Or just want to have like some feedback or something feel free to you know...

Interview #4

Marlon 00:17
We already talked about a little bit about my masterfeeds. So you know, it's about backpacks, it's about repair. I want to now see a little bit why or find out what motivates people to repair or why they do repair or maybe also why they don't repair. So that's kind of like the idea so, but now the interview will be more about a little bit about how you Yeah, how your feelings are your motivations, your opinion towards that. And so maybe, or I would start first, just with repairs in general. So later on, we'll get a bit more specific about backpacks, but not just to as a starter. Learn about repairs in general. And as we shortly talked about that, I know you already did some repairs. We talked about you. At least you said you learned how to.

#4 01:20
I learned to craft with wood, like crafting wood.

Marlon 01:27
Ah okay, yeah.

#4 01:30
Like of course during high school. During high school for six years. Okay, that's more craftmanship thingies. So in theory I know a few things how to repair.

Marlon 01:46
Yeah, because I don't know maybe if you... do you remember something you maybe repaired once? Can you think of an example? Can be anything like household, bike, at work something? Can be anything.

#4 02:08
Bike might be a good example like I repaired my front light of my bike with ducttape around.

Marlon 02:17
Nice (laughing)

#4 02:20
I was like when it broke I still have some ducttape, so I wrapped it around and it works still like after two years so, if it works it works I'm not sure if I'm... normally I make like this time effort... (short interruption) And normally I'm just thinking like how much time does it take and how much effort like

Marlon 03:01
(Short interruption again)

#4 03:01
So one was ducttape like the front light and I'm not sure like if I've repaired yeah probably... maybe like I stitched my shoes like when it riped like I still have to repair my Allstars. But, that I'm just going to glue because like the sole kinda got loose. I'm just going to glue it with like one second glue.

Marlon 03:41
Ah, okay. All right.

#4 03:46
And I still like, I didn't fix it yet, but I still have to fix my bag.

Marlon 03:50
Oh, yeah. We talked about Yeah, nice. 'Cus... Now maybe think of the ones you did for like stitching the shoe or fixing the bike like. Which one was the most rewarding one you think?

#4 04:17
Like at first I would say neither one of them are really rewarding because like to be honest, I don't really like to repair things. I do like to make like new things, but like to repair to be honest. I don't think like it. So I don't find it really rewarding when I repair something. I think the shoe like if I had to choose like between the bike and shoe the shoe was the most rewarding because, like the bike I repaired with ducttape. So, if it works, it works, sure but it doesn't really look good. With the shoe I stitch it back together and you didn't see it.

Marlon 04:30
(Short interruption) What exactly was broken with the shoe?

#4 05:15
Yeah, it was like... you have the sole of the shoe and you have like the shoe itself.

Marlon 05:25
Yeah. Yeah that's the upper

#4 05:30
Ah, the upper. And it just got loose like between the sole and the shoe

Marlon 05:39
So then you did you stitch through it and through the sole as well or what was it?

#4 05:44
yeah, I'm not sure. Or maybe it was like a part in the upper I think it was that. Like I think in the upper like close to your ankle. Like normally I'm like I don't like to untie my shoes so what I'm doing is like I'm using two fingers like to open the shoe and in the end it broke. It wasn't the sole and the upper. It was just the upper so I noticed like it ripped. Then I stitched it back together and actually it worked.

Marlon 06:18
Okay. And so then you think what, like, what at least made it a bit rewarding. What what was the feeling of that?

#4 06:31
Like, why it was why it made me quite felt rewarding.

Marlon 06:36
Yeah.

#4 06:38
Because like you didn't see I fixed it. It kinda looked good.

Marlon 06:47
Interesting. But did you for that one or maybe other repair, was there any problems you encountered?

#4 07:01
Just my anger management. I normally I normally don't it takes like five or 10 minutes. Now it was like I will do it tomorrow or the day after. And for me it's basically that I always found it a bit frustrating like just to stitch. Like for example I still have to stitch my back. I just don't enjoy like stitching. So that's it probably.

Marlon 07:35
That's actually interesting. Can you kind of lay a little bit out what you're feeling process then is when you do that?

#4 07:47
Yes, sure. Like basically like I could have used like those 10 or 15 minutes for something else. Instead of like, repairing my bag. That's like the thing I found most annoying. Like, okay, now I'm sitting here inside in my chair like stitching my bag even though I still haven't stitched my bag back together. Yeah. But that's like, for example: Then I'm like, Oh, maybe I like in those three minutes I could have played the guitar, I could have played... I could have gone outside. I could have heard a book, like anything else? That's like, my thought process.

Marlon 08:32
Yeah, I can understand that. But then, yeah, maybe just a little bit back to repair in general. Because now... you already did some repairs. But how did you get into learning that? Or how? How did you start doing that?

#4 08:52
Now though, the things I did repair or at least the two examples. I'm not sure. Like, I don't remember anything else at the moment. Even though like I probably have, like repaired other things. Like, I mean I can't imagine in 27 years I only have repaired two things. It's definitely more like the only things I can remember now is the bike and the shoe. And how did I learn it? The bike was just ducttape, so I'm like, the learning process is like it's quite easy. And the shoe like I learned, like I learned how to stitch like and to sew etc etc during high school.

Marlon 09:49
Okay, so how was it there? Was it like, was it a class you had?

#4 09:58
Yeah, it was like for six years. We had classes, yeah, I think like it's like for example, like eight weeks or two montgs like, we had like this time to focus on for example wood crafting and like the next two months we focused on like how to make a tshirt how to make a bag two months after it for six years. So that's how I learned the basics.

Marlon 10:37
okay.

#4 10:38
Or maybe four years, four or six years, somewhere in between.

Marlon 10:42
And maybe also during that time, but also in general, do you then do you have have or had like, favorite tools or methods to use like, apart from like, not, not depending on what you repair just like the tool itself in general, like anything that you really liked to use?

#4 11:17
(Thinking) I Think maybe like, like not really for repairing but more in general. Like, I do like to use a figure saw. So in Dutch it's called figur zaag.

Marlon 11:37
What do you do with it?

#4 11:39
Just to like, saw in wood.

Marlon 11:48
Ah, I think I know what you mean. I'm not sure.

#4 11:59
It is a word in english at least according to Google. Or maybe just like this. (Shows image on smartphone)

Marlon 12:07
Oh, that one. Yeah, okay.

#4 12:11
And I don't know the English translation. It also isn't for repairing but it's, it's a (dutch word), and like, you've probably never heard of it. And I can show you (shows something on phone)

Marlon 12:37
Yeah, okay. Nice, that's also interesting to know.

#4 12:48
So you can like, carve those figures in wood, which I really liked to do. It's been like, 84 years, since I've done it. I'm not sure if I'm still able to do it. Yeah, but it can't be that hard.

Marlon 13:04
Yeah, most of the time, it just like need a little bit time to get back into it. And then. Yeah, yeah. Cool.

#4 13:14
It's also not really repairing tools.

Marlon 13:16
Yeah. No, but that's, I mean, it's, for now. It was just really like some tools. So that's alright. Yeah, but maybe now. Now we'll get a bit more specific. Also about repair of backpacks. And yeah, just as a start maybe, can you tell first, just what associations come to your mind when you think of repairing backpacks?

#4 13:45
It's interesting because like I've repaired about some-

thing else. I've repaired my backpack for traveling. I like repaired with the special glue you can buy at Bever. It was like it was like it ripped as well. Because of like a nail or somewhere else in there, I don't know where and it's like ripped. And I think I glued it together with like the special backpack glue. I'm not sure if I'm answering your question right now.

Marlon 14:19
It's alright, it was really about first associations.

#4 14:22
Okay, that's like my first association.

Marlon 14:25
Okay, yeah. But yeah, maybe as a follow up like then more opinion wise, like what what is your opinion on repairing backpacks? You know what I mean?

#4 14:43
Yeah, I think I know what you mean, just to be clear, like, repaired instead of throwing away or like instead of buying a new one?

Marlon 14:53
Yeah. For example, like the Yeah, I mean, as a repair as a way to extend the lifetime of a backpack.

#4 15:04
I think it's quite a good idea, especially for the environment, to choose to use a product as long as possible. Yeah. In general. And also for backpacks. Of course, like in general, I think it's good to think about the environment. Now we can reduce our impact. So, for for backpacks, specifically, I think it's quite good as well, if you can repair like your backpack, instead of buying a new one or throwing it away, I think it's quite good.

Marlon 15:37
Yeah. And now, I mean, it's I think that's, that's a good situation now because your backpack is broke. So if we say now you decided to repair the backpack, and you want to do that? Can you? If you now imagine the process you would go through? Can you like, take me with you? What would I observe?

#4 16:07
A lot of anger management, a lot of frustration. Just how I would like repair my backpack?

Marlon 16:16
Yeah. Like, how would you do that? How would you start? I mean, you start with...

#4 16:21
Probably I have a needle like somewhere in my apartment. That's how like, step one, like looking for needles step two looking for the thread. Like for black one, because like my backpack is black as well. Then just like go for it like stitch it together. Also look at like it's...

Marlon 16:43
So can you first shortly explain what what exactly is broken?

#4 16:47
Yeah, I was looking for the word. Like what's? Yeah, the shoulder straps. Thanks. Like, I think the left one. It's a kind of ripped as well, like you saw it, right? Like, there's like the upper part and lower part like in the stitching. It's just got loose. Yeah. And now you can see the upper inner lower path. Like normally you don't see inner part because there's a upper layer and lower layer. But now it's like the stitching, it got loose. Now you can just like see, like cushioning that's in between. Like, when I'm going to repair I will first have a look at the right one because it's still good. Like see how they stitch it, and then like, get my needle get some black thread and stitch it back together.

Marlon 16:52
Shoulder straps? Okay. And now, I think what I think is interesting. You said, you said in the beginning already that you don't really like to repair stuff. We also talked, you also mentioned the anger management. But still, you said you want to repair it like can you tell me why you decide to repair your backpack? Like what's what's your thought process to do so?

#4 18:10
Yeah, sure. Yeah. Like, wanting to like repair my backpack, is this like, a first step like doing it. Like, actually,

I mean, it's been broken, quote, unquote, for like, two weeks, so I still have to do it. But like, why? Because like, in general, like, I think it's quite a waste to like to just buy a new one. Because like, only like, one strap is broken, the backpack is perfectly fine. Like only one strap I have to fix. So that's basically my thought process even though I don't like it. I think this is like, time effort wise, it's, it's worth it just to fix it.

Marlon   18:56
Okay. By time effort wise, you mean time and effort you have to put in a new backpack, in repairing the back-pack compared to?

#4 19:10
Like, like, like sometimes it just doesn't make sense like a backpack or something else is so old for exam-ple, like you can repair it or at least you can try to add like for example, like an extra layer with some added materials. But then again, like it maybe it works for like a couple of weeks and then it breaks again. That for me would be like the point I won't repair that one and just would buy a new one.

Marlon   19:43
Yeah.

#4 19:44
Because like, in my opinion, then like if it only works for a month, then it doesn't make sense. Or like a week for example. But for now, like the backpack it's per-fectly fine. That really makes sense. And I think about the environment. I think it's, I'm not sure about this. I think for the environment might be even, like if your backpack like if you every time you have to buy like, an extra sticker or like or like something else to add to your backpack to fix it. I think in total it might be even worse for the environment even though I'm not sure.

Marlon   20:27
Okay, why do you think so?

#4 20:30
Like, because then you're buying like, for example, like, like the school sticker, which is in a packaging as well. Like that to produce, like all those things. I'm not sure,

you should like compare it with how much impact it has on the environment if you buy the whole new bag? Like if you buy all the separate things, like compared to buy-ing like one new bag. What makes the most impact for the environment? It might be even worse like to buy all the separate things than just buy one new backpack? I'm not sure about this, though. Yeah. Yeah, but like, for me, my main point is like, if the only like, I'm not going to repair it if it's like only for a week. Like if it breaks af-ter a week and I know it before then that will be for me a point where I'm like, Okay, I really have to buy a new bag. When it's when I fix it like for example the strap like it probably will hold for like I hope at least a year or so like after a year maybe it gets lose again and I'll just stitch it back up. That's fine for me.

Marlon   21:52
Okay, yeah. And yeah, so a little bit more back to the repair. Maybe can you tell me how you would describe the optimal experience because well it's maybe some sort of enjoyable or motivational as well if you would repair something?

#4 22:15
Like the most enjoyable thing for me if someone else let someone else repairs. But I'm not sure if that's like an answer to your question.

Marlon   22:28
It is... but maybe no yeah it is.

#4 22:37
Yeah Even though I'm not entirely sure like I'm saying it like it would be the most enjoyable and I definitely might enjoy it like if my bag like It's like the next morn-ing I'm waking up and it's repaired. Of course I would be happy. But that, it might be uncomfortable as well like if someone else is going to repair it for me

Marlon   23:05
In what sense uncomfortable?

#4 23:07
Like I can do it myself. So why should I let someone else do it if I can do it myself?

Marlon   23:13
Yeah, okay.

#4 23:13
That's why. So then it might be a question like how would it more how it would be more enjoyable for me I have to repair it myself. I think like one of the things that would make it at least less frustrating would be if I have already everything I need to repair like for exam-ple the bag so I don't have to go to the store I can to buy needles or like thread or etc. Like I have everything close to me.

Marlon   24:02
Yeah, okay. Yeah and now so you've mentioned the ex-ample of your shoe or your bad bike light now we also talked about the backpack you also said you already repaired another backpack ones. How do you think is repairing a backpack different from repairing other things other objects? Also, maybe maybe not not. May-be not specifically the task like what you do of course, one thing maybe you sew or glue and another one you screw or something, but like also in terms of motivation or your personal opinions or feelings towards towards it.

#4 24:55
Different compared to repairing other things, right?

Marlon   24:57
Yeah.

#4 24:58
And my feeling about it? I think my feeling is the same towards repairing other things. Like, try to extend the life of like a thing you're planning to use as long as possible. And if it's like only for, like for me personly if it's only for a week, and after a week it breaks again, then no, for me, this isn't worth anymore. That's like how I feel about it. Like I for repairing itself I think it might be harder or easier. Like for example my coffee machine. It kinda broke as well. And it's quite complex. Like it's, it's quite hard to fix it, I looked it up, I was like 'hm'. So I'm glad, like in this specific case, like it works to just like slept really hard on it. Because I, I did I kind of see what went wrong because like, it broke and I

was like, okay, like this one cable, it probably got loose or something like it probably moved a bit too much to like, one side.

Marlon   25:00
Yeah. Okay.

#4 26:06
I was like if I kind of slap like on it like, I don't have to, like open my whole machine. But like, just like get it back in the right bit and it worked. But like, in general I feel the same about like repairing like different objects, things. I think it might be harder or easier, depending on the object you are repairing.

Marlon   26:31
Okay. Now also, again, on the backpack example, What expectations do you have of the aesthetics or the look of that repairment of a backpack?

#4 26:51
Well, like for my backpack right now?

Marlon   26:54
Yeah, like, or in general, when you think you repair your backpack. What are your expectations, in terms of the aesthetic? How should it, what should the look be like?

#4 27:04
Well for me, it's, if it works, it works. So I don't re-ally care about aesthetics unless it's like, really ugly. Of course, there's like, a certain threshold but like, in general, I'm like if it works, it works.

Marlon   27:25
Okay. Yeah. Nice.

#4 27:27
I don't really care about the aesthetics.

Marlon   27:29
Yeah. Yeah, so last two questions. But those now would step away a bit from the act of repair more like into the image of repair, so maybe can you tell me how you perceive the the overall image of repairing backpacks in your surrounding or in the public?

#4 28:02
I think like like, almost, or at least most of my friends, almost all of my friends like I think they think it's a good idea to repair like the object that is broken. Yeah. I think there about it. I think most of my friends is like, I'm living in this bubble, like almost like really, super conscious living people, you know, we should care about the environment, etc, etc. I think in general, if they like, of course, there are exceptions, but in general, I think that they are like, it's quite a good idea, quite a good idea to repair an object first, before starting into buying a new one. Yeah.

Marlon 29:00
Okay. And so, then something more towards the communication. How do you think, or like, how do you think should repair be communicated best for backpacks to make you more aware of it?

#4 29:22
And like, from the side of the brand owners? Like Eastpak?

Marlon 29:33
For example, yeah. Like how should it be communicated, how could it be communicated best that you, that this is something you consider that you're aware of, of repairing your backpack when it breaks?

#4 29:50
That's like, like how to do it or why to do it? Why to repair?

Marlon 29:58
No more like how? How do you think could you be made more sensitive to the topic? More or more aware of it?

#4 30:08
So like, instead of throwing it away, for example, you just can repair?

Marlon 30:13
Yeah. that you think you repair it. Like, in what way could that be best communicated, that, yeah, when it breaks you think 'oh, wait, I can repair it'.

#4 30:29
Well, I always like in general, but it's it's almost like behavioral psychology. How can you make like people do things like you want to do? Like, I'm always quite skeptical like. So in that sense, like, you should make it like super easy for communication in this example. Like one way to do it, we just like to add, like, for example, sticker inside the bag, when you open back, like you see repair fist before throwing it away. I think that's, like make it as simple as possible for the consumer like, and they don't have the possibility to don't take a look at it, so like they are confronted with it. That would be the best way like, what makes it easy to confront them every time so like for example, adding a sticker in the bag. Like I bought a jacket from Picture. And I think even in the inside of the jacket is like repair, I think they added like you have like lifelong warranty. So like yeah, they repair it for you. Like, instead of like seloing a new one.

Marlon 31:55
Okay, yeah. Yeah, nice.

#4 31:59
Was it like, was it clear for you?

Marlon 32:01
Yeah. So yeah, actually, that was it already. If you have any last thoughts you want to share?

#4 32:10
No, not really.

Marlon 32:12
Then yeah, thanks. That was already it, perfect.

Interview #5

Marlon 00:23
What I'm doing is here for my master thesis. So I'm looking into backpack backpack repair, and kind of want to see. Yeah, what a bit a bit about what repairs people already did. What motivates them to do so why they do repair, but also why they don't repair. So they can kind of see, yeah, what motivations or reasons are behind

there. To find a way how to make that easier to actually get people to do repairs. And yeah, it's all on the topic of backpacks. So already focusing on backpacks. The interview will also be a little bit about different things. A little bit first about repair in general, but yeah, I will tell you that then. But yeah, that's about the thesis in general. So yeah, the first part is more about repair in general so now it's really about everything. And but maybe you can you just start think of a few examples of repairs you already did. Yeah, really can be anything.

#5 01:37
Anything already like now. Yes, you can think Oh, yeah. Cloths, bikes, walls, pieces of furniture. Most a lot of times, clothing or toys. Yeah. So that's a lot of stuff I think. Already.

Marlon 02:03
True. Can you can you remember some specific things with clothes for example?

#5 02:08
Yeah, like a little hole in in my neck from wool?

Marlon 02:15
Oh, like a wool?

#5 02:16
Yeah. So I didn't want it to that you see that, you saw it. And I didn't want to that anyone else did it for me. So I wanted to do myself. Sometimes I made like I had like a dress but I really want it to be like a long vest or like yeah, first. So then I shortened it with elastics so it's like sporty and yeah, clothing like when there's a hole in it. Or when the knot?

Marlon 02:53
Oh, yeah the buttons.

#5 02:55
Yeah, the buttons were broken or something like that. Sometimes my shoe I glued my shoe once, didn't work. Like the walls I had to. There were holes in it, so we had to make them smooth again. And yeah, what else? Oh, that's hard.

Marlon 03:22
That's alright. That's already a lot. So from like your, from the all the examples you remember can you can you think which one was the most rewarding one for you? And what what you felt during that repair?

#5 03:40
I think it was. I don't know how to pronounce the woollen?

Marlon 03:45
Was is it like a wool sweater?

#5 03:47
Yeah, wool sweater because it was really in your sight. And I really liked the color. And I just knew that I couldn't find anything like that anymore. And it was it was like the first time I washed it and put it in No, I didn't put it in the dryer in the washing machine it I think it made a hole in it. And then I was Yeah, I was wearing it for a long time with the hole and then I finally got like put myself in for that task. I finally did it. It was so easy. But I looked it on YouTube how to fix it because it didn't want anyone to see it. So there were a lot of ways to fix it. And then I chose one and it worked. So now I'm just happy. Like that was a big reward that I didn't have to throw it away. Yeah.

Marlon 04:38
Nice, but that connects are quite good. And something else that I would want to know as well as be-cause for me, it's also interesting what your experiences are in finding the right resources. So you now you mentioned YouTube. Yeah, and there are Yeah. Also for repairs in general doesn't need to be that example specifically. But what what usually are your your resources to look for?

#5 05:07
Well, most of the time I ask my mom because she also learned me how to like, put the needle in the thread and what's the best way. So if I don't know if I could fix it, or what's the best way I think I first asked her. And then the next one was YouTube. Or just try. Sometimes I just try and see what happens. If it's not that the value valuable.

Marlon   05:37
Valuable, yeah. Okay, so that makes a difference for you.

#5   05:46
Yeah.

Marlon   05:46
What, what kind of value it has?

#5   05:49
Yes.

Marlon   05:50
Why is that?

#5   05:54
Like, for example, with the woolen sweater. There was also a way that you can put paper on it, and then you didn't even have to repair it with needle and thread. Right? I don't know, thread yeah. But I didn't have I didn't want to buy the paper or ruin the whole short shirt by doing it wrong. So that was a thing. Like, so I would just try the cheap and normal and maybe save option or to buy something and then I don't know if it works.

Marlon   06:31
Yeah. I will just surely know that. Okay, cool. Can you think a little back, how did you get into learning to repair?

#5   06:48
From my mom. Yeah, yeah, she, she always told me that she fixed everything. Like she made her own clothes when she was younger. And they also learned it in school, and I did learn something on school about how to stitch. How to do that, but stitching? Yeah, I know. But then, she always told me that she fixed everything for me like, but then again she never did. So I was kind of annoyed that she didn't do it when she said she would do it. So then my pants was still too long, or that was still broken. So I really want to learn myself. And that's, I think that's the main reason why I really wanted to learn myself and not be like the person who

cannot fix her own shirt.

Marlon   07:41
Okay, so but did she then teach it yourself?

#5   07:46
No, she she learned me a bit. And then I just tried because there were not hard things that I tried. Yeah, and this was nice that you can Yeah. Fix the little hole in the shirt or something?

Marlon   07:59
Yeah. Oh, nice. And yeah from all but still also in general repairs. Can you think of problems you en-countered during a repair? So maybe we

#5   08:18
Yeah, like with the bike. Yeah. For example, like I had to I had to put a new tire on my the tire. Yeah, the back tire. But then I had to get the whole bike because because it was the back tire. I had to put so many things loose. And I didn't know how to how to how it works and then I was just afraid that I would not put it back together like normally and then I would fall and so like yeah, I really wanted to do myself but I also couldn't find a time to and the place because yeah, the place I live you don't want to leave eve-rything behind. Yeah. So most mostly that you didn't have the skills like you have to look it up okay. And then it's the back tire so it was hard to replace it and they just give it to the per-son who does it for a job and pay money. Yeah yeah, maybe first with this one this with this example as well. Can you just tell him also how you felt during that event when you encountered these problems? Which feelings were well I did look it up on YouTube, like like different videos how to do it, and then I just didn't have the tools. That's what I first found out. Then I know I saw that it was a bit hard. They also explained and it takes a lot of time. So all together it for me it was better to just give give the job out of my hand. So it was faster so I didn't have to Yeah. To walk or something else.

Marlon   10:14
Yeah. But can you describe your mor like your emotions?

#5   10:22
Well, well the emotion was that I was a bit sad that I didn't get to learn it from my dad because he did learn how to fix the tire but not how to change it. Or when they when they have verschnellingen?

Marlon   10:40
Oh, like the gears?

#5   10:42
Yeah, yeah. When when when that's on your bike. It's harder.

Marlon   10:47
Yeah, true.

#5   10:48
Yeah. So that was my problem. And then I was just like ohh I never got to see that.

Marlon   10:58
Also, I found it actually quite interesting with the with the wool sweater because you also mentioned that as the most rewarding one.

#5   11:05
Yeah.

Marlon   11:07
You already told like, there were like you had this issue with either taking the more risky paper version or like the other one. But did you have also kind of problems during that repair? Were there any prob-lems you en-countered?

#5   11:24
Maybe the color of the thread that I was a bit afraid that you did see it? Or that I was pulling it to tight that you'd also saw that you fixed it. But then again, I think I also like yeah the hole is gone. So that's the most rewarding that no one can say there's a hole. Now they can say you fixed the hole I can see it.

Marlon   11:52
Well, that's interesting. what's your what's your expec-tation of the aesthetic then with aesthetic. They're like

how it looks? For example, you if you see it's repaired? Or if you don't see it?

#5   12:05
Well, I didn't even it didn't even bother me that there was a hole, well, I was a bit sad that it was a hole but then it was not. For me, it was not a problem to wear it with the hole. Yeah. But then a lot of people just men-tioned it and I was like, okay, I can fix it. It's not that hard. Maybe then people gonna stop men-tioning that and I just have more joy by wearing it. So I think that's the whole thing.

Marlon   12:31
Yeah. Yeah. Okay, the (w)hole thing. Cool. I would now get a bit more specific than now about repair of back-packs. So just as a start, can you think of of like, your first associations that come to your mind when you think of repairing backpacks?

#5   12:54
I have two backpacks that needs to be fixed.

Marlon   13:00
Did you, are you planning to do it?

#5   13:04
With one I think I am. But I don't know how so and where. Because I don't feel like I can fix it myself. And the other one, I don't think I'm going to fix it. I just buy a new one.

Marlon   13:18
Why?

#5   13:19
Because it's it's in the inside layer where it's supposed to be cool. It got loose, so it holds your food or anything cool. And I don't know how to fix that. And in the end, I don't know if I really want to use that backpack. So that's the issue and the other, wow, three backpacks. And the other one is the one I like carry a lot with me. But there is new version with like, things on the side where you put your bottle in and that's what I wants. Fixing the backpack or get a new one? Yeah,

Marlon   14:01
Yeah. So what's your... How do you say that? kind of what? What is you know?

#5 14:15
The one I want to fix, I know I don't know where to buy it anymore. Yeah, I love it.

Marlon   14:20
So yeah. Okay, so yeah, because that's kind of what I was wanting to ask. If it's [not understanable] to ask right now. But like you could either if you if you repaired or you buy a new one like what what are the what what would be like reasons to repair or which would be like to buy a new one like, Yeah, where's the point of saying, okay, now I'm just gonna buy a new one?

#5 14:47
Well, if there's a better version, then I'll buy a new one. And if it's not that expensive, well, the one I do want to buy a new one is expensive. And the one I I want to repair is not expensive, but I don't know where to buy it. So maybe if I well, I think even when I find someone similar, I still want to repair that one because I really like it. It's just for me. Yeah. So that's I think that's the big difference. It's really a unique backpack, little backpack.

Marlon   15:23
Yeah. Yeah. Nice.

#5 15:25
Colors. And then the fabric. Yeah.

Marlon   15:29
So I would now say, let's imagine the one the one backpack you want to repair. Yeah. Let's just imagine you're, you will do that.

#5 15:41
I will do it?

Marlon   15:42
Yes, you will repair that. And I will join you to kind of observe how you do that. Could you just now if you imagine how you would do that whole process of think-

ing how I'm gonna repair it now to actually doing it? Like, how would that be? What could I observe?

#5 16:01
I think the first thing I need to know is how to fix it. I have no idea because I never... it's with magnets in the fabric where the magnet is in is is the I think the magnet is too strong

Marlon   16:18
 That's maybe good first.

#5 16:19
Yeah. Okay. I think, look it up. I think I will look it up on YouTube. And then see if it's really hard to look for, if anyone else can fix it for me. And if it's not that hard, I think I'll just the first time I will be in the shop. I'll buy it. I think and then do it in the evening. Yeah, I think I will do that.

Marlon   16:54
ahh buy it you mean, like the spare parts? Yeah and fix it. But, like saying it, I don't expect that it's easy. Yeah. Where do you? What do you think will be complicated? Or what will be hard?

#5 17:09
Because the fabric is already broken. Because of the strong magnets. So I'm just not sure if I maybe make another solution. Like making not magnets, but just a knot.

Marlon   17:24
So kind of to individualize it. And yeah, improvise.

#5 17:29
Improvize a bit because yeah, yeah. Thanks.

Marlon   17:34
Now we also got a different idea, nice. And now will from now you'd expect it to be very, you expect it to be also quite hard to repair. Yeah. But if you would now imagine you want to repair your backpack? And now doesn't necessarily need to be like this one, but you want to repair your backpack? What how would you de-scribe the optimal experience? Like that makes it really

the most enjoyable and motivational for you?

#5 18:09
When the replace replacing is easy, or. Yeah, when the fixing part is easy, like when you really have the, like, sometimes the parts are not that that broken. So you can still use it. Like, like one thing is very loose and that's the reason you cannot use it and then you fix it. I think there's more... I forgot your question.

Marlon   18:43
What what your optimal experience would be?

#5 18:45
Yeah, that it's easy to fix, and then that there is like, if you don't fix it, you can not use it. And if you do fix it, like you can use it like straightaway. I think that's my optimal experience.

Marlon   19:00
And when you say easy, how do you I mean, like it could be easy sewing wise, easy to...

#5 19:07
I think time, like, easy to buy, so you don't have to look for it. Like buying it a HEMA or any simple shop. And that it doesn't take a lot of time like maybe 15 minutes and I think I would be very happy.

Marlon   19:27
What kind of motivates you to repair?

#5 19:31
because it's nice to repair stuff. Because you did it like it's same with when you buy something or you make it yourself I think there's a story like look, I fixed myself. See I can do stuff.

Marlon   19:47
Nice. So what feeling is that?

#5 19:53
Well, I don't know in English.

Marlon   19:57
What does it make your...

#5 19:57
Like your skills, like an extra skill? Go. And like inde independent from the shops, so you don't need, like, where we were talking about like, you need to bring your bike to the thing because you cannot fix it at all. It's super nice feeling that you don't have to bring your bike to someone because you can fix it yourself.

Marlon   20:19
Yeah. Yeah, that's interesting. Yeah. And when gen also in general, I mean, now you already said you want to repair your backpack. What do you think needs to hap-pen to make it really more like, likely that you actually repair backpacks?

#5 20:39
Because now just one magnet is really, really broken. The other one is almost broken. I think it when that one is broken I would really do it.

Marlon   20:49
Okay, so so the urge...

#5 20:52
Yeah, because the other one has like an extra stop. And, yeah, when the other one is broken, every-thing is open. Then it's dangerous. I'll loose stuff.

Marlon   21:13
But maybe also from the other side, like, how do say that? Like, Now you say, it's kind of like, then if it breaks, you need to because you can't use it anymore. Yeah. But also what will would make what would make it more likely for you to repair something as kind of like, let's say facilitation or so. So like, from not the, not the site you need to but what would need to happen that you think, Oh, I want

#5 21:44
Yeah, pass through the stuff that you need. Like, like I last time I saw glue. And oh, I need to that's true. I need to fix my shoe because it's almost broken. Or shoelac-es, because it was walking walking by the staff. And I was like, a I'll buy that stuff because one day it will break and I just have it. So also need to find the stuff.

Marlon   22:13
And then like, yeah, so the availability and also Yeah, knowing where to get it?

#5 22:18
Knowing where to get it. That's I think that's most important that it's not a special thing you have to order online and wait for it and yeah.

Marlon   22:28
Okay, yeah. And how, how do you think is repairing your backpack different from repairing other ob-jects?

#5 22:42
I think for me, the backpack doesn't need to be very, very beautiful. But very functional. Like you don't want to lose stuff or kind of carry it or like the risks that you take that if you, it might break you going on a trip that you're like really have a problem. So I think that's different like with with clothing, you have many clothes. And with a backpack normally you just bring one. Yeah. Same with your shoes. You just don't have an extra spare everywhere. Yeah, you don't buy it like that fast.

Marlon   23:22
Yeah.

#5 23:24
So for me, that's the difference.

Marlon   23:26
Okay, also, because of the way now you also said with shoes you don't buy it that fast so it's also the is that connected to the value again, as well?

#5 23:37
Yeah, like now, I do have a lot of backpacks, but I normally know that people don't have a lot of back-packs. So they really, yeah, just wear it all the time until it's very, very broken. And then they buy a new one. Yeah. So then the urge to fix it maybe before because it's not that old. It's higher, I think.

Marlon   24:03
Yeah. So actually, they're already like, there's only like

two to three last questions. So, now, I would step away a bit more from like the act of repairing and look more into like the image of repair. So could you tell me how you how you perceive the image of repairing backpacks in like public or in your new friends?

#5 24:37
I don't understand.

Marlon   24:38
So, like the image in terms of what what people around you are people people how they think about it, like how pre how present how prominent the topic is in your in your surrounding, how you perceive that. Do you re-member that?

#5 24:59
Yeah, well I think maybe I understand like how they react normally on repairments?

Marlon   25:07
Yeah. And also how kind of how, how present it is in your, in your everyday life or in your in your sur-round-ings? Like...

#5 25:16
I don't think it's very present, to be honest. But I do think that different I don't know if that's your question, but different groups how to react on repairment.

Marlon   25:32
Yeah, on repairs.

#5 25:35
Repairing stuff, like, one group of people that I hang out with are like, just buy a new one. Or throw it away. It's it's broken, and the other group is like, you need to fix it. So I think that's also a difference that you don't maybe you don't hear about it because they always buy new stuff.

Marlon   25:54
Yeah. Okay, so there's interesting. So there are different like, opinions about it.

#5 26:02

Yeah, like, the easy way or maybe still the easy way, but then you still have the old older stuff.

Marlon   26:10
Yeah. Okay, but yeah, that already answered this ques-tion. Yeah, that's, that's all right. But, so there, yeah, that's interesting when you say that you also have this group of friends that says more like, yeah, just buy a new one. Yeah. So how do you think, would it? How do you think needs, needs repair to be communicated? So that to make people more aware of it?

#5 26:41
I do think because that's...

Marlon   26:42
Also in the context of backpacks, of course.

#5 26:46
I think that when you Oh, wait. I think people need to be a little bit more proud when they fix stuff, be-cause then they talk about it. And then maybe the other per-son also thinks, oh, maybe I can do that, too. I have a backpack that I love. But yeah. Yeah. And I think that's it for me. When people talk about an on subject, and you also make that connection to do it easier, or like, they're, like, very proud of the person. Did they fix it themselves? Or? Yeah.

Marlon   27:31
Okay. Yeah. Interesting. Yeah. Cool. So there's one last question. And you're already talked a little bit about it, but just when you when you buy a new backpack? What for? What is the importance between aesthetic and function for you? Like, what is the look?

#5 27:59
Well, for me, the look is very important. I'm not the kind of person that that maybe looks like buy stuff that looks good, but it's not functional. So and in the end, I do feel like because when I buy it, I already know that I'm making that mistake. And then in the end, did I just or I do sell sell the backpack or be-cause of... that hap-pened because it was too big on my back, and I just loved the how it looked. And then everyone said it was too big. I bought it because I loved how it looked. So

yeah, I think that's for me, it's more how it looks. Okay, if it's clean if it's my color, if it's, well, some in some way it needs to be functional. So I need to have like, some things has to be there otherwise I don't buy it.

Marlon   28:57
Which are that?

#5 28:58
Like many many...

Marlon   29:01
Like pockets?

#5 29:02
Many pockets? So yeah, so you can really organize it. Yeah. Yeah. Because I have a lot of stuff with me all the time.

Marlon   29:18
Yeah. Cool. Any last things you want to share?

#5 29:24
I love this interview. It was great. It was great. It really made me think about finally fixing my backpack be-cause it makes me proud. Thanks.

Marlon   29:38
Thanks, as well.

#5 29:39
You're welcome.

Marlon   29:40
For taking the time. Perfect. Nice. That's already it.

Brainstorming

Concept
Development
Process

Figure 40 – First prototype

Figure 41 – Other prototype and stitch testing

Figure 42 –Concept testing for bleeding backpack

Figure 43 –Concept testing for bleeding backpack #2

Figure 44 – Laser cutting prototype

4C Analysis

Competition
Noso:
https://nosopatches.com/
GearAid Tenacious tape:
https://www.gearaid.com/collections/tenacious-tape
Bo-Camp:
https://www.bever.nl/p/bo-camp-reparatiedoek-zelfklevend-nylon-grijs-VBEAC70166.html?colour=4324
Zpacks:
https://zpacks.com/products/15-inch-nylon-tape-strip
Tear Aid:
https://www.bever.nl/p/tear-aid-tear-aid-type-a-reparatie-MABBA92002.html?colour=5806
iFixit:
https://de.ifixit.com/Kits
Deuter:
https://www.deuter.com/de-de/verantwortung/reparaturservice
Patagonia:
https://eu.patagonia.com/gb/en/repairs.html
Bever:
https://www.bever.nl/expertise/reparatie/reparatie-service-kleding.html
Hema:
https://www.hema.nl/
Obi:
https://www.obi.de
Kikkerland:
https://www.bever.nl/p/kikkerland-brillen-reparatieset-OCAED80008.html?colour=4118
GearAid Seam glue:
https://www.bever.nl/p/mcnett-silnet-seam-sealer-28-gram-reparatie-MABBA42010.html?colour=5806
Hornbach:
https://www.hornbach.nl/
Vaude:
https://help.vaude.com/reparaturanfrage/
Patches4Less:
https://www.patches4less.com/
Etsy:
https://www.etsy.com/market/patches_for_clothes
https://www.etsy.com/de/listing/1190554697/brauner-ledernahbogen-paar-ovaler?click_key=2442e2138f9392d1cd3ea6f7ed1ce0dc02fbdfab%3A1190554697&click_sum=1873328f&ref=related-2&sts=1
Sea to Summit:
https://seatosummit.eu/de/products/air-sprung-cell-mat-repair-kit

Figure 45 – Sources for competitors

Business Case Planning

Funding

Funding	excl. VAT	Explanations
Equity capital		
Own resources	4.000,00	
Investors		
Other		
Debt capital		
Bank loan		
Private loan		
Other		
Sum funding	**4.000,00**	

Figure 46 – Funding

Sales revenue planning

Year		Sold products best case	Sold products worst case	Sales price (excl. VAT)	Sales price (incl. 21% VAT)	Sales revenues best case	Sales revenues worst case	Ø sales revenues (basis for further calculations)
Year 1	Ripped small	4.000,00	2.000,00	7,43	8,99	29.720,00	14.860,00	22.290,00
Year 2	Ripped small	6.000,00	3.000,00	7,43	8,99	44.580,00	22.290,00	33.435,00
Year 3	Ripped small	12.000,00	8.000,00	7,43	8,99	89.160,00	59.440,00	74.300,00

Year		Sold products best case	Sold products worst case	Sales price (excl. VAT)	Sales price (incl. 21% VAT)	Sales revenues best case	Sales revenues worst case	Ø sales revenues (basis for further calculations)
Year 1	Ripped medium	4.000,00	2.000,00	9,08	10,99	36.320,00	18.160,00	27.240,00
Year 2	Ripped medium	6.000,00	3.000,00	9,08	10,99	54.480,00	27.240,00	40.860,00
Year 3	Ripped medium	12.000,00	8.000,00	9,08	10,99	108.960,00	72.640,00	90.800,00

Year		Sold products best case	Sold products worst case	Sales price (excl. VAT)	Sales price (incl. 21% VAT)	Sales revenues best case	Sales revenues worst case	Ø sales revenues (basis for further calculations)
Year 1	Ripped Large	4.000,00	2.000,00	10,74	12,99	42.940,00	21.470,00	32.205,00
Year 2	Ripped Large	6.000,00	3.000,00	10,74	12,99	64.410,00	32.205,00	48.307,50
Year 3	Ripped Large	12.000,00	8.000,00	10,74	12,99	128.820,00	85.880,00	107.350,00

	Best case Revenue	Worst case Revenue	Expected/average Revenue	Costs
Year 1	€ 108.980,00	€ 54.490,00	€ 81.735,00	72.000
Year 2	€ 163.470,00	€ 81.735,00	€ 122.602,50	87.000
Year 3	€ 326.940,00	€ 217.960,00	€ 272.450,00	132.000

Figure 47 – Sales revenue planning

Capital needs planning

	excl. VAT	Explanations
Investments		
Sum investments	**0,00**	
Start-up costs		
Notary	600,00	Private Company notary costs; https://www.standaardbv.nl/kosten-bv-oprichten
Consulting (e.g., lawyer)	900,00	Law consulting for contracts etc.; https://www.wetrecht.nl/contract-opstellen/#:~:text=De%20prijs%20van%20een%20contract,af%20van%20uw%20specifieke%20wensen.
Patent	4.850,00	European patent: https://www.advocado.de/ratgeber/patentrecht/patentanmeldung/patent-anmelden-kosten.html
…		
Other		
Sum start-up costs	**6.350,00**	
Launching costs (before product launch and first revenues)		
Personnel	0,00	
Website	2.345,00	https://www.atlanticbt.com/insights/how-much-does-ecommerce-website-cost/
Office space	0,00	
Office appliances	20,00	
Marketing	1.000,00	Google Ad, based on the amount of pay-per-click (1,98 euros). A conversion rate of 4.2% was used. https://ads.google.com/aw/keywordplanner/plan/overview?ocid=219045834&planId=268845140&euid=226805653&__u=2268164397&uscid=219045834&__c=3657283066&authuser=0&sf=kp&subid=ALL-it-et-gaw-a-tools-kwp_bb-awhp_xin1%21o2
Administration	0,00	E-boekhouden.nl is free for the first 15 months of new businesses
…		
Other		
Sum launching costs	**3.365,00**	
Capital needed	**9.715,00**	

Figure 48 – Capital needs planning

	Cost in €	Explanations
Ripped' Patch Large (16 x 10 cm)		
Fabric material	0,08	https://www.globalsources.com/Recycled-fabric/Recycled-Polyester-Fabric-1192312279p.htm (+0,10€ estimated. Higher price for adhesive fabric)
Printed Plastic Foil	0,15	https://stickerprinting.de/transparente-aufkleber-berechnung.htm
Needle	0,01	https://www.globalsources.com/Hand/Hand-machine-sewing-needles-1193729272p.htm
Yarn	0,01	https://www.globalsources.com/Recycled-polyester/Recycled-polyester-yarn-1193564816p.htm
Packaging	0,09	https://www.schachtel24.de/kissenverpackung.html
Production cost	0,60	Based on Portugese wage; https://www.rnd.de/politik/portugal-mindestlohn-auf-4-40-euro-pro-stunde-erhoeht-kurz-vor-der-wahl-2GDN4N2FI5WGZMP54P7ZXM3HG4.html
Total	**0,94**	

	Cost in €	Explanations
Ripped' Patch Medium (10 x 6 cm)		
Fabric material	0,03	https://www.globalsources.com/Recycled-fabric/Recycled-Polyester-Fabric-1192312279p.htm (+0,10€ estimated. Higher price for adhesive fabric)
Printed Plastic Foil	0,15	https://stickerprinting.de/transparente-aufkleber-berechnung.htm
Needle	0,01	https://www.globalsources.com/Hand/Hand-machine-sewing-needles-1193729272p.htm
Yarn	0,01	https://www.globalsources.com/Recycled-polyester/Recycled-polyester-yarn-1193564816p.htm
Packaging	0,09	https://www.schachtel24.de/kissenverpackung.html
Production cost	0,60	Based on Portugese wage; https://www.rnd.de/politik/portugal-mindestlohn-auf-4-40-euro-pro-stunde-erhoeht-kurz-vor-der-wahl-2GDN4N2FI5WGZMP54P7ZXM3HG4.html
Total	**0.89**	

	Cost in €	Explanations
Ripped' Patch Small (6 x 3,6 cm)		
Fabric material	0,01	https://www.globalsources.com/Recycled-fabric/Recycled-Polyester-Fabric-1192312279p.htm (+0,10€ estimated. Higher price for adhesive fabric)
Printed Plastic Foil	0,15	https://stickerprinting.de/transparente-aufkleber-berechnung.htm
Needle	0,01	https://www.globalsources.com/Hand/Hand-machine-sewing-needles-1193729272p.htm
Yarn	0,01	https://www.globalsources.com/Recycled-polyester/Recycled-polyester-yarn-1193564816p.htm
Packaging	0,09	https://www.schachtel24.de/kissenverpackung.html
Production cost	0,60	Based on Portugese wage; https://www.rnd.de/politik/portugal-mindestlohn-auf-4-40-euro-pro-stunde-erhoeht-kurz-vor-der-wahl-2GDN4N2FI5WGZMP54P7ZXM3HG4.html
Total	**0,87**	

Income statement

	Year 1	Year 2	Year 3	Explanations
Sales revenues	81.735,00	122.602,50	272.450,00	Average from sales revenue planning
./. Variable costs				
Gross profit	**81.735,00**	**122.602,50**	**272.450,00**	
Personnel costs (incl. non-wage costs)	45.000,00	60.000,00	100.000,00	
High Performance Computer	5.000,00			
Office Rent	12.000,00	12.000,00	12.000,00	
Marketing Campaign	10.000,00	15.000,00	20.000,00	
1% for the planet	817,35	1.226,03	2.724,50	
Sum costs	**72.000,00**	**87.000,00**	**132.000,00**	
Profit / loss (before interest, depreciation, taxes)	**9.735,00**	**35.602,50**	**140.450,00**	
Interest				
Depreciation				
Operating profit / loss (before taxes)	**9.735,00**	**35.602,50**	**140.450,00**	

Figure 49 – Income statement