MADE TO MEND

Exploring alternative ideals and norms in textile design through the concept of repair
Degree work
Bachelor of Fine Arts in Textile Design

Title
Made to Mend
Exploring alternative ideals and norms in textile design through the concept of repair

Author
Hannah Ax

Main tutor
Karin Landahl

External tutor
Seetal Solanki

Class tutor
Katrine Krull

Opponent
Philippa Brock

Examiner
Delia Dumitrescu

Special thanks to
Karin Landahl
Seetal Solanki
Tove Runefelt and Viktor Lundmark
David Njie at Emmaus
Jesper Danielsson at Houdini
Tekoutbildningarnas stipendiefond
Katrine Krull, Maria Oknemark, Francisca Venegas, Phyllis Hahn, Anna Arthur and Hanna Klasson
Oskar Simann
# Table of content

1. Representative images of work, Abstract & Keywords  
   1.1 Representative images of work  
   1.2 Abstract  
   1.3 Keywords  
2. Introduction to the field, Motive and Idea discussion & Aim  
   2.1 Introduction to the field  
   2.2 Motive and Idea discussion  
   2.3 Aim  
3. Method & Development  
   3.1 Design method & Design of experiments  
   3.2 Development & Design rationale  
      3.2.1 Pre-study  
      3.2.2 The act of repair  
      3.2.3 The craft of repair  
      3.2.4 The esthetics of repair  
      3.2.5 Material qualities  
      3.2.6 Color  
      3.2.7 Labels  
4. Result, Presentation, Conclusion & Discussion  
   4.1 Result  
      4.1.1 Method  
      4.1.2 Example 1  
      4.1.3 Example 2  
      4.1.4 Example 3  
   4.2 Presentation  
   4.3 Conclusion  
   4.4 Discussion  
5. References
1. Representative images of work, Abstract & Keywords

1.1 Representative images of work

Fig. 1. Example 1

Fig. 2. Example 1
Fig. 4. Example 3
1.2 Abstract

This project explores alternative ideals and norms in textile design, using repair as a design parameter. Facing the age of the Anthropocene, the work aims to investigate how repair can be integrated into the design process in order to deal with the Earth's scarce material resources. By formulating an alternative design method around a concept of repair, this project investigates a holistic way of developing textiles. The result is a design method, supported by a collection of three design examples. By exploring alternative methods for conducting textiles, this project aims to force new ideals and norms within the textile design field.

1.3 Keywords

repair, material, knitting, anthropocene, norm, textile design, design
2. Introduction to the field, Motive and Idea discussion & Aim

2.1 Introduction to the field

There is a need for alternative ideals in design, where designers address problems through a holistic approach (Jongerius & Schouwenberg 2015). Designers today seem obsessed with the idea of something new, and this mania results in products that lacks understanding of their user and their context. Designers needs to address the full life cycle of their products; not merely the manufacturing but also the decay and afterlife of the design.

Many of our recent design solutions today are based on knowledge and techniques developed long before our time (van Helvert 2016). The search for a socially and an environmentally responsible design has been carried out by several artists and designers over the years. William Morris was an early pioneer within sustainable design and one of the first to criticize the evolving industrial production by the end of the 19th century. Morris methodology was based on ideas of an equal and durable production and consumption. He believed that the trace of a crafters hand was essential to our wellbeing and dignity as humans. A few decades later in the early 20th century, the Bauhaus school in Germany and the VKhUTEMAS in Russia were established. Post-war Germany and post-revolutionary Russia were both in need for new ideals and systematization in design and production. These schools shared an understanding of the significant impacts design had on economical and political issues, and created their methodology accordingly. They believed in economical and social equality, the equal availability of objects and the need for understanding both industry and craft in order to design responsibly (ibid).

Bethany Williams is a fashion designer working with socially and environmentally responsible design (Franklin & Till 2018). In her project *Breadline*, Williams suggests an alternative way of designing and creating fashion through a closed-loop system. Her collection explores the potential of waste materials collected at a Tesco food store from which she creates her own textiles. Williams then applies all profit to the local people living in the neighborhood.

*Houdini* is a Swedish sports- and performancewear company that has created their own business model of producing and recycling garments (Houdini). Their products are constructed using materials from the one chosen origin (synthetic or natural) making it easy to recycle and re-purpose the material. Houdini also created a system where they sell second-hand garments in all their stores as well as offer rental options.
Something is broken. Design seems stuck in an increasingly fast spiral of technology, economy and capitalism. Constantly pushing things forward might not always result in the most successful development (Hara 2007). Design is after all about identifying problems in order to improve the living conditions for as many people as possible. Designers need to investigate how repair and reuse can be integrated into the actual product (Jongerius & Schouwenberg 2015).

The Anthropocene is the name of a proposed new geological epoch, referring to how the power of humans have become so significant that it measures up with the inherent forces of our planet (Encyclopedia of Global Environmental Change 2002). Within a near future, we will utterly exhaust the fossil fuels that took the Earth hundreds of millions of years to create. How can textile design position itself within an Anthropocenic landscape? How can we formulate new norms and ideals for the future?

Today, there seems to be a somewhat general understanding of the scarce resources of our planet. However, daily exposure to what seems like an endless range of products and material choices makes it difficult to fully grasp the severity of this situation (van Helvert 2016). Material scarcity or global warming is not something that can actually be seen, however we can experience local manifestations of these problems (Morton 2013). This kind of problem or thing, by Morton called hyperobjects, are things that in its complexity, paradox and distribution is almost impossible to grasp, which makes them difficult to understand or to handle.

As mentioned, there are several examples of people who have worked/are working around issues of sustainability within design. However, as our society evolves there is a need to re-evaluate what a responsible product development can be. While Houdini has managed to keep a responsible approach to materials, their products are still only available to a smaller mass of people with a certain income. Bethany Williams has investigated this social aspect a bit further, however her garments are more artistic, less comfortable and might be difficult to produce in a larger scale.

Facing the age of the Anthropocene, this project proposes an alternative design method around the concept of repair. The method explores repair as a mindset, a way of thinking when designing. Furthermore, it defines what repair could mean in a modern society, such as material choices, form elements and color. This project looks at repair as identifying a problem, and then trying to fix it.
2.3. Aim

This project aims to investigate alternative ideals and norms for textile design through the concept of repair. By using repair as a design parameter, the aim is to create a toolbox for sustainable and responsible design.
3. Method & Development

3.1 Design method & Design of experiments

Fig. 5. Design method
The set up for this project is to investigate alternative ideals and norms for design, using repair as a design parameter. In order to investigate how repair can be integrated into the design process, a design method was created (see fig. 5). This method is presented here.

This project defines design as identifying problems and then creating solutions. In many ways, it is similar to the concept of repairing as described in 2.2. Through the research for this project, three main areas of repairing were defined. The act of repair, the craft of repair and the esthetics of repair.

The act of repair refers to the communal aspects of design, the traditions that brings people together in the making act. The craft of repair refers to techniques and materials, the tactile aspects of design. The esthetics of repair refers to the appearance and the value of what we make and what it looks like. These areas are explained in more depth in chapter 3.

Three main methods for conducting experiments and examples were defined: join, fill and assemble. Join means to seamlessly join pieces of a broken object. Fill means to fill a gap or hole of a broken object with an added material. Assemble means to gather pieces from broken objects and put them into a new one.

Finally, the methodology introduces a loop in which the life cycle of materials used is analyzed. What is the source of the material, how is it processed and what is the after-life of the product?

Flat bed knitting was chosen as the main technique for conducting experiments and examples. Knitting offers a way of creating fabrics without the need for cuts and seems, minimizing the amount of waste material. As a technique it is also quite dependent on repairing, since all the loops are connected to each other and need to be fastened or secured, otherwise it will break.

Celia Pym is a textile designer working with repair in knitted materials (Pym). The materials explores repair as something revealed and highlighted, making the mending part of the over-all visual expression.

Fig. 6. Textile by Celia Pym
3.2 Development & Design rationale

3.2.1 Pre-study

A pre-study was conducted, in order to explore the potential of repairing and mending using the knitting machine as the main tool (see fig. 7). Most of the samples were made on a hand knitting flat bed machine, but also industrial circular and flat bed knitting machines were used. The materials used were cotton, lycra, wool, PVA, thermo-plastics, polyester and bio-plastics. Some samples are mono-material, and some have a mixed complexion of both naturals and synthetics.

In order to understand how to integrate repair into the design process, the pre-study aims to investigate what repair is. The pre-study shows how the concept of repair can provide methods for designing something that is responsible in its construction, material choices and esthetics. The result of the pre-study consists of a library of knitted samples exploring the concept of repair. By investigating the act, craft and esthetics of the knitted material, and by using join, fill and assemble as methods; the pre-study explores how repair can be integrated into the design process.

Fig. 7. Samples from the Pre-study
3.2.2 The act of repair

The act of repair refers to the social aspects of design, the kind of projects and/or products that connects and educates people through the act or performance.

In some communities, the act of repair is an integrated ritual that continues year after year. In Canas, Peru, a community comes together annually to build a rope bridge (Algera & van Der Hoeven 2016) (see fig. 8). This bridge is called a Qeshwachaka, and it is the only bridge in the world to be rebuilt every year solely by hand. Every year the bridge will degrade naturally and fall down into the underlying river, after which it is then rebuilt again (ibid).

Fig. 8. Qeshuachaca bridge / Peru
In the first design example, a decision was made to focus on the act of repairing (see fig. 9.). The aim was to illustrate the ritual and social aspects of repairing. The idea for the first design example was to focus on the connecting act, referring to how design can connect people through repairing by, in this case, connecting several textile elements.
In order for people to feel activated and connected to the textile, the decision was made to make it in a scale big enough so that the person interacting with the material would have a clear understanding of how it had been put together.

The hole and the bandage were chosen as design elements. These were then gradually scaled up in order to emphasize the expression of something broken (material with holes) being fixed (filled with an added material) (see fig. 10 & 11).

In the process of scaling up the holes, the knitting machine started making small holes in the material. The yarn would brake in the bind-offs due to the struggle to keep the fabric rolling down. A decision was made to keep these holes as a part of the expression, and to add hand stitches afterwards. These hand stitches were added as a design esthetic, but also in order to keep the loops from running and breaking the material.
A toile was made to explore the potential of draping and layering the different design elements (see fig. 12). The purpose was to make a decision on how many elements that should be part of the final example, and how these elements then should be connected. A decision was made to add a second layer with holes and to have the bandage connect the two layers, pushing a focus onto the connecting act. One of the experiments was then chosen and finally knitted.
3.2.3 The craft of repair

The craft of repair refers to the techniques and methods used in design. Looking at both tradition and innovation, the craft of repair explores how to design considering aspects such as material, context and technique.

Helen Kirkum is a designer that uses repair as a design method, exploring the craft of putting together discarded materials (Kirkum). In the project Our Public Youth Kirkum has gathered thrown away sneakers and re-assembled them into new shoes (see fig. 13). By taking care of this dismissed materials and repurposing them, Kirkum aims to address questions of identity and consumerism.

Fig. 13. Our Public Youth / Helen Kirkum
In the second design example, a decision was made to focus on the craft of repairing (see fig. 14). The aim was to explore a material in more depth, and to give suggestions of an alternative way of giving purpose to something discarded. A collaboration with a local thrift shop, Emmaus, was initiated.

In year 2017, Emmaus sorted approximately 850 tons of textile material (Njie 2018). Around 30% of this material were sold in second hand stores in Sweden. 47.9% were exported, 17.2% were sent to be recycled and 4.9% were discarded and burnt. One specific item that is particularly difficult to sell is the white t-shirt. Every day Emmaus have to sort out white t-shirts with stains or holes that they are not able to sell in their stores (ibid).

A decision was made to look into ways of re-purposing the discarded white t-shirt.
A series of samples were conducted, through the methods of join, fill and assemble (see fig. 17).

A decision was made to move forward with the samples that had a mix of recycled t-shirt waste and seaweed-based bio-plastics. The bio-plastic was chosen in order to bring in a more speculative and futuristic material into the collection. Furthermore, the purpose was also to bring in a material that has a marginally shorter life-cycle than the other materials used in the collection.

Different methods of mixing the t-shirt waste and the bio-plastic were made, in order to find an esthetic that would resonate well together with the rest of the collection.

Fig. 16. White T-shirt from Emmaus

Fig. 17. Samples from the Pre-study & further development
3.2.4 The esthetics of repair

The esthetics of repair refers to the look and style of repaired goods or materials, and what value this esthetic communicates. Is there a way to change how we value the repaired object?

*Palau Banda* is a project by Marta Velaso Velaso that explores narrative possibilities within surface pattern design (Velasco Velasco) (see fig. 18). Velasco explores the history of nutmeg, a spice that until the 19th century only were grown on a few islands in Indonesia. During the 17th century, nutmeg was considered "The Holy Grail of Spices", worth as much as gold. As Europe continued exploiting the resources of the rest of the world, nutmeg slowly lost its value and became forgotten. *Palau Banda* is a collection of printed textiles exploring the story of the nutmeg, and what it means today.
In the third design example, a decision was made to focus on the esthetics of repairing (see fig. 20). The aim was to explore a visual expression of repairing, and to look at how this expression might effect the value of the textile. A decision was made to create a pattern inspired by the visual aspects of repair.

*Kintsugi* is an ancient Japanese technique of repairing damaged porcelain by adding a precious metal to re-join the pieces of the broken object (Frearson 2016) (see fig. 19). By adding the metal, the process of kintsugi repair adds value to the object, whilst other types of repairing quite often does the opposite. A decision was made to integrate the visual and technical aspects of kintsugi into the third example.
A decision was made to focus on an intarsia knitting technique, which is similar to the kintsugi techniques in terms of how it connects different elements. An intarsia knitted textile looks the same on both front and back. It does not require all yarns to knit together or to make floats behind each other as in a jacquard or fair ilse (see fig. 21 & 22). Instead it makes tucks to the sides, connecting the different parts of the pattern together. This way of knitting patterns makes for less material waste.

An intarsia knitted textile requires one yarn carrier per same-time-knitting color or material in the pattern. However, the yarn carriers might collide if they are to knit in the same pattern row. A decision was made to use as many yarn carriers as possible to see how far the expression could be pushed.

A series of sketches exploring pattern composition and material combinations were conducted (see fig. 23). The sketches were also put in relation to the materials and conditions of example one and example two, in order to create a varied but at the same time coherent expression through the collection.
3.2.5 Material qualities

A set of materials were decided for each of the three design examples, in order to create a variation throughout the collection. The purpose was to point at different possibilities of choosing materials that are responsibly sourced and processed.

Example one consists of an ethically sourced wool from farms in northern Europe, combined with a mechanically recycled polyester. The different elements of this textile is easily disassembled, in order to be able to repurpose the different fibers separately.

Example two consists of recycled cotton t-shirts, sourced locally from Emmaus Björkä in Gothenburg, combined with seaweed bioplastics sourced from the west coastline of Sweden.

Example three consists of a viscose fiber sourced from wood grown in Sweden and then locally processed.

Note
The design examples may contain other fibers than mentioned above due to economical and logistic circumstances of this project. In these cases, the chosen material has been replaced by a material as close in appearance to the chosen material as possible. The neon-thread used in the examples is a polyester yarn, but is supposed to match the different materials used in the examples.

A set of material qualities were chosen through a study of wabi-sabi philosophy. Wabi-sabi is a Japanese esthetic and theory. It is the beauty of things that are imperfect or irregular, unconventional and organic (Koren 2008). Wabi-sabi is about accepting the inevitable and to appreciate the force within nature.

Material Qualities according to Wabi-Sabi theory:
- The suggestion of natural process
- Irregular
- Intimate
- Unpretentious
- Earthy
- Murky
- Simple

These qualities were explored and expressed through samples and sketches, in order to find a coherent expression and esthetic for the collection that relates to the concept of repairing. For example, by taking advantage of mistakes and errors created by the knitting machine the aim has been to invite irregularities and unpretentiousness.

Fig. 24. Knitted sample
3.2.6 Color

A choice of color was made through an image study. The images were picked out due to their ability to relate to the concept of repairing or restoring. During WWII the British government had to enforce strict regulations on fashion and clothing, in order to save money, materials and labour (van Helvert 2016) (see fig. 25). The colors of utility fashion, beiges, whites, greens and browns; were chosen as the main colors in the collection.

The other image shows a construction site in Borås where a building is being restored and repaired (see fig. 26). In order to provide a contrast to the quite dull and muted color scheme of the utility colors, a neon orange and neon yellow color were chosen as accent colors. These two colors are commonly used in workwear and on construction sights in order to draw attention to certain notions and to provide a safe work environment. The neon colors are familiar to us by being very present in the urban environment, but are not conventionally associated with 'sustainability' and therefore provides an interesting contrast in the design examples.
3.2.7 Labels

A decision was made to integrate a label into each element of all the three examples (see fig. 27). The label communicates the fiber and/or material, yarn number and technique used in the element where it has been added. The label has been integrated into the textile through a jacquard knitting technique in order to minimize waste and to make the repurposing of the material easier. The label becomes a way of systematizing the method, and to also communicate what the material actually is to a potential viewer in an exhibition context.

Fig. 27. Jacquard knitted labels
4. Result, Presentation, Conclusion & Discussion

4.1 Result
4.1.1 Method

The result is a design method based on the concept of repair (see fig. 28). A collection of three examples, textiles, accompanies the design method, giving suggestion on how to use and apply the method. The method and the collection together forms a design toolkit.

Fig. 28. Design method
4.1.2 Example 1

Design example one consists of two layers of flat-bed-knitted wool with holes in two rows. Holes made by the knitting machine has been fixed using a neon thread. The layers are connected by the interweave of four polyester bandages. The elements of the piece can be connected and draped in varied ways. All elements have added labels.
4.1.3 Example 2

Design example two consists of a composite material, a combination of seaweed-based bio-plastics and recycled cotton t-shirts. Stitches in a neon thread has been added to bring structure and esthetics to the material. The design example is composed by putting together nine pieces of the material together with the stitches.
4.1.4 Example 3

Design example three consists of an intarsia knitted, patterned textile, exploring the visual aspects of kintsugi repairing. It is knitted in a viscose yarn, with an added label in the lower right corner. Holes made by the knitting machine has been fixed using a neon thread.

Fig. 35. Intarsia knitting technique

Fig. 36. Example 3 close up

Fig. 37. Pattern composition
4.2 Presentation

*Made to Mend* shown at the textile design graduate show ‘Human Needs’, The Swedish School of Textiles, June 2018.

Fig. 38. Made to Mend collection

Fig. 39. Made to Mend collection close-ups
4.3 Conclusion

This project explores an alternative method for responsible textile design, using repair as a design parameter. By formulating the method around repairing, the project keeps a broad and inclusive approach to repair that can be applied in a varied range of design fields.

This project positions itself in an anthropocenic scenery (Encyclopedia of Global Environmental Change 2002). In this scenery material resources are getting more and more scarce and unequally distributed. Textiles are produced from sources that are soon to be utterly exhausted. The anthropocenic scenery has informed the method of this work, considering the social, material, technical and visual aspects of what is being designed. Furthermore, the experiments conducted has helped brief the method and how it finally has been formulated.

Innovation does not have to be new, innovation can be found in traditions. By looking at repairing culture of different times and cultures, this project brings together knowledge in a gathered method that helps designers ask questions in order to approach the full life-cycle of their products. Why is it made? How is it conducted? What is the esthetic value? Where is the material sourced? How is it processed? What happens when it decays?

Flat bed knitting offers a broad range of possibilities in terms of a mindful textile production. Flat bed knitting can create form without any material wasted or need for cuts or seems. Patterns can be made with different colors and materials, since each needle knit on its own we can place the yarns exactly where we want them to be. This project takes advantage of these features provided by the machine, combined with programming and added design elements by hand. By embracing both success and errors of the knitting machine, the different design examples has been made in a symbioses of both machine and human hand.

Norms and ideals in design are both methodological, material and visual. By exploring alternative methods for conducting textiles, this project aims to force new ideals and norms within the textile design field. This is achieved through for example using techniques that minimizes waste or choosing materials based on their source and their abundance.
4.4 Discussion

The Anthropocene is paradoxical in its nature. We are dealing with material scarcity, over-consumerism and inequality all at the same time. This project argues that we need to be consistent and methodological in order to deal with these issues. As Jongerius and Schouwenberg suggests in their design manifesto Beyond the new, we need to consider all parts of our production (Jongerius & Schouwenberg 2015).

Textiles are fundamental materials that we use and experience every day. It is one of the largest industries in the world, and it has been of importance in this project to look at what we can change in that area specifically. By exploring flat bed knitting as the main technique, the method takes physical shape in the collection. All the decisions made when developing the method and developing the examples are connected and linked. Still, the method is supposed to be able to be applied in many different fields and situations. This decision is based on the belief that we need to collaborate and aim to understand each other regardless of field if we want to make a change in how we develop and distribute products.

The design examples created in this project are early prototypes, but could have various application possibilities. Example one could for example be applied in a fashion context, due to its many draping possibilities. It could also work as an architectural element, dividing or defining a space. Example two could be suitable in a context where a material with a short life-cycle is needed, for example packaging. Example three could be applied in an interior or art context due to its strong visual expression. In case of a specific product in mind, each example has the possibility to be pushed and further developed in order to fit more specific requirements.

To develop the project further, workshops or manuals sharing knowledge about the concept could be developed. Already in the 19th century, William Morris were imagining a type of open source system where designers and artists would share knowledge and ideas without the aim of making profit (Kostakis & Drechsler 2018). Today, technology offers ways to receive and share knowledge fast-speed all around the world. This means that the method developed in this project could be shared both locally and globally. Both Bethany Williams and Houdini work with sharing bits of their knowledge and vision, but the design industry in general is still defined by companies making profit and keeping their secrets.

Made to Mend suggests an alternative way of integrating repair into the textile design process, in order to sustain a responsible product development. By using repair as a mindset, rather than an after-add, this work adds both consideration, critique and innovation to the textile design field.
5. References


Figures


Fig. 13. Kirkum, Helen. (year unknown). [photo]. https://static.wixstatic.com/media/da470_7e1dc9515e2144cca884619e19f351c5–mv2_d_3651_2444_s_4_2.jpg/v1/fill/w_1784,h_1194,al_c,q_90,usm_0.66_1.00_0.01/da4770_7e1dc9515e2144cca884619e19f351c5–mv2_d_3651_2444_s_4_2.webp [2018-05-25]


All other figures: Copyright Hannah Ax, all rights reserved.