dressing and undressing furniture

/ a catalyst for repair

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LUND UNIVERSITY

Dressing and Undressing Furniture - A Catalyst for Repair
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Degree Project for Bachelor of Fine Arts in Design
Main Field of Study Industrial Design
From Lund University School of Industrial Design, Department of Design Sciences

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2026

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/ thank you

This bachelor project would not have been possible without my supervisor, Jasjit Singh, thank you for challenging me and for your support when needed.

I would also like to thank Ola at YLLW for providing me with textiles for prototypes, and Eva-Lotta at Gabriel Fabrics for offering their sponsorship with materials.

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Thank you to my classmates and friends who are always there to help and brainstorm.

Finally, the continued support from my family, friends and especially my partner, Alexander. Thank you for always being there.

/ abstract

Every design project should consider sustainability, and this one focuses on textiles in relation to furniture. A particularly difficult problem with furniture design is textile attachment. The dressing of a piece of furniture or a seat is usually done using glue and nails, which are invasive both on the fabric and the wood. Through analogue prototyping, this project explores alternative ways to dress furniture, with less permanent measures, while also discussing different aspects of sustainability. Through prototyping and exploration, the project finds a way to dress a seat that aids in the repair, cleaning, and replacement of textile materials, which wear faster than wood, for example.

Sustainable furniture design is a difficult task; it is not only choosing the right materials or ensuring that your design is recyclable, but also giving form to something that endures the wear of the eye. Furniture textiles enable people to bring color, softness, and personality into their homes. By simplifying the exchange of textiles, this project also explores customization as a catalyst for long-term attachment.

/ sammanfattning

I varje designprojekt bör man tänka på miljöaspekten av det man gör och just detta projekt fokuserar på textilier i förhållande till de möbler de fästs vid. Att fästa tyg är en extra svår utmaning när det kommer till möbeldesign. Ofta används lim, spik eller häftstift, vilket skadar både tyg och den underliggande träkonstruktionen. Genom analoga prototypmetoder utforskar detta projekt alternativa och mindre permanenta sätt att klä möbler, samtidigt som olika aspekter av hållbarhet diskuteras. Projektet finner ett sätt att klä en sits, vilket förenklar reparation, rengöring och ersättning av de textila materialen som nöts snabbare än trä.

Hållbar möbeldesign är inte en enkel uppgift. Det handlar inte bara om att välja rätt material eller att se till att den slutliga produkten är återvinningsbar, utan även om att formge något som tål slitningen av ögat. Möbeltyger tillåter människor att ge färg, mjukhet och personlighet till sina hem. Genom att förenkla bytet av dessa textilier utforskar detta arbete även det egna valet som en katalysator för långtidsägande.

Alice Carlsson

/ contents

(Volkrov 2024)

01 / introduction

Alice Carlsson

This bachelor's project is a start to what I want to continue to explore as a designer. When I began my bachelor's degree, I set out to work with sustainability within design in some way, much inspired by my year in environmental engineering. As I looked back at the projects in my portfolio, I realized that I had put focus elsewhere.

If there's anything I've learned from studying industrial design, it's that half the job is finding yourself in unknown situations. The basis is, of course, the design skills we learn. Choosing a project within an unknown subject area felt natural, since I knew the approaches to take and my limitations. I chose this project to learn more about the topic of furniture, to construct something, make use of my time in the workshops and to work with materials I hadn't yet explored: wood and textiles.

From my initial research, I found that upholstered furniture in particular poses a recyclability challenge due to the use of composite materials and the way they are combined (Lectra 2025). Therefore, the starting point of this project is to find a way to dress furniture in fabric or textiles that are easily removable. To find a solution to the problem, this project focuses on physical prototyping, where the most promising way of dressing a seat is implemented on a piece of furniture.

/ presearch:
recyclability of dressed furniture

Research about the recyclability of dressed, or upholstered, furniture is what sparked the idea for this bachelor's project. Recycling upholstered furniture is a complicated and time consuming process due to high amounts of composite materials. The mix of fabrics, foam, and adhesives makes parts difficult to separate (Wojciechowska & Kowaluk 2024). Further, the textile on upholstered furniture is often the first to wear, thus affecting the aesthetics of the entire product. Aesthetics is a common reason why furniture is discarded, even though the function is still the same (Lundberg & Jangfall 2017).

By simplifying the seperation process of an upholstered furniture product, I can simplify recycling processes. Designing for disassembly also allows the parts that aren't too worn to live on, and others to be easily replaced.

/ upholstery vs dressing furniture

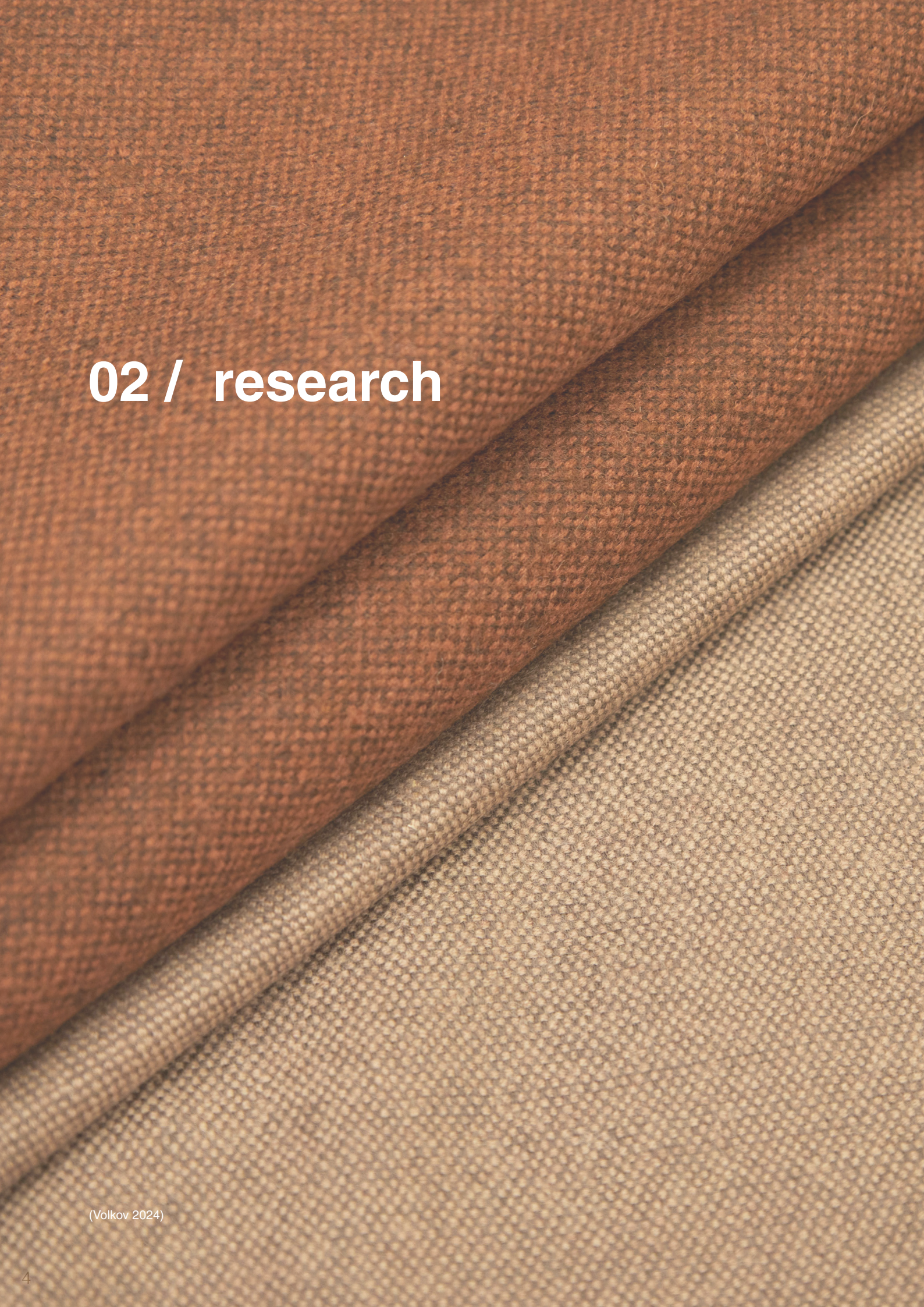
In this bachelor's project, you will find me writing about "dressing furniture" rather than upholstery. This is because this is not an upholstery project. Upholstery is a craft in itself and takes years to master, and there are shapes and furniture pieces which are only possible to manufacture using traditional upholstry methodss. It would be very naive of me to believe that I could reshape the craft of upholstery in one bachelor's project. This is not what I want to do either. Therefore, I will more often referr to the addition of soft cushioning and textiles in this project as "dressing furniture".

(Bachinger 2020)

/ initial brief

Find a way to dress furniture which is non-invasive and improves recyclability and separation of parts.

02 / research



(Volkov 2024)

The main focus of this project was to find a successful way in which a piece of furniture could be dressed with textile, also fulfilling the criteria to be removable. An aspiration is also that the final design will, in as many aspects as possible, consider the environmental impact. Therefore, most research was based on what sustainable furniture design is and the considerations that need to be made early in the process.

The focus of my research was to create a basis of knowledge that would help me be successful in sticking to the core of the project.

the right to repair / now enforced by law

In June 2026, it is expected that the EU directive regarding “the right to repair” will be implemented in all membership countries. In line with the EU Directive 2024/1799 of the European Parliament and of the council of 13th of June 2024 on common rules promoting the repair of goods and amending Regulation (EU) 2017/2394 and Directives (EU) 2019/771 and (EU) 2020/1828, all membership countries are expected to have their manufacturers of goods provide:

Repair of a product for a reasonable price
within a reasonable time frame,

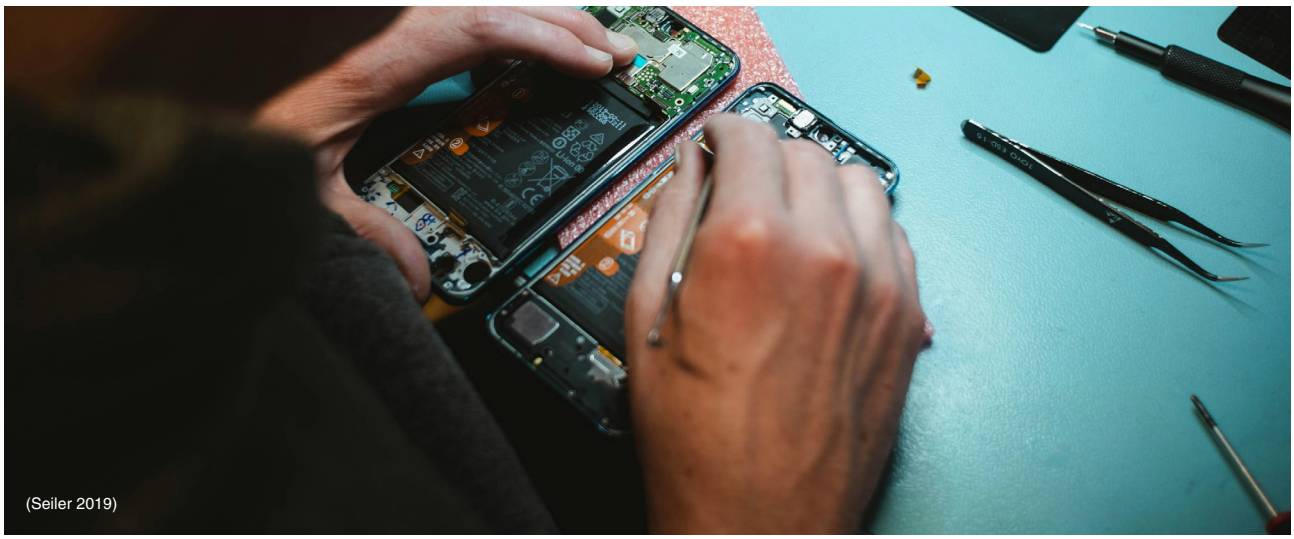
Access to spare parts, tools, and repair information,

Incentives to opt for repair,

Assistance in finding repair services and refurbished goods.

The right to repair covers consumer goods such as common household appliances and electronics, but may be expanded to include other products (European Parliament 2024). Consumer goods are notorious for being subject to planned obsolescence, and are difficult for most people to repair themselves. Furniture, on the other hand, is very accessible for repairing, but the problem is knowledge of how. By design, it is possible to simplify the process of reparation and therefore make long-lasting products. The right attitude to repair should include furniture products as well.

Through the implementation of “the right to repair”, power will be returned to the hands of the consumer. Hopefully, we will begin making sustainable decisions to lengthen the life of our belongings.



(Seiler 2019)

/ books

I visited the LTH library to locate material on sustainability within furniture design. It may be difficult to meet all requirements, but research creates a good basis for the design process.

The library sourced furniture and textile books, and helped in finding academic papers that would aid in my research.

/ material overview

Materials and how they are put together play a big role in a product's afterlife. In this project, I will most likely use wood and textiles, along with some type of upholstery material for the soft seat. I did some basic research on textiles and wood to be aware of my material choices later in the process.

/ textiles

Textile materials are difficult to recycle, depending on the type of textile material you are using. There are different types of textile materials, categorized into natural, semi-synthetic, and synthetic fibers. Natural fibers are plant-based fibers such as cotton, fibrous wood, grass and leaves, natural protein fibers (animal-derived), leather, or fur. Semi-synthetic fibers are regenerated fibers like viscose or acetate, and synthetic fibers are made of plastics, such as nylon (Thompson 2014 p. 12). Regenerated fibers are derived from renewable sources by converting cellulose or proteins into filament yarns and have high potential for closed-loop processes (Thompson 2014 p. 506). Textile fibers each come with environmental issues; synthetics are made of fossil fuels, and cotton requires large amounts of water in areas where access to water is threatened (Världsnaturfonden 2005).

Upholstery fabrics are different from clothing fabrics. They often need to fulfill requirements to be wear-resistant, dense, and flame-retardant, for example. Synthetic fabrics such as nylon, polyester, elastane, polyvinylchloride (PVC), and polypropylene (PP) are common for high-wear applications. Some natural fibers, like certain types of wool or leather, are wear-resistant enough as well (Thompson 2014, p. 406). Textiles are constructed through weaving, knitting, or by nonwoven processes such as entanglement or bonding by adhesives (Thompson p. 11-18).

The amount of processing a material is subject to is a large factor in the environmental impact of the end product. Creating a thread requires lots of energy, often coming from fossil sources. Other processes, such as knitting, weaving, coloring, and treatment, require lots of chemicals and water, which often leak into the environment and water around textile factories (CNN 2020). The environmental impact of the textile industry is important to be aware of when designing with textiles.

(Guercio 2024)

/ offcuts

Offcuts are leftover pieces of textile (or any material) which can't be used in manufacturing anymore. Offcuts often go to waste, especially in the textile industry, creating another environmental problem.

/ wood

Wood is a popular material to make furniture from. All wood is a renewable resource, but current forestry practices lead to deforestation and a decrease in biodiversity and, therefore, habitats for forest living animals. Changing our current practices could make wood an even more sustainable material.

Different types of wood and the shapes they are manufactured in have different properties. The type of wood used for a project can be based on aesthetics, the look of the grain, and the color of the wood; for example, for me, this is the most important. Sustainability is also wanting to keep a piece of furniture for longer, meaning that it needs to be visually appealing as well as sturdy.

There are some common wood types available in the workshop to use. Oak is strong and durable, both to compression and dents. It is beautiful in its grain structure, but also quite expensive. Ash is paler in color than oak and has a narrow grain. It is tough and flexible, thus often being used for steam bending. Beech is a very tough and durable wood, but unfortunately has a pinkish color, which is unappealing for most. Pine is light weight softwood, often used for the construction of houses. The grain of pine is said to be aesthetically pleasing.

Wood is manufactured as massive wood in different shapes, or glued boards made of adhesives and timber waste, such as MDF (medium-density fiberboard), plywood, or chipboard (BBC Bitesize 2026). The added materials in wood decide the recyclability of it, and this is divided into grades. Solid wood with no added glue, coatings or nails (Grade A) can be recycled into premium products, like animal bedding or play ground surfaces. Grade B wood is solid wood with coatings or screws, which maybe can be removed to make use of the clean wood underneath (The Waste Group 2025).

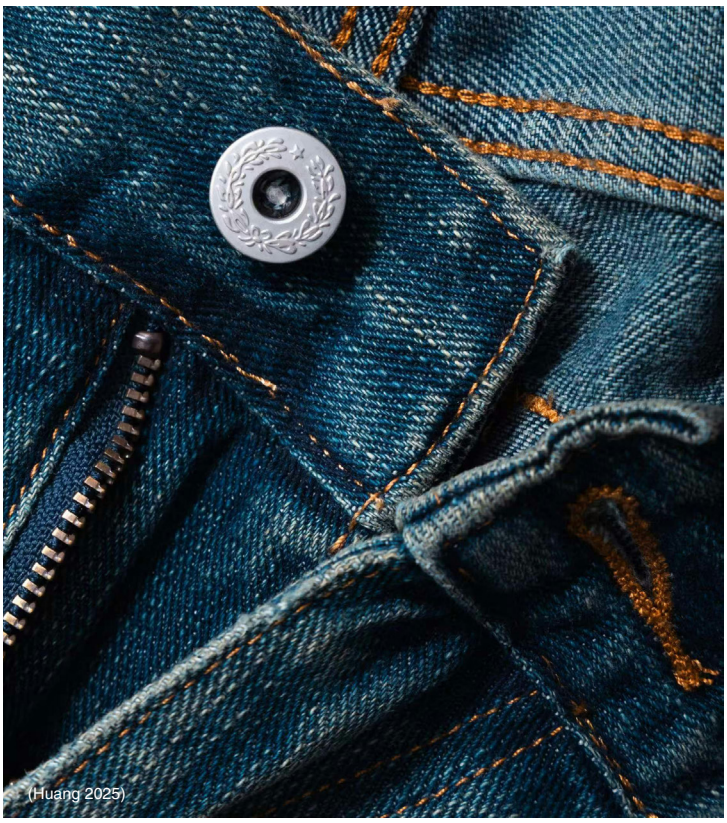
(Førestbird 2018)

/ joining

Joining materials is the core of my bachelor's project. Looking at and taking inspiration from existing joining techniques will help me get a start on concept generation.

The most versatile way to join fabric is by stitching. Adhesive bonding is popular since adhesives can be engineered to have properties similar to the textile being joined, such as stretch, for example. Welding is possible with textiles made of thermoplastics, literally melting the material together with heat. Welding makes thermoplastic materials more efficient to recycle since there is no mixing of materials (Thompson 2014, p. 18).

Mechanical fastening methods entail joining using some type of hardware that physically holds two parts together. Buttons and screws are examples of simple mechanical fastening methods. Snap buttons (also called press studs, poppers, or snap-fastenings) are low-profile and avoid holes in the fabric. This is good if you're looking for a non-invasive fastener. Zip-fasteners are very common for removable upholstery, like pillowcases for your couch cushions. Buttons have become a design feature in the fashion industry, sometimes highly detailed and reflecting the brand of the product (Thompson 2014, p. 396-398).



(Huang 2025)

/ some keywords

Sustainable furniture design is based on choosing proper materials and designing a thought-out construction. The goal is to create a product that will stand the test of time, in regard to looks, structural stability, and sustainability.

Circular furniture manufacturing, compared with traditional business models, could reduce climate impacts within the furniture industry by 20-40% (Ankarberg, Terzioğlu & Sundin 2024).

/ design for disassembly (dfd)

Design for disassembly is a design technique allowing a product to be disassembled for easier maintenance and to enhance serviceability. This method also allows parts that last longer to be reused, and increases the value of end-of-life products. Design for disassembly reduces the environmental impact, and implementation would be a step toward a more circular economy (Yoga Mule 2012).

/ remanufacturing

Remanufacturing is making use of previously sold, worn, non-functional, or end-of-life products. These so-called “cores” are made to function again and match the performance of newly manufactured products (Science Direct 2012).

/ reverse logistics

The process of returning products from the end users back through the supply chain to either the retailer or manufacturer. Reverse logistics begins when customers return products. Reverse logistics includes returns management, remanufacturing and refurbishment, repair and maintenance, rentals, and more (Association for Supply Chain Management 2026).

/ circularity

Striving for a circular economy is preferred. In a linear economy, products are created to be bought and then thrown away. The result is that some perfectly functioning objects, or objects that could be made functional with some repairs, end up in landfills. Circularity is instead making use of things for a longer time, and reusing or reselling them after the primary consumer no longer wants them anymore. Sharing, upgrading, cascading, and maintaining, along with all the RE-words, are all solutions for increased circularity (Morseletto 2023).

/ sustainable furniture design

To construct a sustainable piece of furniture, I needed to find out how and what to consider. The public sector in Sweden uses a lot of furniture, for libraries or hospitals, for example. A lot of this furniture is also upholstered in some way. The target group for my project is not the public sector, but I thought it would be a good area to look into due to the high amount of use and wear.

I read a guide specifically aimed at how to design with aging and wear in mind, and implementing circular design techniques. The study found that there were some common areas for wear, such as the edges of a seat, armrests, and exposed sharp corners. There is also a difference between aging and wear. Wear is damage and deterioration stemming from frequent use, while aging is a gradual change over time due to exposure and external influences such as heat, sun radiation, humidity, or air pollution. When it comes to furniture, some aging is perceived as positive and adds charm, but there is little acceptance of textile wear, for example. Below, I will summarize what the study says about each step in the furniture design process (Lundberg & Jangfall, 2017).

/material selection

When it comes to material selection, you always have to consider both how long-lasting and sustainable it is, and these factors don't always align. A general rule is to choose materials that age and wear well, and allow for circulation.

Do not choose unethical materials and follow the quality requirements set by existing standards or environmental labels, such as Möbelfakta, Svanen, and Ecolabel.

Choose materials that are easy to clean and look fresh.

Choose high-quality materials; there is value in being able to maintain and restore the furniture. Natural materials are also perceived to age better.

Choose coatings and surface treatments mindfully, ones that are easy to maintain and reapply, such as wood stains or lacquers, are preferable.

Use as few material types as possible to facilitate separation for material recycling.

Use recycled materials if possible, and renewable ones.

Use surface treatments with a similar color to the underlying materials, so that wear will appear less distinct. Avoid plastics that become discolored; white plastics have a tendency to turn yellow.

Avoid materials that degrade over time.

Avoid hazardous substances or materials containing chemicals that are untested and may become prohibited.

/ product construction

The potential to create long-lasting and sustainable products lies heavily in the joints between parts and materials. Modular construction and designing for disassembly are made possible through how parts are connected.

Consider ergonomic aspects of the design and that the furniture piece may be used by people of different needs and body shapes.

Use tags and allow for easy access to repair information.

Facilitate cleaning by avoiding nooks and corners where dirt can collect.

Select joining techniques that facilitate disassembly for easier part and material recycling.

Self-locking constructions enable joining without additional fasteners, which can be damaging to the materials.

When using glue, choose appropriately strong glue, and convex or flat surfaces are possible to cover with textile without the use of glue.

Ricketiness is a common result of wear and tear that users do not accept, so it could be easy to repair. This is made possible by the visible joining method.

Minimize the number of joints, but without compromising the strength of the construction.

Make spare parts available, use standardized screws and bolts, and allow furniture to be fastened with chucks for easy remanufacture.

/ visual appearance

A design that can be customized and updated over time has a higher chance of surviving changing needs and trends. Allowing for easy upholstering, for example.

Create a design with attention to detail, and consider emotional attachment to the furniture.

Consider the execution of joining. It is in the connection between two different materials where the quality of the product is detected.

Even though “classics” are proven to stand the test of time aesthetically, don’t be afraid of being original.

/ the seats

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/ other notes

If the furniture piece is to be used together with a table, then armrests are not necessary. Armrests are a hotspot for wear, so avoiding them where not needed is preferable.

Consider grain direction and length for wood constructions, especially for the legs. Shorter grain woods tend to break under larger loads.


(Moisa 2021)

“The textiles are a determining factor for how people perceive the chair as a whole. As long as the textiles are looking fresh, users seem to some extent be willing to put up with other wear.”

(Lundberg & Jangfall 2017)

/ interview furniture restoration

To design an attachment method and furniture piece that considered the afterlife of the product, I had to acquire some insight into furniture restoration and repair. I interviewed Hanna Nilsson, an architect from Malmö. Before her current job, Nilsson ran a company that restored Scandinavian furniture classics from the 1900s.

The interview gave me plenty of important constraints that I could take into account when designing my furniture piece and how I would attach the textile.

/ interview questions and summaries

Before the interview, I prepared some questions based on the research that I had done previously. The interview was done over a recorded Zoom call, which I transcribed afterward. The interview questions are translated from Swedish, and the answers are translated and the answers are summarized in the third person perspective.

/ What have you worked with in relation to furniture? In other words, what is your background?

Hanna Nilsson used to own and run a company that restored Scandinavian furniture. Together with her partner, a cabinetmaker, and her friend, a furniture upholsterer, she bought, restored, and sold furniture classics. Originally, Hanna is an architect with a background in visualization, communication, and landscape architecture.

/ What is the procedure like when you receive a furniture piece for restoration?

The procedure depends on the type of furniture piece, its condition, and the materials it is made of. Furniture made of good materials can be restored many times over; for example, massive wood is preferred over glued veneer on MDF boards. Stains, water damage, and old varnish are removable as long as there is a good base to work on.

Textiles are often glued down hard and attached with staples. This made textiles difficult to use again. Large sofas are expensive to restore since the foam in them often gets hard and crumbly, and the stuffing and upholstery often have to be completely redone during restoration. Foam is also a health and environmental hazard to work with.

/ What is the most difficult aspect of restoring furniture?

Finding a balance in how much to restore, without removing the personality from the furniture piece. They have spent a lot of time sanding and polishing tables until they look like new, but they stopped. Instead, they kept staying true to older furniture and letting it have some imperfections, while also treating the surfaces and making sure the pieces lasted for years to come.

Hanna also speaks about when professional skills are needed. Most people can't reupholster an entire couch, but dressing a seat or fixing small dents is not difficult. The problem is that people don't know how and aren't interested enough in their furniture to find out.

Nilsson says that making furniture care more accessible is a nice idea. But everything is a balance, and in some cases, professional skills are needed. How far people will go to care for their furniture is an exciting topic. Another issue is that it is more expensive to restore than to buy new, cheaper furniture. Couches that Nilsson and her co-workers have spent lots of time restoring become much more expensive than a couch from IKEA, but last much longer.

I brought up the use of zippers on furniture, and Hanna mentioned that the threshold of sewing a new cushion with a zipper is quite high, and that even a crafty person like herself wouldn't feel confident in that task. It would be nice to use something to tighten on instead, for example.

/ What is most difficult about taking apart a furniture piece?

Most often, you don't want to take apart the entire furniture piece, unless you think the result will be better. It can be very difficult to put it back together due to swelling of the wood, damage, or the pieces having been almost forced together.

Screws are not worse than glue. Screw holes can be used again, and you can put a dowel in them. Some furniture pieces have screws and then dowels to hide the screw holes; this is difficult to remove. Throughout history, a lot of weird materials have been used, which also makes the restoration process more difficult.

/ In which cases are specialist tools needed? For example, tools that you don't have at home.

Most furniture doesn't need much to look better. Nilsson uses white spirit, steel wool, washing, and oiling. Dents can be fixed with wax, glue, and/or sawdust. Maybe something similar to IKEA instructions could teach people to care for their furniture.
Leather upholstery required a lot of specialist tools and stretching; in these cases, Nilsson would pay a specialist.

To unscrew the base of a furniture piece is done with regular tools. The challenge comes in not breaking anything in the process.

/ What may prevent a furniture piece from lasting a long time or being restorable?

Hanna Nilsson says that the quality of the craftsmanship and a well-thought-out construction allow for longer durability.

A beautiful piece of furniture will also last longer and will stand for generations, thanks to its design. There is a saying about furniture enduring the wear of the eye. There is a reason she can work with the restoration of Wegener furniture, for example. A design that people want to preserve is important, but this is more difficult to do today, due to the overflow of things available to us.

Furniture can be expensive to begin with, but if you count in days of use, it is worth it. She says it is nice to keep furniture with you for a long time. Keeping furniture because it is of quality is both democratic and sustainable.
The frequency of repair need depends heavily on the furniture piece, and you want to repair it without removing its history and soul.

/ What do you do with the parts that can't be used anymore?

When Nilsson and her associates restored furniture, they almost always assumed all parts could be used. Textiles, stuffing and foam don't age well, therefore don't meet requirements and need to be discarded and replaced. They have had to replace wood pieces only in rare cases, where a dog has chewed on something, for example.
Wear is more prominent on armrests. A lot is dependent on the materials used in the first place; furniture with a good base quality can be used until it falls apart. Some fabrics, like "Svenskt tenn", are possible to resell.

/ What is important for me to think about regarding the construction of my furniture piece, so that it is easy to repair?

Some people think practically, she says, and think you shouldn't value the beauty of furniture pieces. Nilsson does not agree; creating something beautiful facilitates a will to keep it alive. You need to consider that you may build something super smart construction-wise, but not so aesthetically pleasing, and therefore it won't be used for long.

Nilsson says the construction should not come at the expense of the aesthetics. You could create a simple kit without too many screws or glue, but then it could also be uncomfortable and ugly, and then the goal is not reached anyway. Glue is difficult to take apart, rather good pre-made holes and screws. Use good materials; IKEA tables get one dent, and they're broken forever.

You can consider the sustainability of working with good wood materials. Some materials can be toxic, so restorers would rather work with materials they know they can sand and oil if needed. Nilsson says she wishes she could fasten textiles in some way, like those ugly bed sheets with elastic, but better looking.

“Om man skapar en vacker möbel så kommer den stå i generationer på grund av sin design. Man pratar mycket om att möbler ska tåla slitningen av ögat.”

“[If you create a beautiful furniture piece, then it will stand for generations due to its design. People often say that furniture should endure the wear of the eye.]”

- Hanna Nilsson (2026)

/ interview reflections

The interview with Hanna really opened my eyes to other aspects of sustainability than simply recyclability. We talked a lot about the concept of “not bringing wear to the eye”. I look forward to exploring ways I can incorporate design practices which create a product that people want to keep instead of throw away.

/ long-term attachment

During our interview, Hanna Nilsson and I talked about keeping furniture for a long time and how this is what's really sustainable. I decided to do some further research on what factors allow this. Product attachment has been underlined as a feasible, sus-tainable design strategy, but the difficult part is how to implement this, and actually affect consumer behavior after the product has been purchased.

According to research, a large reason why people become attached to objects is that they received it from a friend, a relative, or bought it in association with a memory, such as a trip. These types of attachments are, of course, difficult to replicate in the design of a product, but there are other ways in which the designer can make an im-pact. A study was performed where participants were asked to bring their favorite ob-jects and discuss the reasons for their attachment (Page 2014).

/ customizability

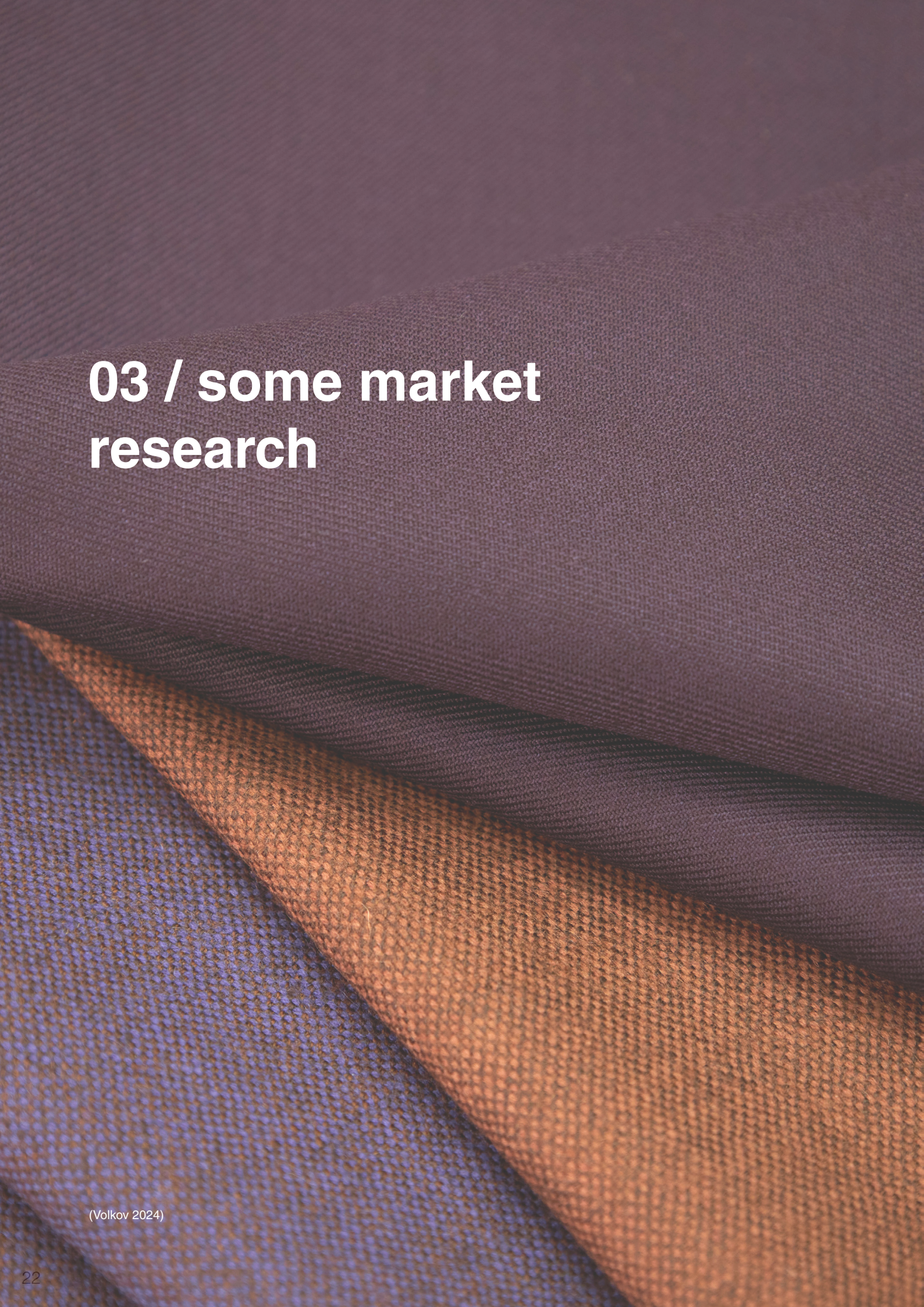
Product personalization has been highlighted as an essential method of attachment. It is believed that personal modifications are often what make products the most senti-mental to people (Page 2014). Customization can then be important in this project as the fabric can be changed to fit a new trend or a new apartment.

/ group activities

Memories formed are circumstantial, but one way for designers to catalyze memories is to enable group activities. Group interactions and stimulating social contact in-crease the opportunity for dear memories to develop. Products that also show a little bit of wear and that have aged with dignity are also connected with fond stories and experiences (Page 2014).

/ reliability

Reliable products were highly discussed among participants of the long-term attach-ment study. Products that felt likely to last for many years were favored. Reliability was perceived both in connection to branding and how the product had performed throughout the ownership time. A brand associated with quality was more likely to be kept for longer, as well as items that just kept on being functional and were easily re-pairable (Page 2014).



03 / some market research

(Volkov 2024)

Regarding market research, I looked at what target group would be appropriate and scoped out existing concepts for removable textiles already on the market.

/ target group

Crafty-curious

Adult homeowner

25-40

Potential parent

Environmentally conscious


(Tirado 2020)


(Lagan 2019)


(Syla 2020)


(Lagan 2019)


(Flaxeco 2018)

The target group for this project includes people in their prime spending years, who might be starting to furnish their first home. The core of this project is creating a prod-uct with consideration for its longevity and afterlife. Therefore, the owner should be aware of their purchases and the potential of their belongings.

/ common market

For market research, I looked at how furniture with removable textiles often look.

(Huang 2023)

A common method is to make use of zippered cushions on seats, with the limitation that cushions move around a lot more easily than physically fastening the fabric to a furniture frame.

(IKEA 2026)

I spoke about the IKEA Ektorp with my supervisor. This Sofa comes with a easily removable cover, similar to a dress or skirt. The removable function creates a certain look which may or may not be favorable. The cushions make use of a zipper function as well.

/ design inspiration

I took to pinterest to find how designers before me had attached textiles to furniture. These objects may not be on the market in the same way as IKEA Ekeby, but provide some possible solution to the initial brief. I collected some inspiration pictures and will evaluate their function, what I think is successful and what could be done better.

(Moore 2012)

/ screw down frame

The image to the left is a design by Mischer'traxler studio (2012). The frame holds down fabric and is allowed to be tightened using screw fixtures. Pressure and friction hold the fabric in place, allowing for easy changeability.

/ evaluation

The design appears clean aesthetically, even with raw fabric edges sticking out. Corners are han-dled through sewing, which also cleans up the overall look. Although, raw edges may snag easily, wear quicker and get in the way.

The screwing function calls for many screws, especially for long sides of the bench to be tightened properly, which adds a new material, such as brass screws for example. The screws also appear to go through the textile, which creates holes and weaknesses in the material, which makes for faster wear.

/ sewing evaluation

The design to the left utilizes pre-made holes with metal rings. This design gives a distinct aesthetic, which may not cater to everyone's taste. The strings give the user the possibility to tighten the seat, which is positive.

The combination of materials may make the product difficult to separate at end-of-life.

/ frame evaluation

This method of attachment tightens a frame, like one used for embroidery, around the furniture tex-tile. This also leaves edges exposed for wear.

This mechanism is very simple and intuitive, which is positive. A frame works very well to tighten like this if it is a circle, but it is more difficult to distribute the tension in a rectangular frame evenly.

/ locking wedge evaluation

This method of attachment is designed for a chair back. A wood wedge is inserted into a slit with soft material around. Aesthetically, this looks simple and not too crowded. The general look can also be changed depending on material choices.

I could imagine that a challenge with this attachment method would be perfecting the fit of the wedge, and reliability as weight is put on the joint. The type of textile material chosen probably also influences the function.

04 / concept ideation

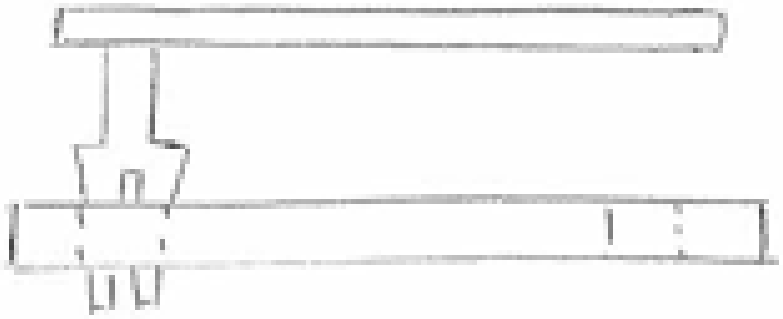
(Volkrov 2024)

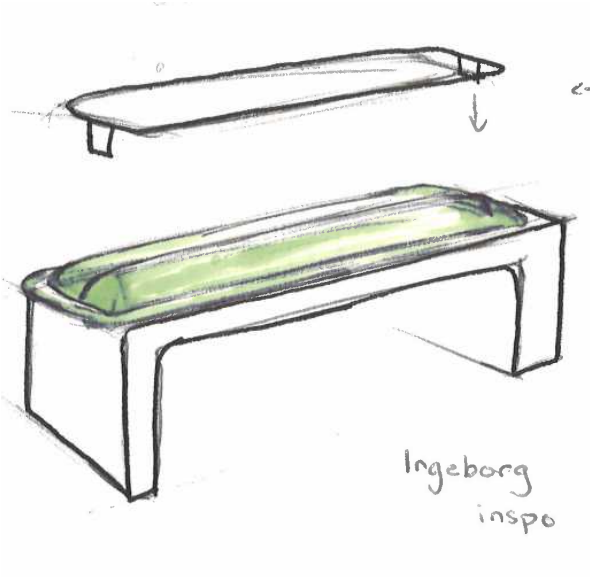
In my mind, I always wanted to design and construct some sort of seating furniture as the end result of my bachelor's project. The furniture piece will prove that the attachment concept for the textile works in the real world. The need for exchanging textiles on seating furniture is high due to wear, risk of spillage, or damage.

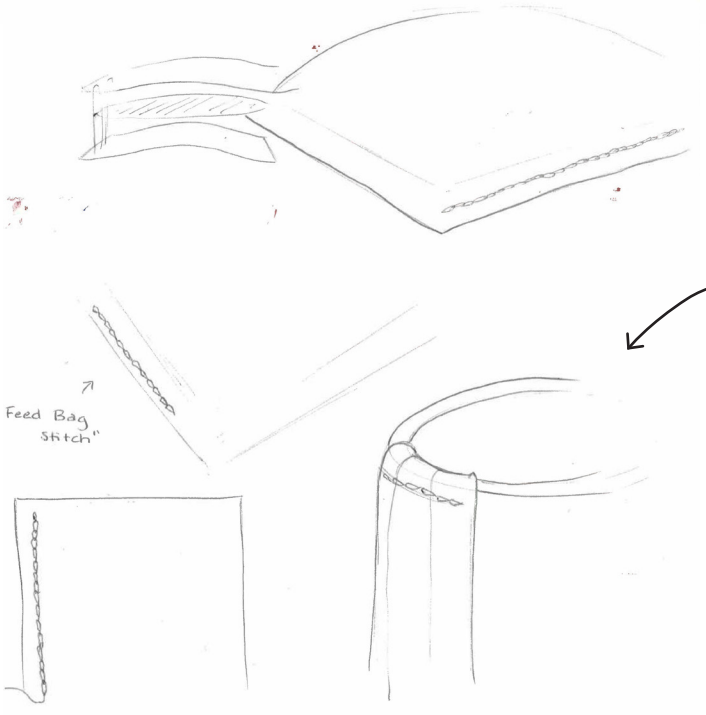
I began by brainstorming some ways in which the textile could be attached, always considering the attachment to some sort of seat.

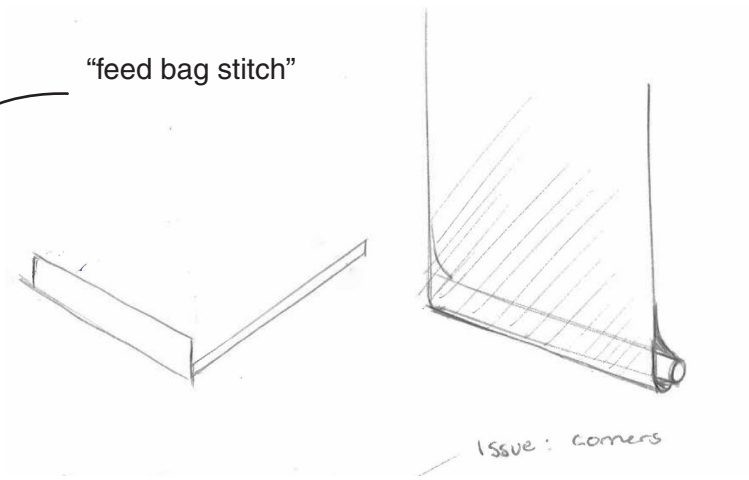
I decided on a few different furniture concepts I could imagine going with. The concepts create a setting for the furniture piece. Concepts for how the textile was to be attached to the furniture piece were also created.

/ early ideation

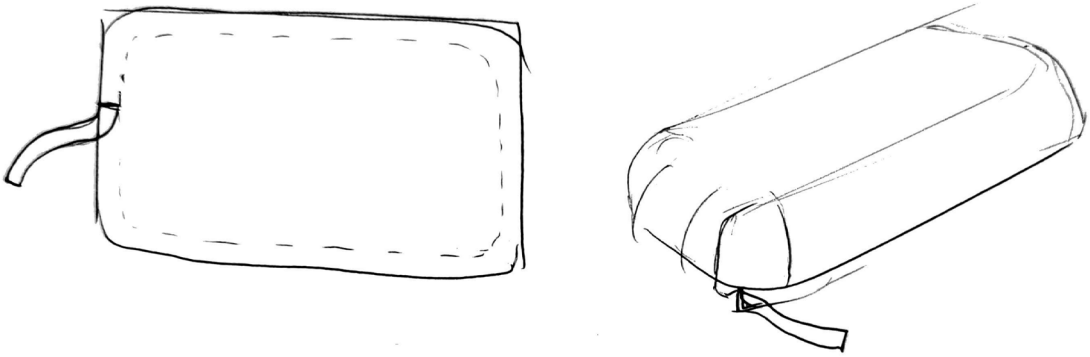






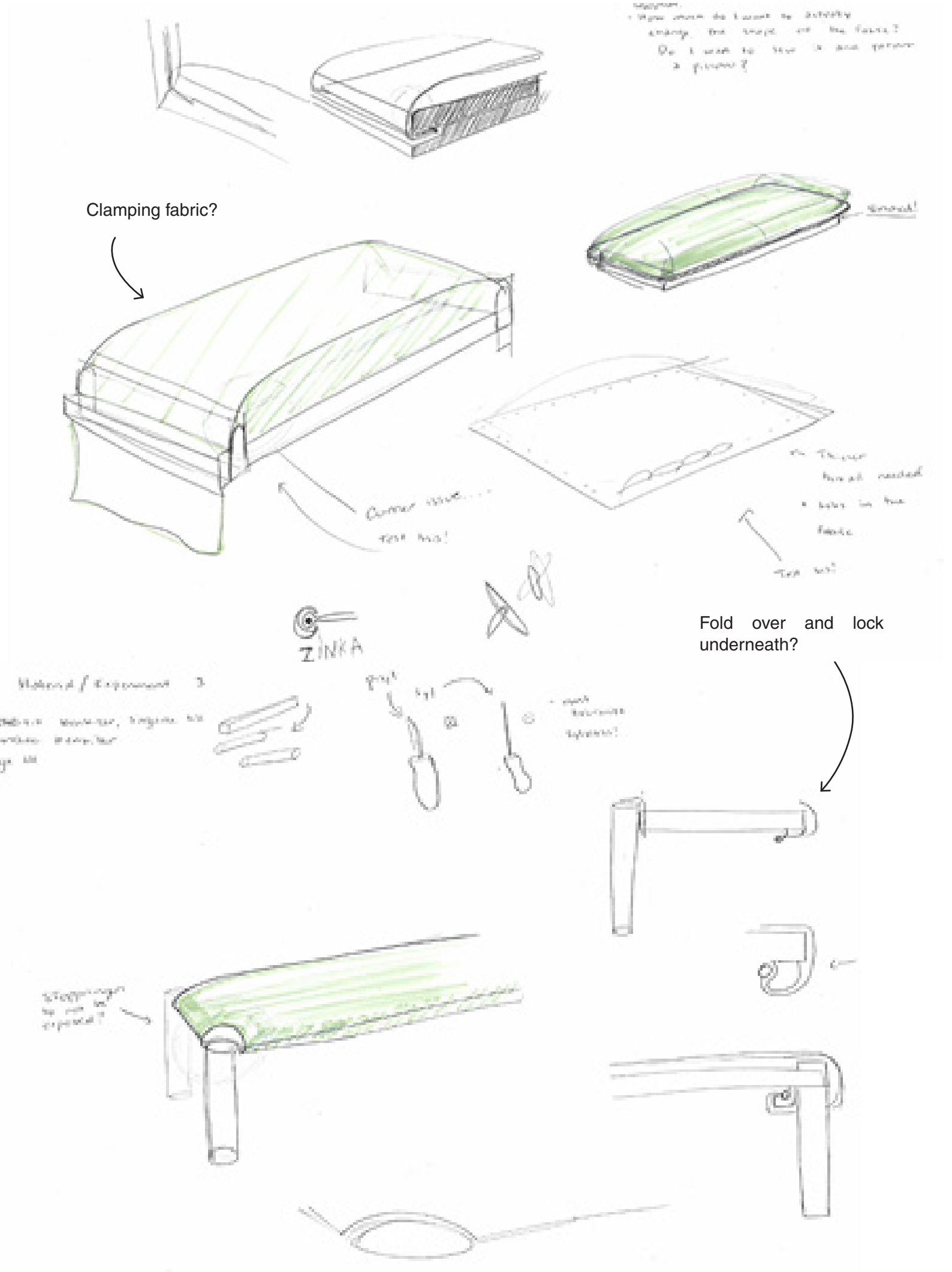


To begin with, I didn't focus on what type of product I wanted to create. I tested how textile material could be attached to another.



Early skethces of a strap to lock the fabric in place.

I made a small test of a stitch, called “the feedbag stitch”. This stitch unravels entirely if you pull the right thread. It was easy to sew in paper, but not in fabric.

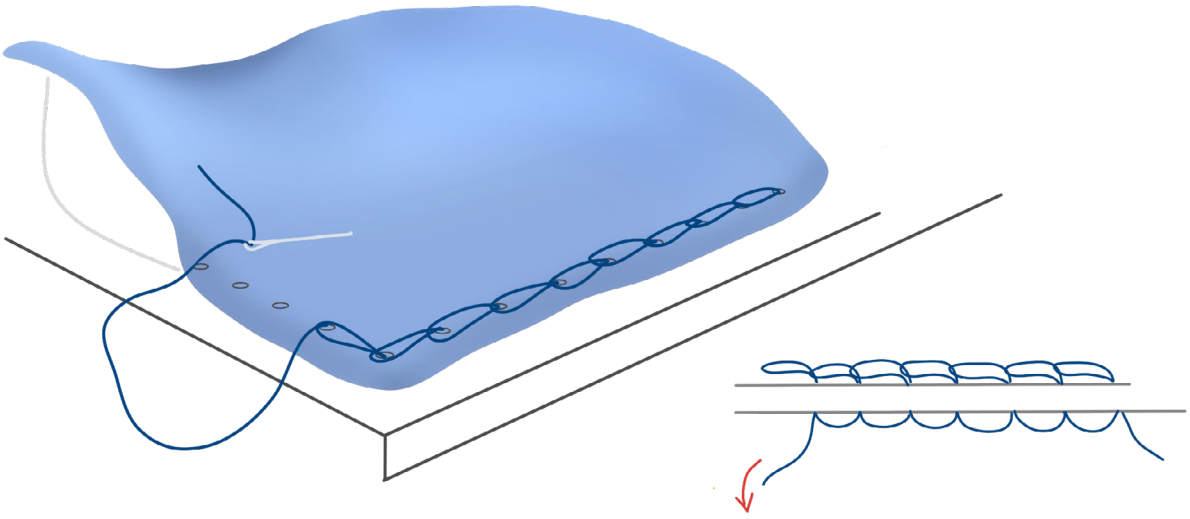


Alice Carlsson

The thumbnail sketches I had made were developed into four more concepts, a bit more refined. Then I made small concept models to test the principle.

concept 1 / loop stitching

I wanted to combine one of the setting concepts with a style in which the furniture tex-tile would be attached to the seat. This can be done in a number of ways. It is possible to sew the cushion down into the wood. This method would entail making holes in the wood, which would weaken the construction overall. The textile would need reinforced holes to prevent fraying.



/pros

Interesting stitch.

Crafty, have to learn to assemble.

Can be a fun activity for kids.

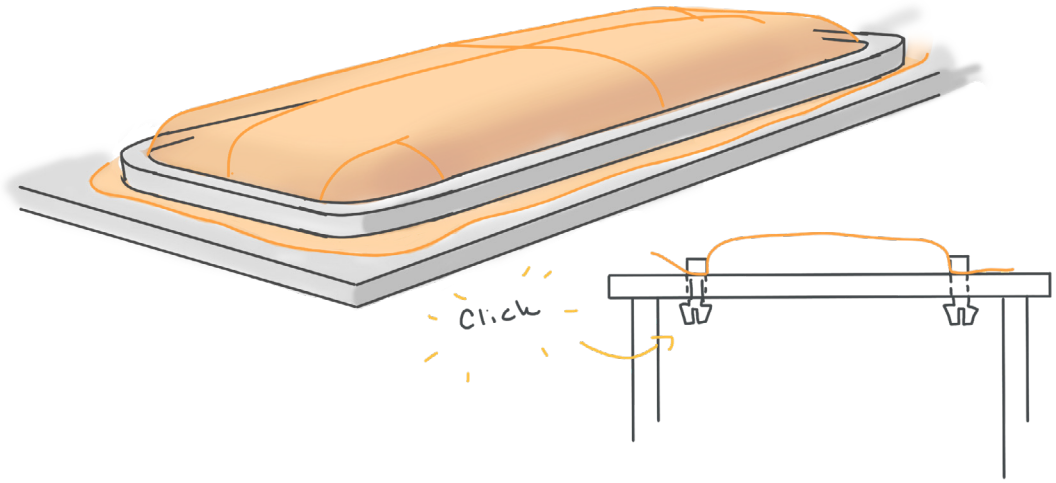
/cons

Repair threshold too high

Holes create weak points in materials

concept 2 / click frame

Embroidery frames inspired the second attachment method. I've seen several textile on furniture concepts where similar methods are used. The idea is for the frame to easily be clicked onto a wood base, or instead of click fasteners, have screws under-neath the base that hold the frame down.



/pros

Simple and intuitive.

May need some work to fit perfectly.

/cons

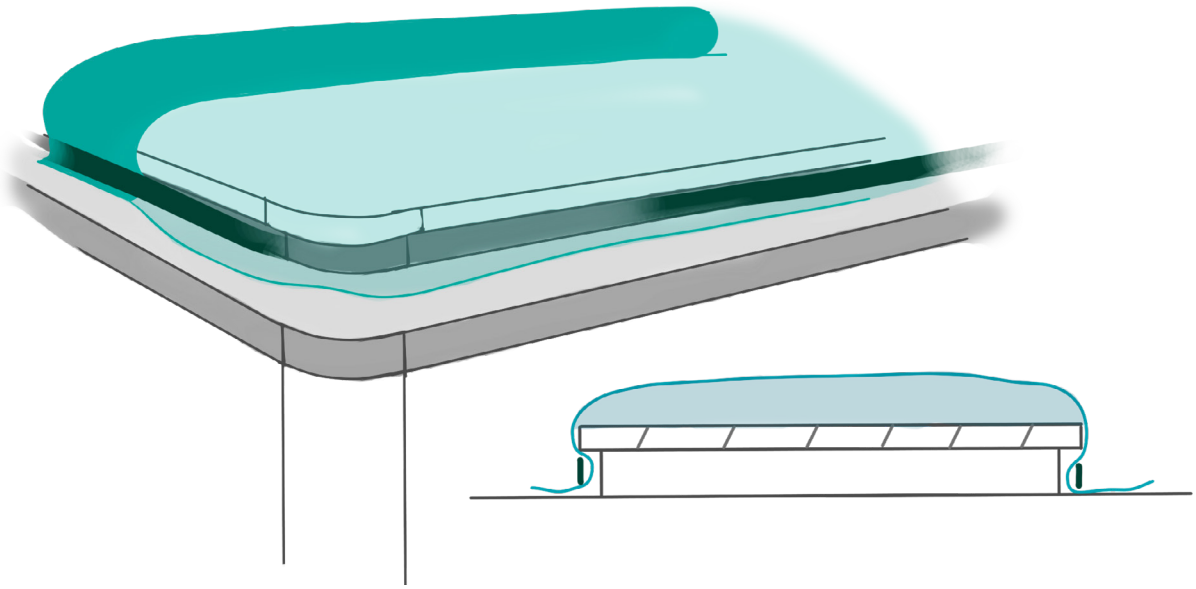
Holes needed in fabric.

Exposed edges may catch on clothes.

Plastic use needed to “click“.

concept 3 / mushroom and strap

This method of attaching the fabric was inspired by Hanna Nilsson. She mentioned in our interview that maybe some sort of strap would work to tighten the fabric around the seat, similar to an old sheet with elastic inside.



/pros

Simple.

Intuitive, recognizability in the mechanism.

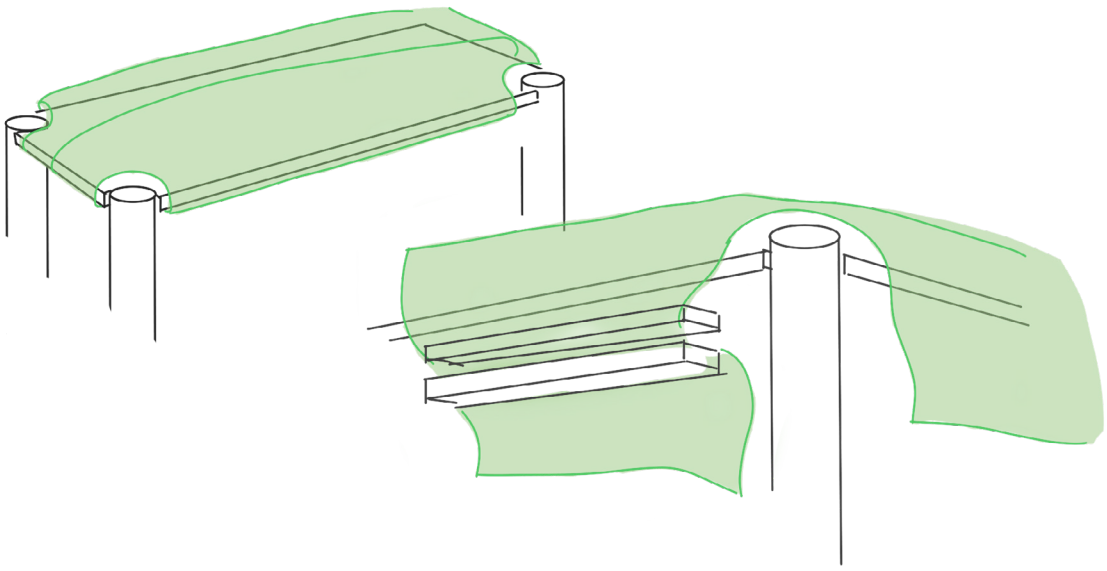
/cons

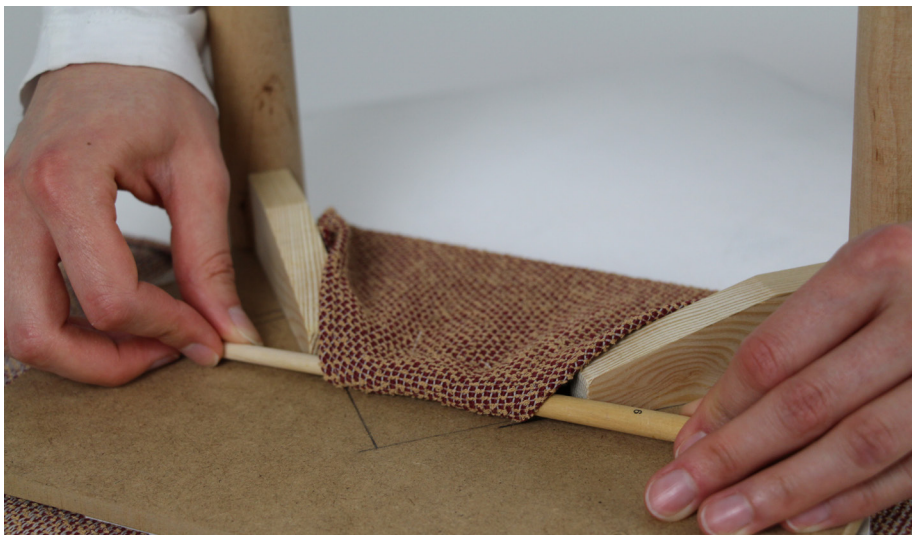
Bunching of fabric.

Unsure if it will secure the fabric properly.

concept 4 / cross fold

In this concept, the fabric is shaped like a cross and then wrapped around either side of the seats and attached underneath.





/ pros

Wraps around more like a “regular” cushioned seat.

Design feature.

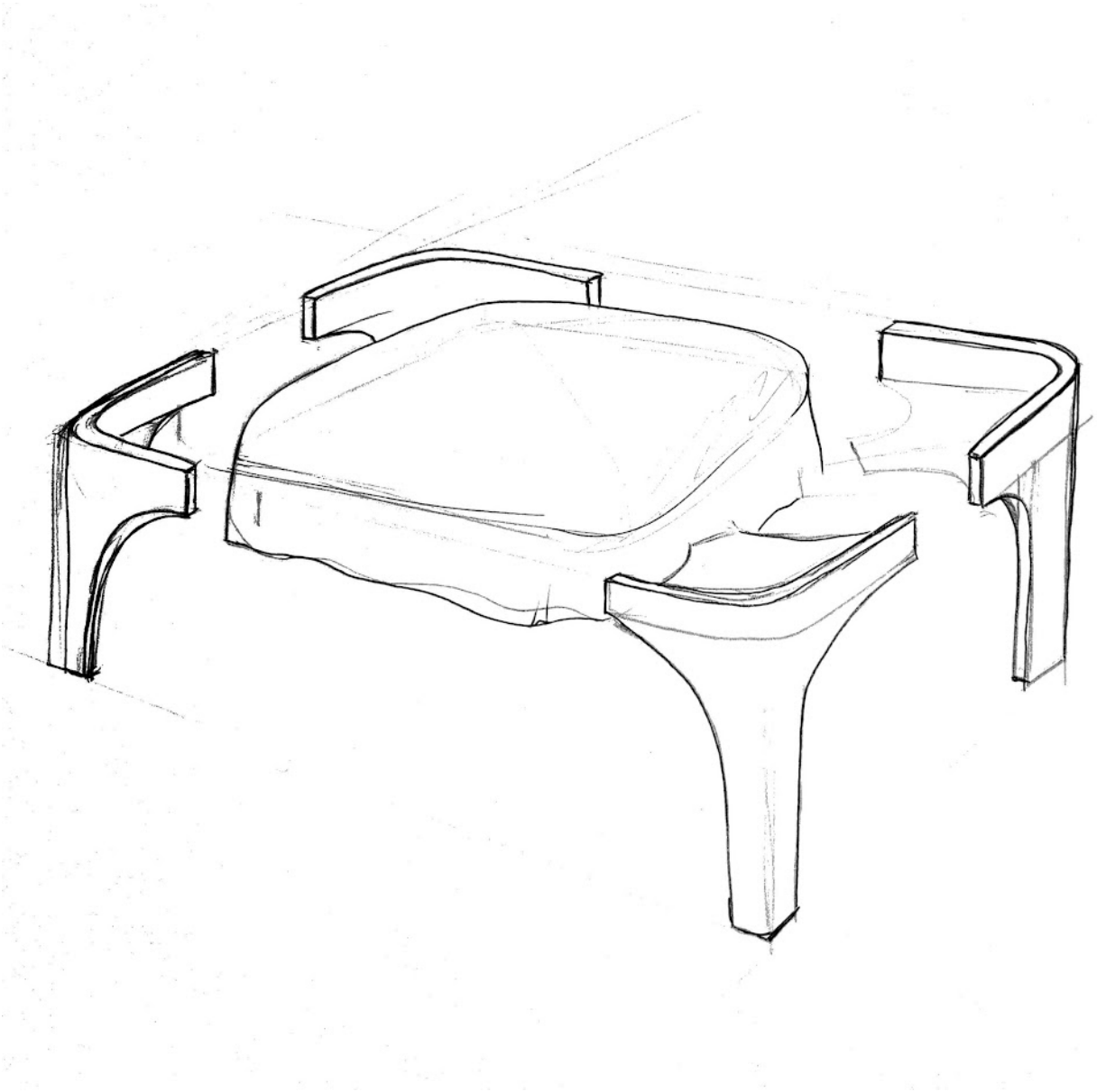
Tightly secured fabric.

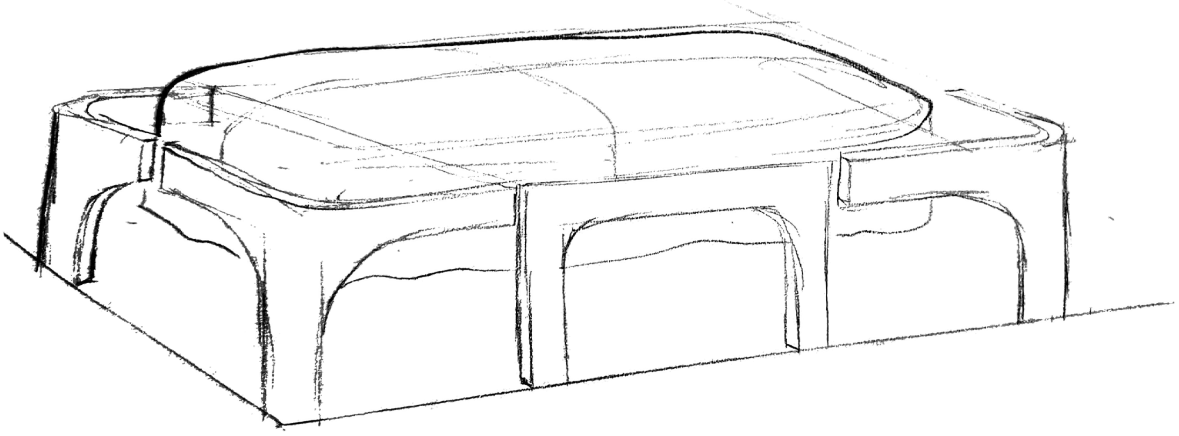
/ cons

Corners need solving on how to cover the stuffing.

concept 5 / construction

This concept just popped up as a visual in my head. I wondered if the frame construction itself could be what kept the fabric in place.





/ pros

Cool feature, “king pin”.

/ cons

Risk of stability loss in the frame.

Calls for unscrewing entire frame to replace fabric.

/ setting 1

The first setting concept is a furniture piece for a kids' room. Kids' furniture tends to get dirtied, worn, or spilled on more often due to kids being kids. Therefore, there is an increased need to switch out the textiles on furniture. The textiles can then be washed or mended when accidents happen, and the kids can get a first introduction to furniture care.


(Bøker 2006)

/ setting 2

The second setting concept is a classic kitchen sofa. This is a piece of furniture many Swedish families have had in their lives, and it has the potential to become a family heirloom. The need to refurbish and lengthen the life of a kitchen sofa is high, as use around the kitchen may entail spillage. The painting shown below by Carl Larsson represents a Swedish interior style that became popular historically and stayed relevant for a long time, even today.

(Carl Larsson 1898)

/ setting 3

Setting concept 3 accounts for my personal lack of woodworking skills, or rather, knowledge. The optimist in me tells me that I just need to set my mind to it, and then I would be able to build a piece of furniture craftsmanship. The realist in me says that I should probably stick to something as simple as possible, a soft bench. You often see these at the end of a bed or in the hallway.

(Sutano 2019)

/ final setting concept

As I continued developing the attachment concept, I decided how I wanted to imple-ment it as well to prove my concept. Through combining settings concept 2 and 3, I will create a bench fit to a dinner table. The core of my project is the attachment method, so the form of the bench will follow the functions needed.

I enjoyed the idea of making a classic kitchen sofa, but it felt like a very large project, which took my brief further than just finding a way to attach a textile to furni-ture. I decided to instead create the bench concept, but make sure that it can be used together with a standard-sized square dining table.

A bench for their kitchen is something I think my target group would enjoy as well. Benches create a strong sense of community, as you sit closer and create space if needed. They are more casual than chairs and allow flexibility in sitting. The textile el-ement adds a colorful touch to the kitchen, and in case of large spills, you can simply remove the fabric and wash it.

05 / further exploration

I had settled on a concept for the setting of my furniture piece. Now, I needed to continue developing how the textile cover would be attached to the seat.

Through sketching and discussion with workshop technicians, I continued working on two of the concepts, which I thought were the most promising, variations of concepts 4, the cross folding and 5, the frame construction which holds the fabric in place. I sketched and began considering the actual construction of the bench in combination with the attachment method.

/ demarcations

The process started very explorative. By analogue methods, I tested different ways in which to attach the textiles to smaller wood pieces. To continue the design process, I wanted to set some demarcations for myself. I will, beyond these demarcations, also consider the recommendations made by Lundberg & Jangfall (2017).

/ must have

A seat with a fully removable fabric cover.

The fabric should not slip around (be relatively tightly attached).

The bench must fit a standard 4 person dining table.

The final design must consist mainly of wood and textiles.

A stable bench frame construction.

No specialty tools needed.

/ would like to have

A frame made without the use of glue.

Avoid the use of plastics.

A simple to sew cover.

Facilitation of craft for the consumer.

No external tools needed.

Minimal wear on the materials.

A simple and straight-forward construction.

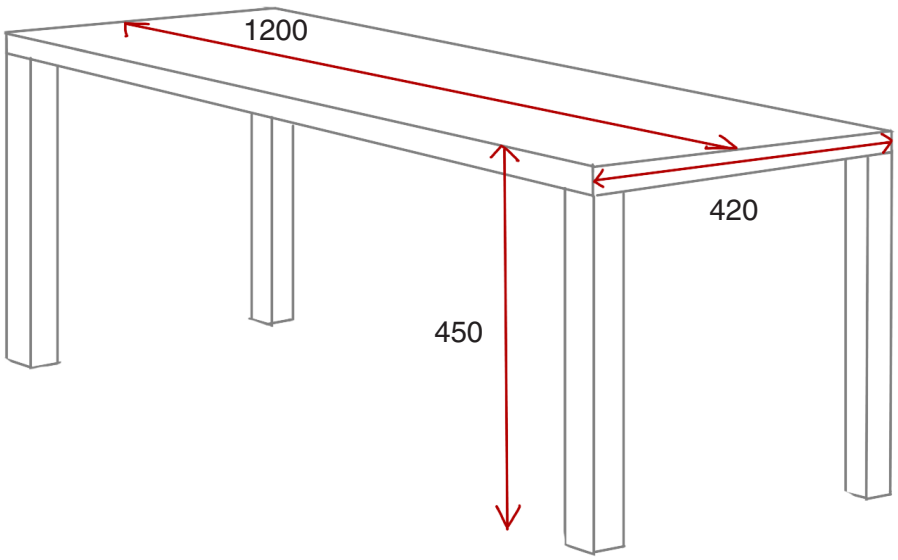
Not bring “wear to the eye”.

/ deciding on dimensions

Regarding dimensions of a bench or any seating furniture, there are set measurements for how high a bench should be for example. Seating furniture made for dining tables has a front height measurement of 45 cm (Berglund 2007).

For reference, I used a table which, on the long side, fits two chairs side by side. I wanted my bench to fit on the inside of the legs of the table.

(mm)



The dimensions of the cardboard model

The carboard bench model with a woman next to it for size reference. The cardboard model was made using a leftover cardboard box and duct tape.

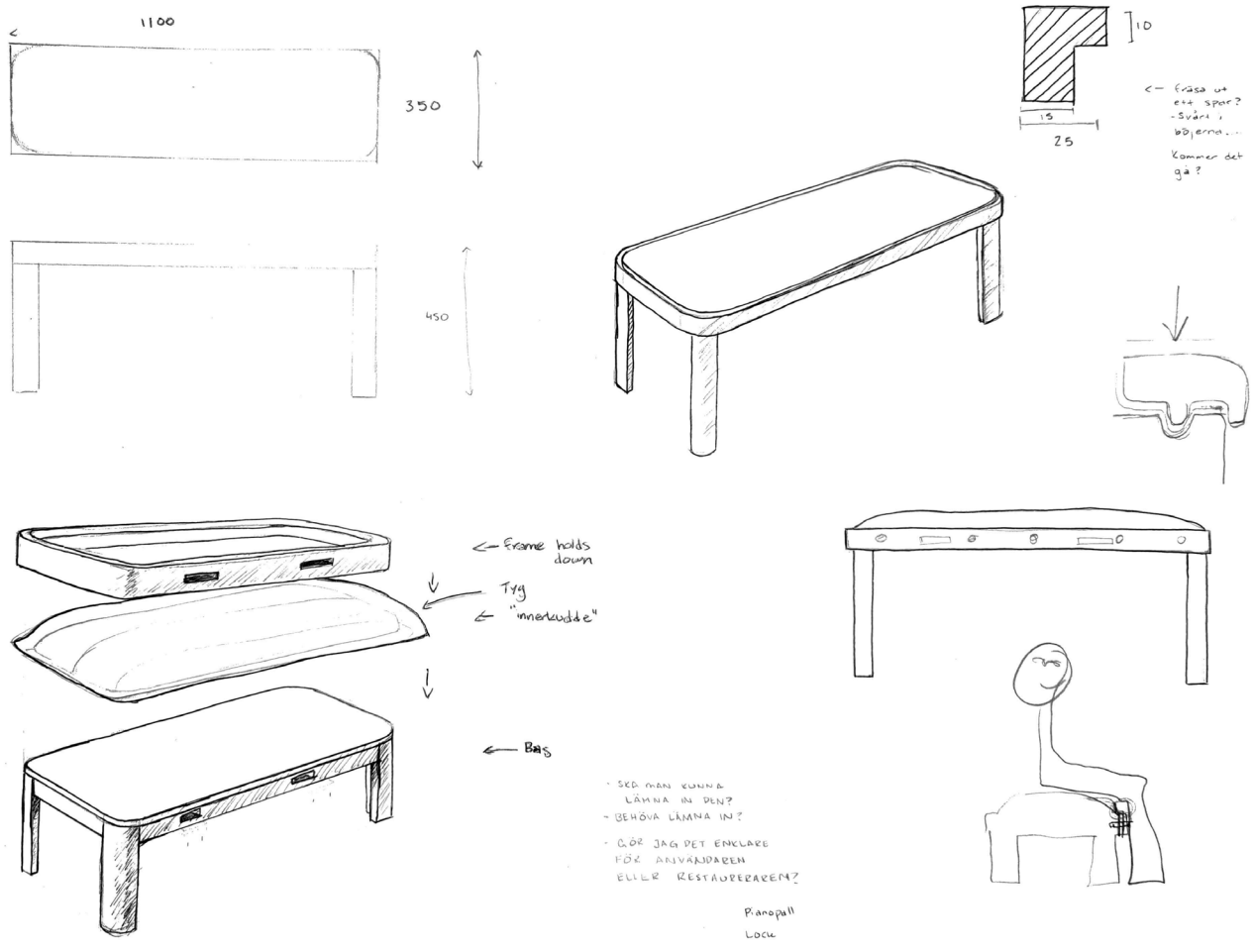
By making a 1:1 model in cardboard, I got a feel for the size of the final construction and could roughly try out how my attachment methods could work in full scale. I found that the cardboard bench was too deep.

A charming feature of using a bench at a dining table is that you have the possi-bility of sitting in any direction. You can sit 360 degrees around if you want. Although if you want to sit with one leg on either side, a bench that is too deep will be uncomforta-ble. I realized that since a bench doesn't have a backrest, the sitting area doesn't have to be too deep either.

/ frame construction

I continued sketching on something where the entire frame locked down the fabric on-to the seat. This was created having concept 5, and how the frame could lock the fabric in place in mind, but inspiration was clearly derived from concept 1, the click frame, as well, when looking at the rounded frame.

This concept was one of my favorites, but when speaking to the workshop tech-nicians and experienced cabinet makers, I realized the manufacturing process would be difficult. Frames work well on circular seats, similar to the embroidery frame, since the tension can be distributed evenly around the fabric. Rectangular constructions are suboptimal for this technique.

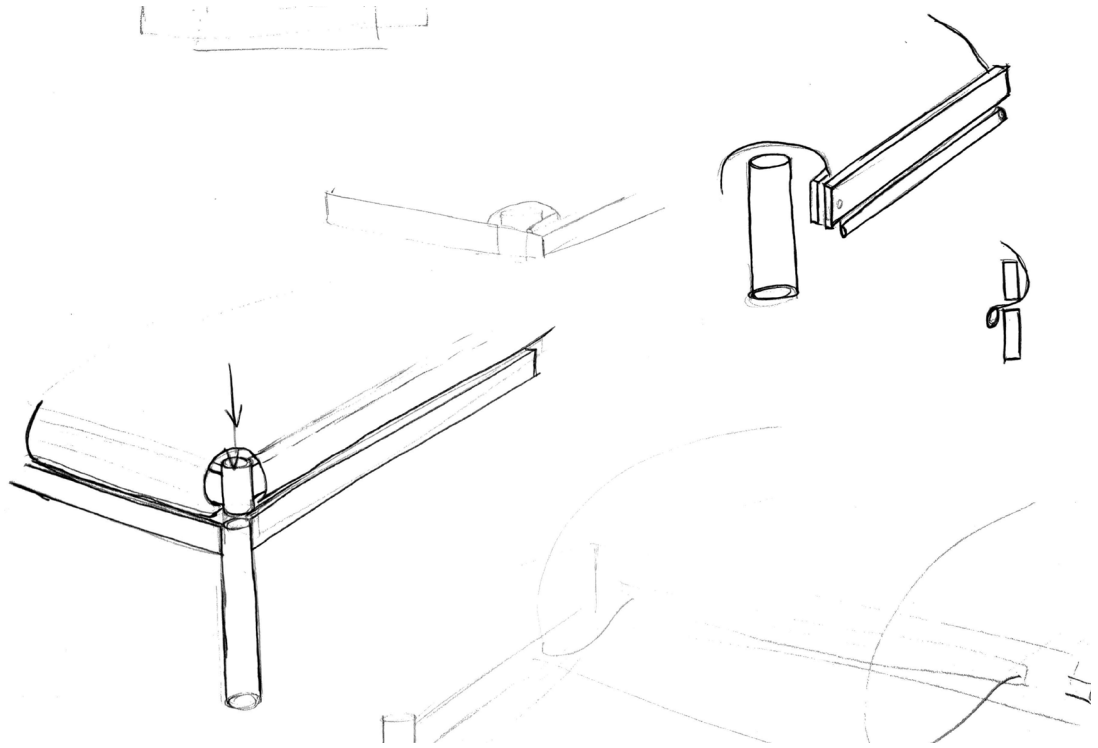


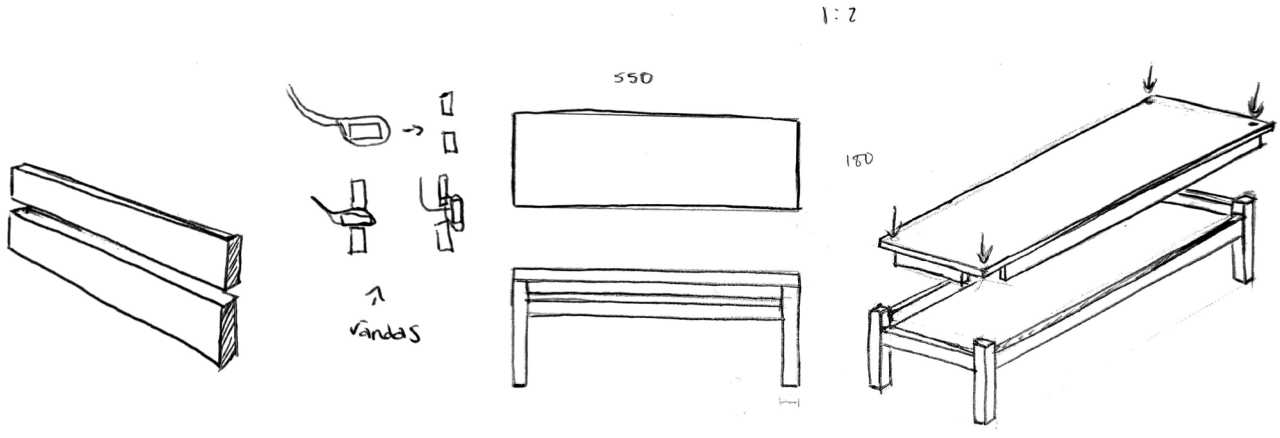
Ltd.

/ folding underneath

I felt discouraged having to kill my darling, and didn't really know how to move forward. But I decided to let go of the development of concept 5 for the time being and work on concept 4, cross folding underneath, instead. Here, I looked more into how the fabric could actually be fastened underneath the bench. A concern I had was that this method would be too messy.

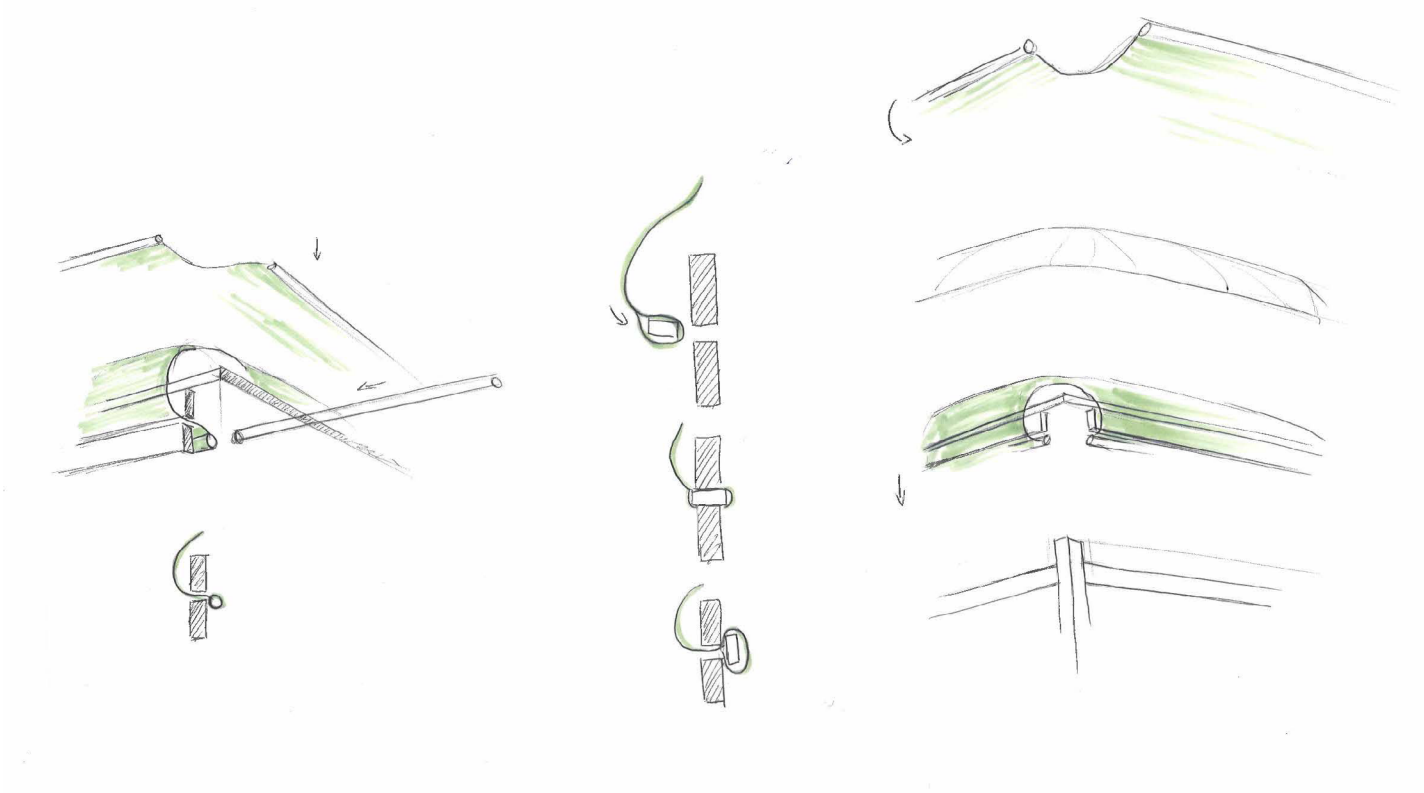
By talking to my classmates Marcus and Cecilia, I built on the idea I had before, as seen to the right below. The result became the attachment of the fabric through a slit between two rims between the bench legs, which also ended up being my final concept. There is so much value in discussing your ideas with others.



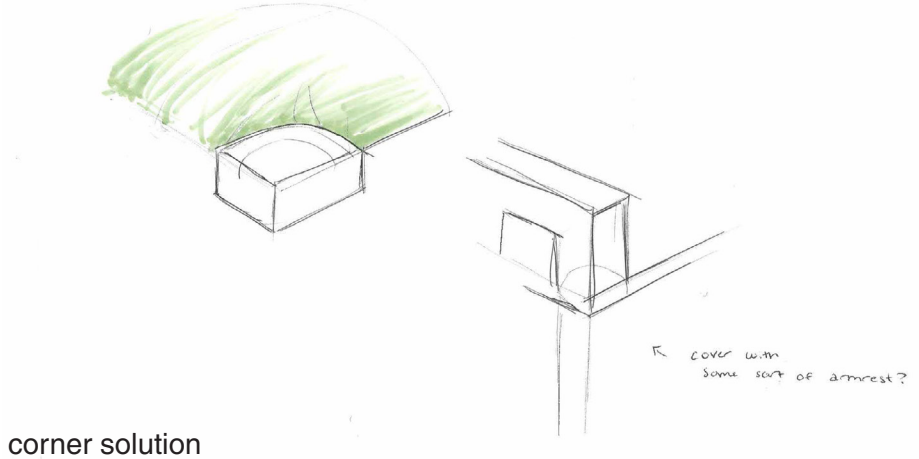


/ finalization of attachment method

I had a few ideas on how to solve the locking of the fabric behind the slit. Any of the following could be a part of my final concept. I tested out numbers 2 and 3 below to see which would work the best. Intuitively, method 1 would work with one slit, but as soon as the construction is enclosed with the 4 legs, it would be difficult to insert some sort of long stopper.

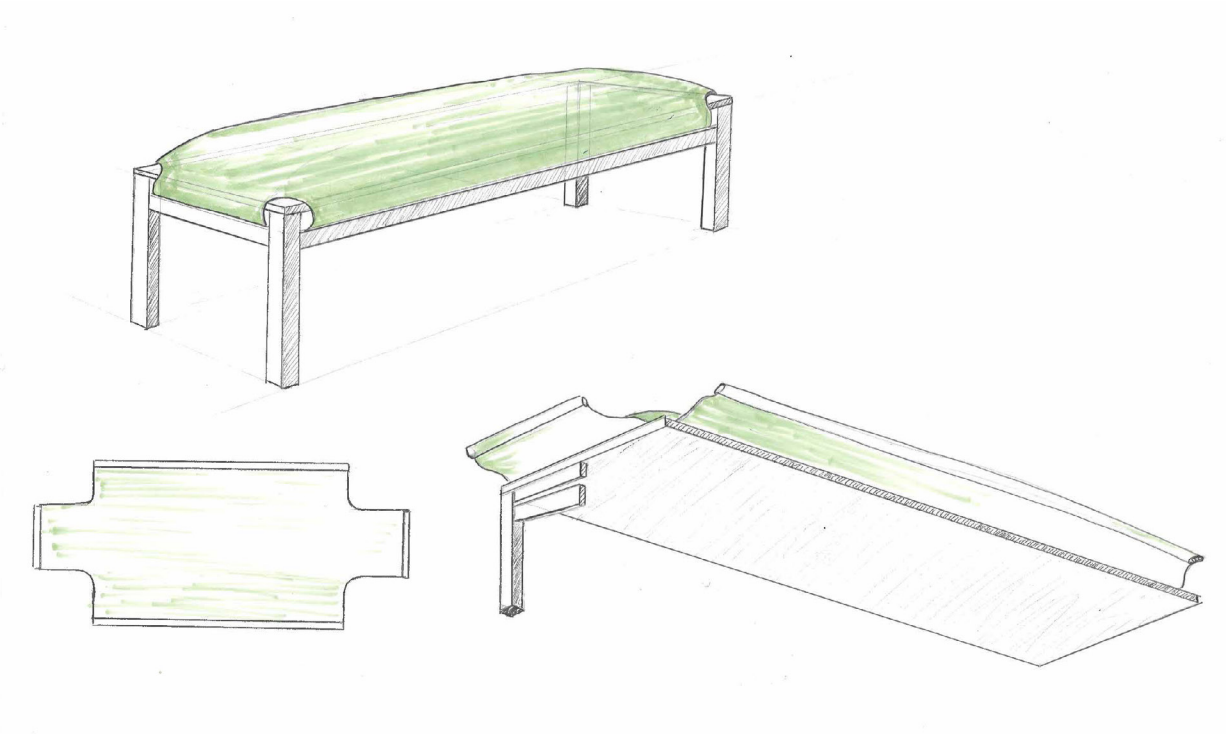


1 **2** **3**



potential corner solution

/ the final concept



06 / more prototypes

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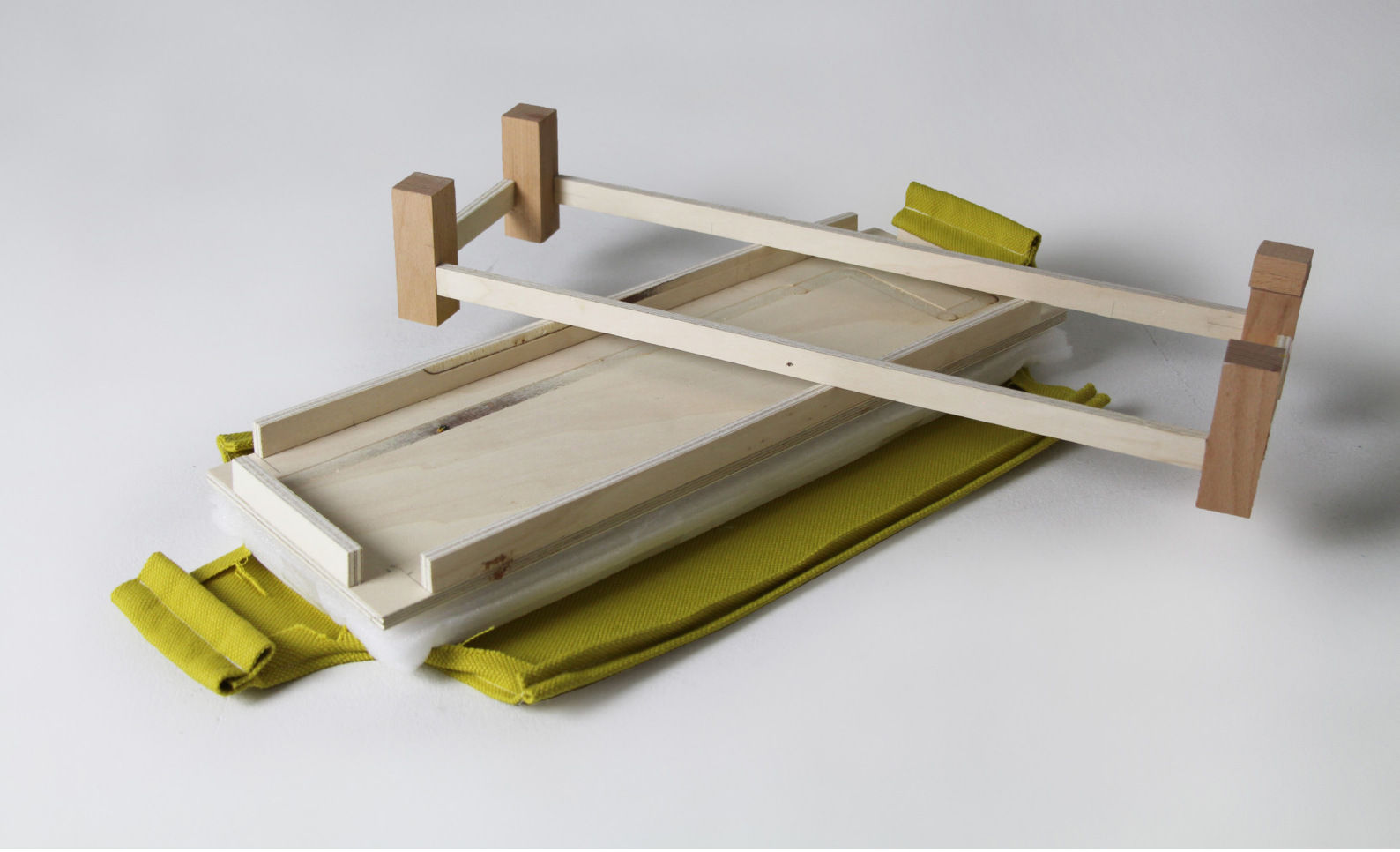
Once I had decided on a concept to finalize, I started refining the details of how the bench would be constructed. Through both smaller-scale and full-scale models, I was able to find an attachment method that worked well. I planned the construction of the wood frame and the sewing pattern of the cover.



/ 1:2 model

To test out the locking mechanism of pinching the fabric between two parts of the frame, I constructed a 1:2 size model of the bench I would be building. Pinching the fabric between the two frame pieces was quite difficult. It was doable to get three sides of the fabric attached in the slit, but when it came to the final side, I had to have help from two classmates.

When constructing my final model, there will be a balance between getting the fabric to fit tightly enough around the four sides and the sections to be long enough to actually get them through the slits. In this model, I used thicker seams to keep the fabric from coming out of the slit again, but in the final model, I will use a more secure stop.

Once we got the fabric around the frame of the bench, it ended up looking quite good. The fabric was taught and didn’t move out of place when fixed. The concept proved to be promising, and once constructed in proper materials, I believe it could be a good so-lution to the brief. Instead of dividing the bench into two sections, which clamped down on the fabric, I would construct it as one and use the locking mechanism of a turning wood stick, shown previously.

/ lock mechanism

I tested out the locking mechanism on a longer slit to see how this would work. The fab-ric locked into place well, and once wrapped around a seat, it would stay by itself. The wood stick inside the fabric loop extends the entire length of the slit, making sure that the fabric tension is distributed evenly.

/ 1:1 structure model of bench

One of the take-aways from the research on sustainable furniture was that a rickety construction was not accepted and often led to getting rid of the furniture piece. To create a properly stable bench, I built a full-scale model in cheaper materials and ex-amined where points of instability were.

/ turning the locking mechanism

/ aesthetic decisions

I started off constructing the final frame of the bench in solid wood. Parts of the final build can be seen in the pictures on this page. After this, I could play around with the turning and locking mechanism of the fabric.

Turning the locking stick inside the fabric loop required some technique prac-tice. I had to pinch the fabric to try to work the stick around 90 degrees. I thought that maybe if there were holes in the fabric loop, then the turning would be made easier.

The holes made disrupted the even fabric tension created, and a visible crease was made in the fabric, shown on the right here. Even though it would be a bit more difficult to turn the wooden stick, I chose not to make the holes for aesthetic reasons.

/ construction began

Bachelor Project 2026

07 / the final result

Bachelor Project 2026

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Bachelor Project 2026

/ demonstration fabric being secured

/ grab a friend

The attachment of the fabric is easier with the help of a friend. This way, a group activity is carried out, and fond memories can form through creating something together.

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08 / design details

Alice Carlsson

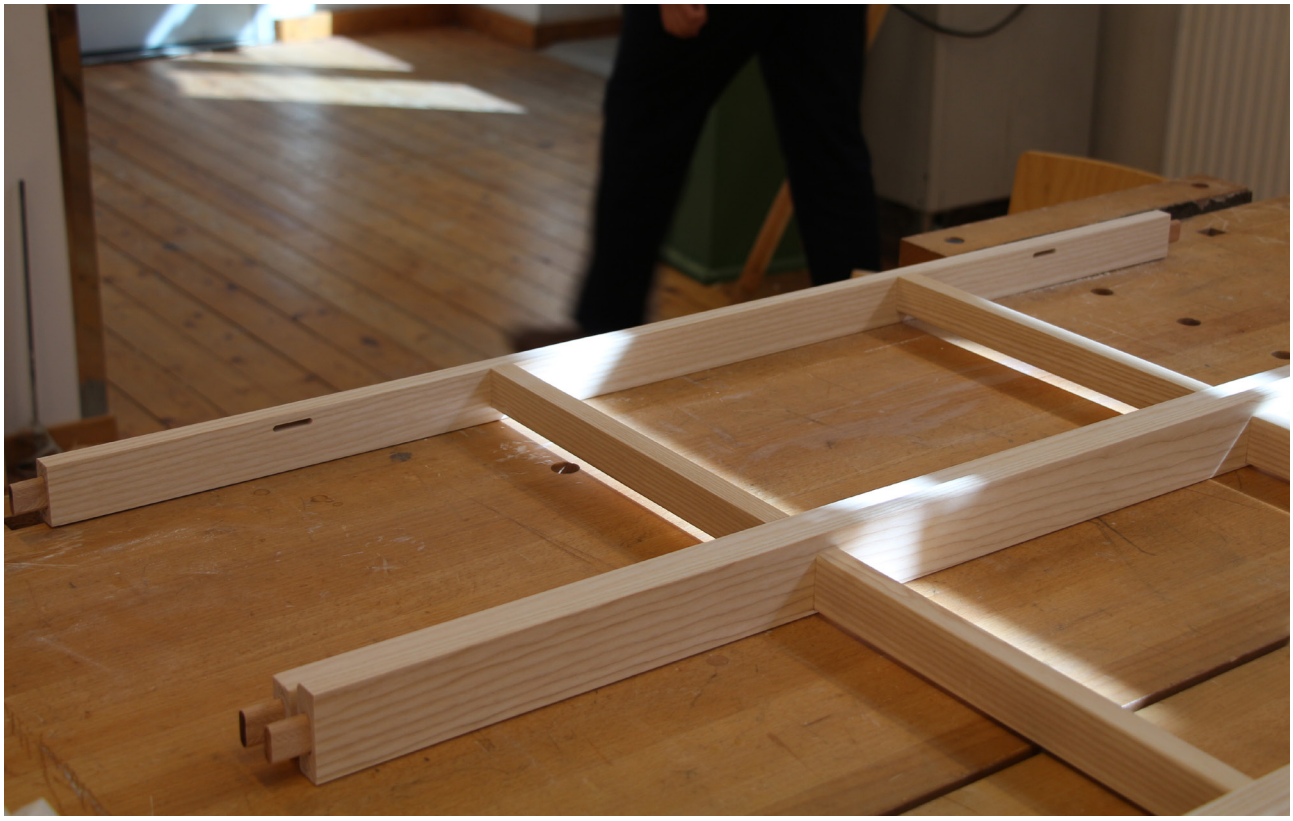
Design decisions were based on what was needed for the attachmet mechanism to work, and to make the system intuitive for the user. The form of the bench comes second to the function of the textile attachment.

/ stable construction

The construction of the bench is designed to prevent ricketiness. As mentioned before, I made models to identify points of weakness in the frame and added support where needed. There are support structures between both rims on the long sides, as well as between the legs.

Despite recommendations from Hanna Nilsson and Lundberg & Jangfall (2017) I decided to use glue to connect the legs and rims of the frame. The workshop techni-cians told me that glue would create tighter connections and, therefore, be more sta-ble. I prioritized stability over ricketiness.

The bench would also appear to be seamless, without visible screws, giving an overall harmonious look. Wood glue is strong, and if kept inside in good conditions, it will hold up for a long time.



/ removable seat

/ restoration

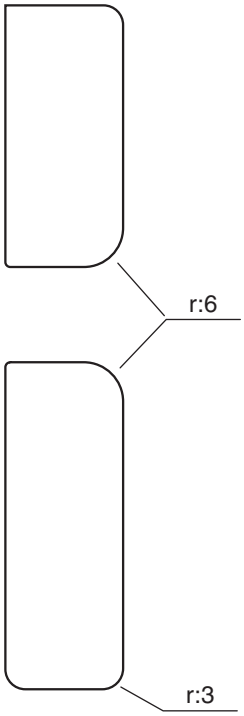
The seat of the bench is fully removable with a torques screw bit. This allows easy ac-cess to all the nooks and corners of the bench. I know this because I oiled the bench with the seat removed, and I could reach every surface area of it.

Since the most common type of restoration is simply touching up the surface of solid wood furniture, removing the seat is enough. As recommended by Nilsson, the seat is attached with proper pre-drilled holes and screws, nothing else.

/ wood expansion

The L-shaped wood bits that the seat is connected with are called “möbelklossar”. This allows expansion of the seat perpendicular to the grain, without pushing on the stable construction of the legs and rims. Thus allowing for charming ageing and honoring the natural material.

/ shapes that guide



The radii milled into the wood rims give the user a hint to where to insert the fabric.

The radii on the edges of the slit are double that other exposed edges of the wood construction.

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/ placeholders

On the short side of the bench, glued wood cubes act as guides and stops for holding the locking mechanism in place once turned. As shown to the left.

On the long side of the bench, the stabilizing structures double as placeholders for the locking mechanism. The distance between them is the same as the height of the wooden stick, including margin for the textile and seams.

/ the loops

Each side of the cross-shaped sewing pattern is folded and sewn 55 mm above the fold edge. This created a loop along the sides of the fabric that runs along the sides of the bench. This is where the beech locking sticks are inserted.

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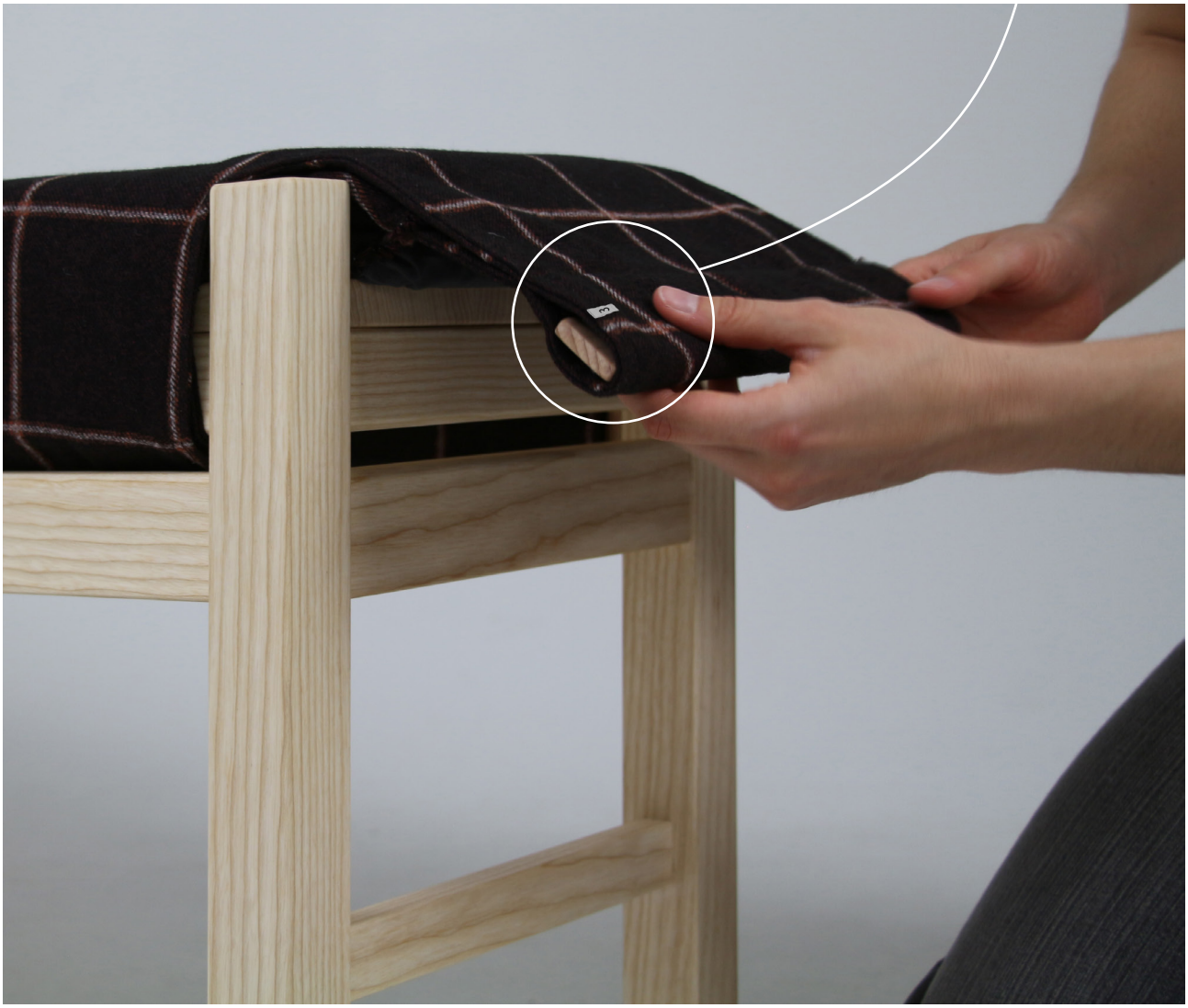
/ order of operations

Embroidered number tags indicate to the user which side of the fabric cover to tighten first. It is easiest to attach the long sides first, together with a friend, and then finish with the short sides.

1 2 3 4



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/ beech locking sticks

Solid beech was chosen as material for the locking sticks since it is a durable hardwood. Thus, preventing the sticks from breaking during assembly.

/ cushion

Underneath the fabric cover is a zipper cushion fit to the shape of the foam. The zipper cushion makes removal easy and safer than having to rip it apart. The prototype is con-structed using PVC foam and polyester wadding, but the final product should make use of renewable materials for the stuffing.

/ curved bench legs

To account for the corners of the fabric, the wood legs have been raised above the seat to cover the cushion underneath the fabric cover. The legs have been CNC milled to be perfectly curved. Since the seat wraps around the legs, there is a small gap added between the leg extension and the seat to account for any potential expansion of the wood.

Once the pillow is in place, three people can sit confortably on the bench without being bothered by the legs sticking up.

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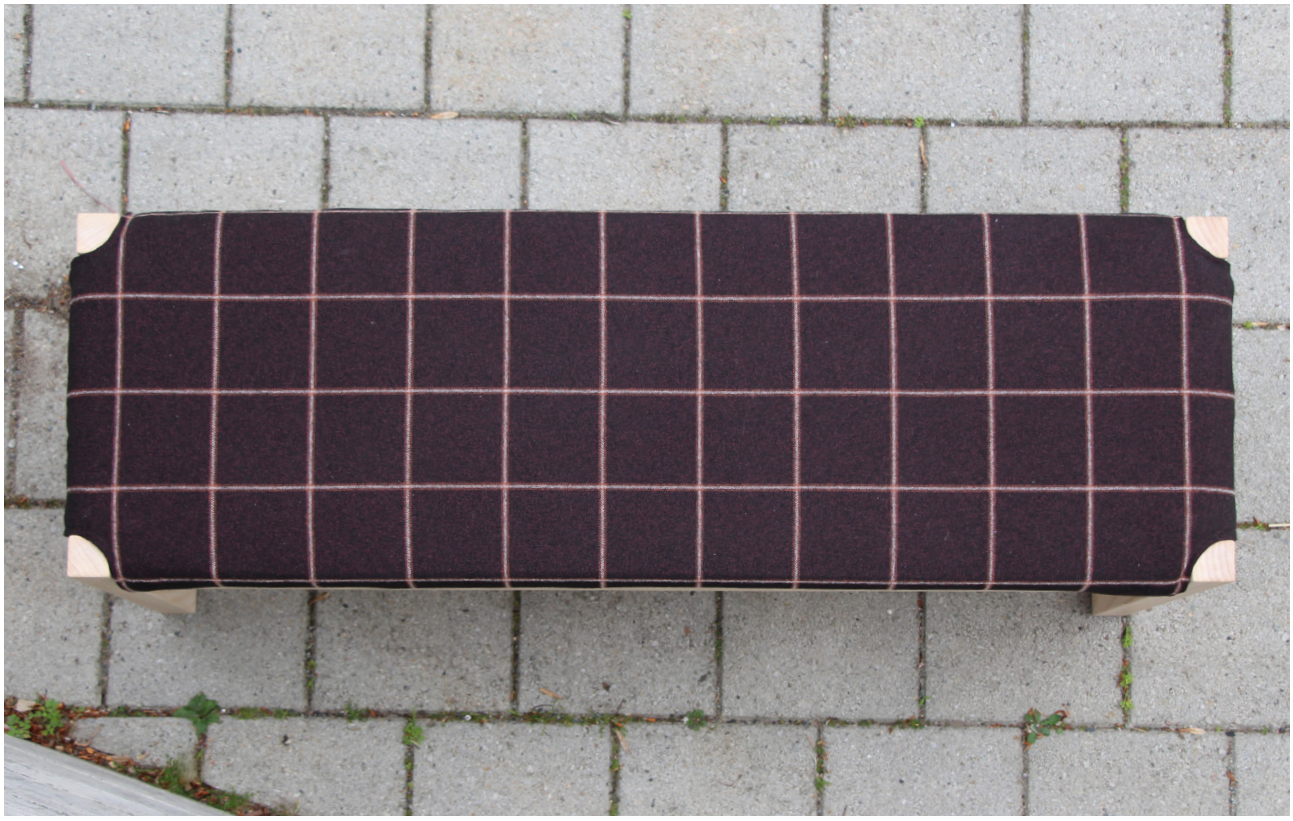
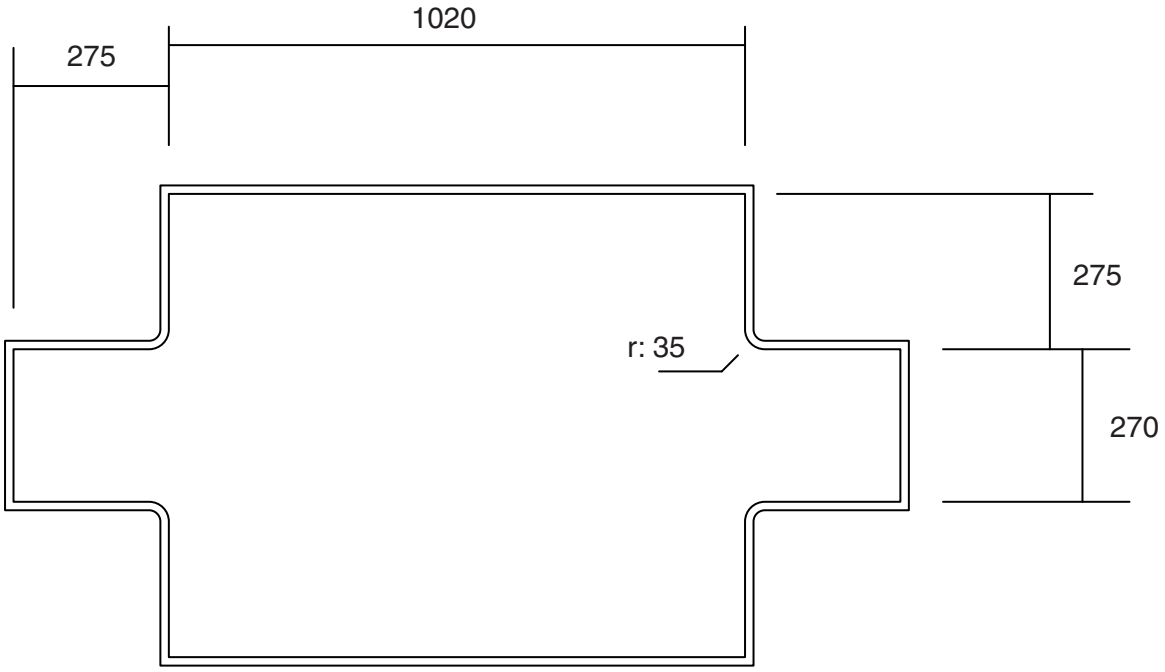
/ aesthetics meet function

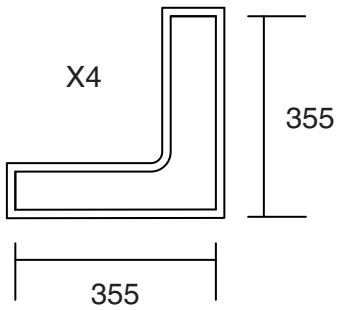
A close-up view of the bench legs with the fabric in place is shown to the left. The bench legs function as a cover to avoid exposing the inner pillow, but also to accentuate the shape of the cross-sewn textile cover.



/ the sewing pattern

Something I would have liked to do with this project is create a sewing project possible for those who haven't sewn too much before. I'm happy that the cover is constructed of only flat sewing and 2 different kinds of pattern pieces.



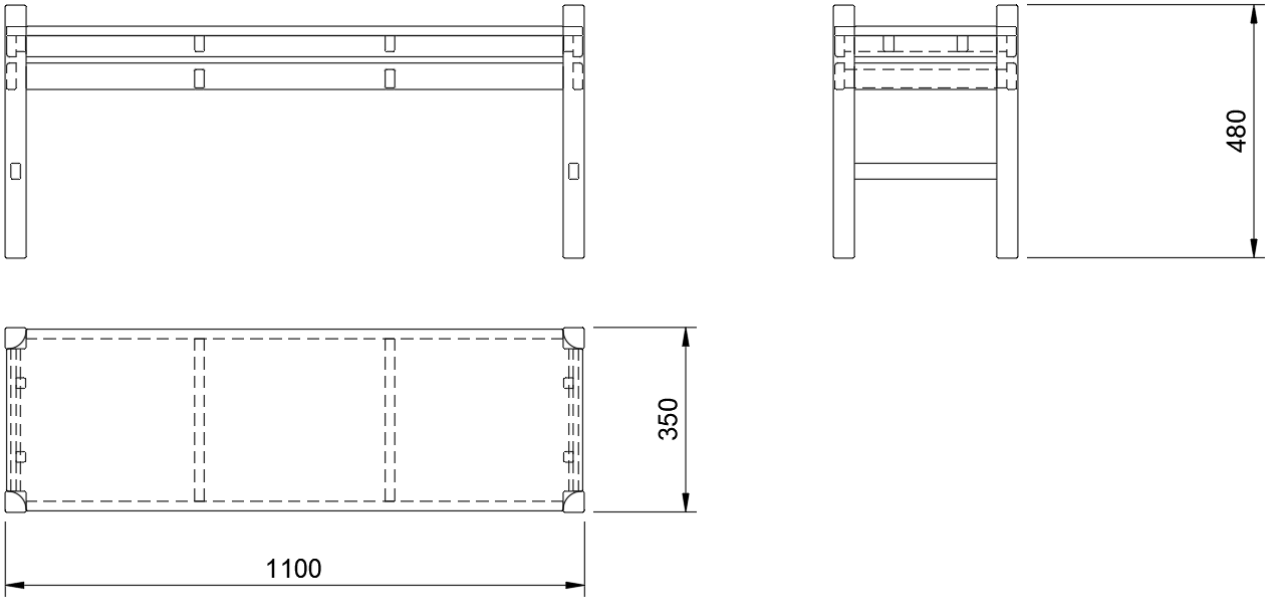


Seam allowance is 15 mm, not included in the measurements.

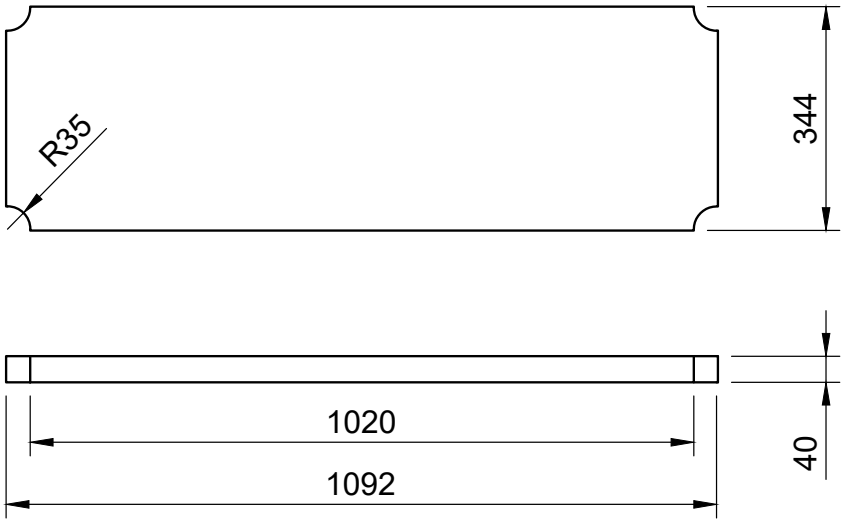
(mm)

/ general measurements

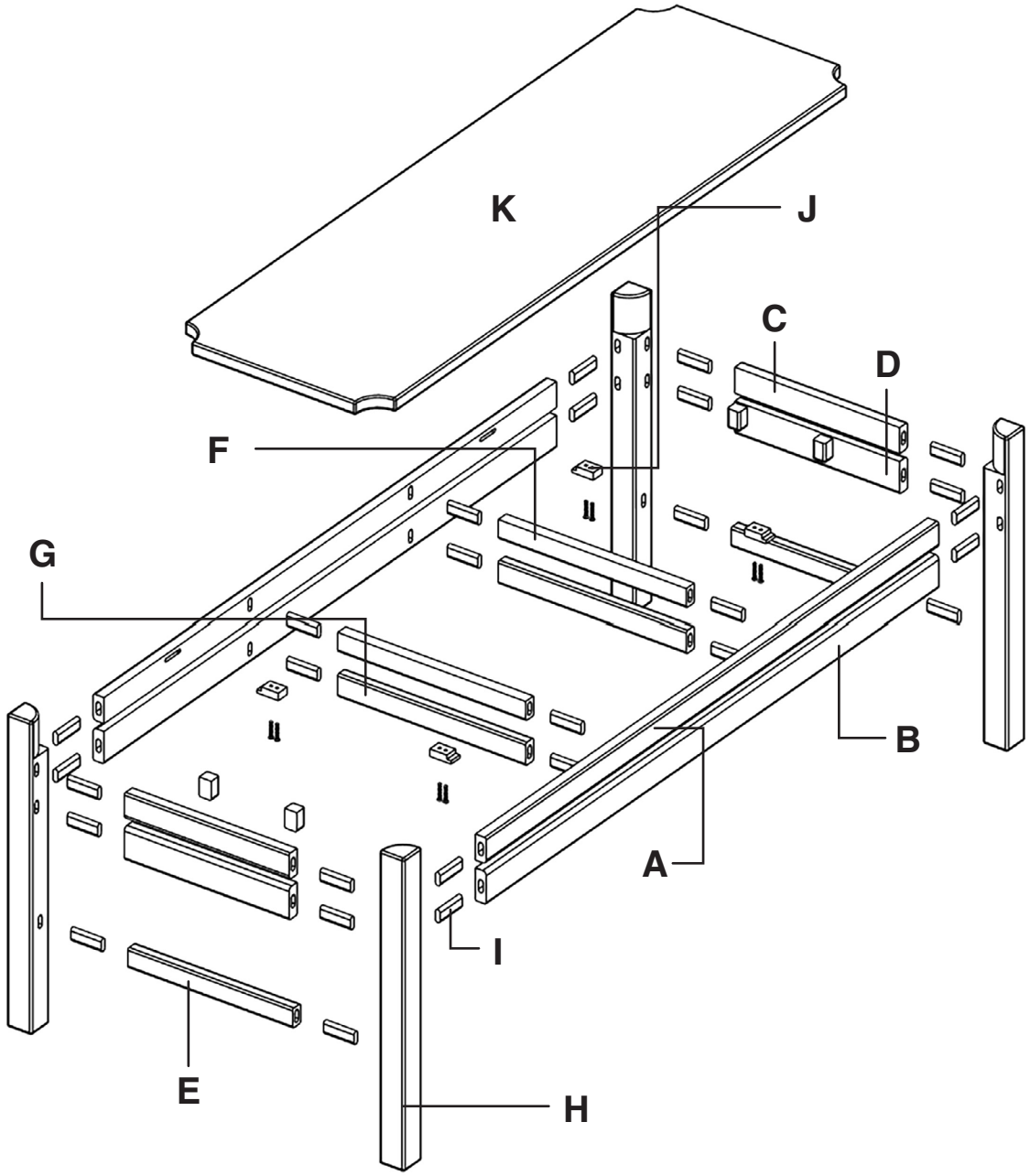
/ wood frame



/ cushion & wood seat (J)



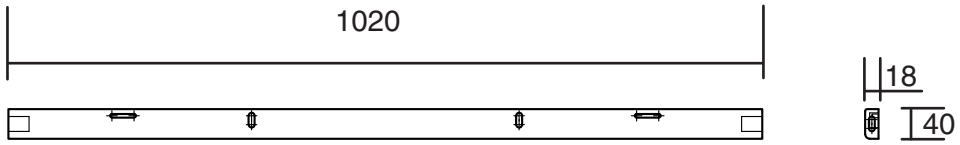
/ frame construction parts



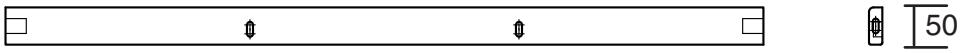
/ frame construction parts

(mm)

A X 2



B X 2



C X 2

D X 2

E X 2

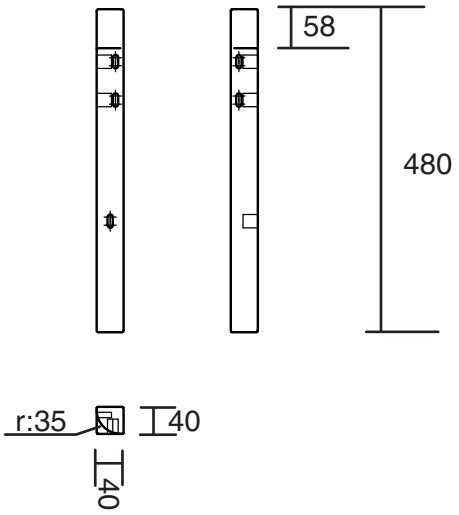
F X 2

G X 2

/ bits & legs

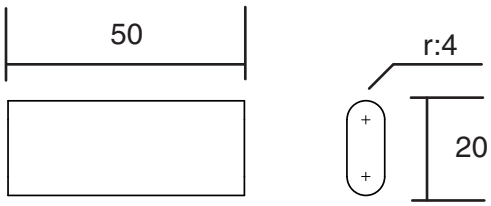
(mm)

H X 4



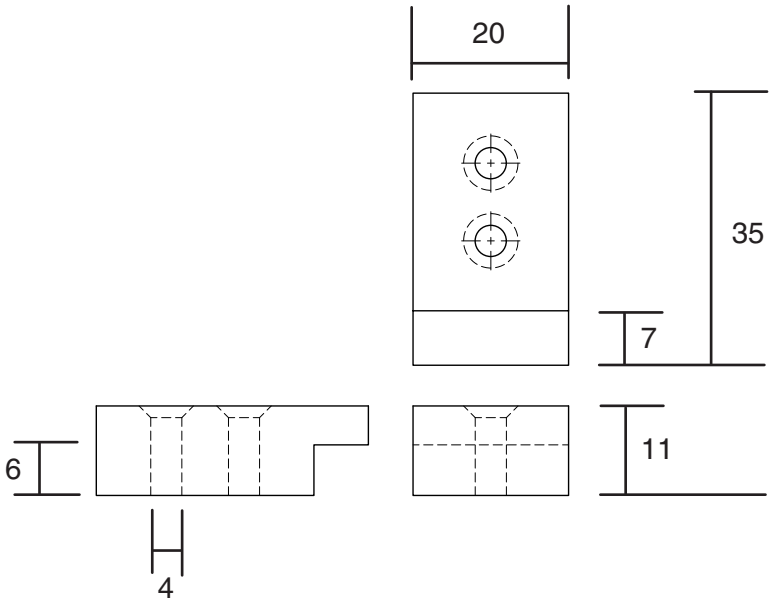
I X 28

Domino plugs



J X 4

L-shaped seat fixtures.



/ about the construction

The construction is made of wood pieces cut to the dimensions described in the previ-ous pages. Using standard-size Festool domino plugs, most of the frame is glued to-gether. The milled track for the L-shaped seat fixtures is made using a domino machine as well. The radii were made using a corner rounding cutter. There was no radius made on the piece that sits flush against another wood piece; exposed edges were given a radius of 3 mm, and the slit edges are 6 mm. Four 4 mm countersunk screws were used to fix the seat to the rest of the construction.

/ cmf

Alice Carlsson

Fabric: GABRIEL Uptown 2220
100 % Recyclable polyester

Dark brown/ burgundy/ white check

Ash wood, solid

Sanded smooth and treated with Hardwax oil, which maintains the natural color.

Beech wood locking sticks, solid.

Sanded for a smooth finish which doesn't snag on the fabric.

Cotton weave pillowcase.

Colors can vary depending on the fabric cover color. Taught fabric without stretch. The color used in the model is warm grey.

Agoprene foam cushion.

Agoprene is a company which makes foam out of seaweed. The foam works like polyvinylcarbonate foam does, but is safer for humans and better for the planet.

09 / reflections

Alice Carlsson

I have had a lot of fun during this project. I am happy with the result, although there are always details which could be improved. In the following pages I will reflect on if my goals were achieved and which changes and further developments I could make.

/ reflections

To conclude my project, I wanted to reflect on the process and end result. First, looking at the demarcations I set for myself in the beginning, I feel many of them have been met. Let us look at them one by one.

/ must have

A seat with a fully removable fabric cover.	✓
The fabric should not slip around (be relatively tightly attached).	✓
The bench must fit a standard 4 person dining table.	✓
The final design must consist mainly of wood and textiles.	✓
A stable bench frame construction.	✓
No specialty tools needed.	✓

/ would like to have

A frame made without the use of glue.	✓
Avoid the use of plastics.	—
A simple to sew cover.	✓
Facilitation of craft for the consumer.	✓
No external tools needed.	✓
Minimal wear on the materials.	—
A simple and straight-forward construction.	✓
Not bring “wear to the eye”.	?

/ evaluation of demarcations

I managed to meet all my “must-have” goals, which I am very pleased with. Of course, there could always be improvements made. I do wish that the fabric was a little more tightly attached, but I believe with a more refined sewing job, this could be arranged to a better level. As of now, the fabric is quite easy to attach, and it could be a little more difficult if the loops for the locking mechanism are moved. The corners are exposed a little bit at times, which I also believe could be solved with a more refined sewing job or possibly some way to tighten the seam around the curved legs after the cover has been attached.

I am really satisfied with the simplicity of the textile attachment mechanism. The need for any type of tool is eliminated, making the removal easy to begin with. The threshold to actually care for the furniture piece is lowered, both by the simple mech-anism and by the simplicity of the sewing pattern for the cover.

Some aspects of the “would like to haves” are difficult to evaluate. For example, I don’t know how much wear the locking mechanism may bring to the bench frame or the fabric. I have tried to eliminate wear by following the recommendations of Lundberg & Jangfall (2017) through rounding the edges of the construction and the locking sticks. Hopefully, these measures will facilitate a long life for the parts, but any movement will cause wear to the product. If wear were to take place, I would predict it to be in the meeting between the legs and the ends of the beech locking sticks, which, fortunately, is invisible during daily use.

Through choosing alternative foam materials and other textile materials, the use of plastics in the product can be completely eliminated. Although plastic textiles such as the UPTOWN model from GABRIEL Fabrics is 100% recyclable.

The aspect of “bringing wear to the eye” or not is also difficult to evaluate, and only time will tell. The bench is simple in its design, and the attention to detail is close, thus giving the product good prerequisites to being beautiful for a long time. The ability to customize the fabric cover also gives the user the option to change it in case the cur-rent model goes out of fashion.

/ further developments

My idea is that the bench can be sold in a few predecided fabric cover options, and that the customer can later on purchase different covers if they want to update. If the user is feeling crafty, it is possible to purchase any fabric one would like and then be provid-ed with a sewing pattern and instructions for how to sew.

The fabric attachment method can be applied to other types of furniture as well, as long as the form follows what is needed for the locking function. The mechanism works for any type of rectangular or square seat; a chair would be possible as well through the extension of two of the legs and the addition of a backrest.

/ thank you

(Satalova 2019)

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