Snålandsstolen
Snåla with material resources

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Abstract

This is a project about how the furniture industry could become more sustainable in their waste handling. The project is based in Småland both geographically and in terms of heritage and history in order to encourage locally produced products. The collaborators for this project are the two furniture companies Swedese and Strömslunds Snickerifabrik AB. Both companies have their production in Vaggeryd, Småland. Both companies are struggling with the waste that they produce. The aim of this project is to find a sustainable solution for their waste issue. In order to find a solution two theories are applied. The first one is industrial symbiosis which means that several industries can, by collaboration, profit from each other’s resources. The second theory is circular economy which encourage remake, reuse or recycling of a product once it has reached its end of life. To prove that this solution would be possible a hunting chair was made by combining the waste material that was gathered from Swedese and Strömlunds. The decision to make a hunting chair was made to connect the chair with the heritage of hunting and foresting in rural Småland. The making of the chair was different in the way that instead of that the designer would tell the material what was possible it was instead the material that decided the limitations and possibilities. The final product fulfils its purpose and works perfectly for outdoor activities, even though some minor design decisions could have been changed. The outcome proves that Swedese and Strömslunds could benefit from working more with circular economy and start cooperating in order to work as an industrial symbiosis.
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I would also like to thank Stephan Hruza for all the help I have received, and the knowledge shared of wood making, and Lena Håkansson for the guidance in the leather work.

At last I want to thank my family for the support, encouragement and showed interest in my project. It helped me very much to be encouraged by you guys!
Introduction

Background
In the start-up of this project the main ambition was to combine industrial design, furniture design and sustainable design in order to make a locally produced furniture by only using waste material.

Definition of “waste”
I have chosen to define the meaning of “waste” in this project, since it is a concept that can include various meanings. In this project, the definition of waste is excessive material from specifically furniture production that otherwise would go to waste handling companies and be burned.

Smålands heritage
Ever since Småland got its name, and even before that, the habitants of Småland have been closely connected to and living of nature. The main occupation in Småland has been to work with forestry, small-scale mixed farming and cattle raising. Småland has, and has always had, a rich animal life which have encouraged the habitants of Småland to live of both cattle raising and farming but also hunting. Hunting has been a natural way of living and a way to provide food and it still is up to today. Through the cattle raising and hunting, the leather trading has been a natural source of income. One of Sweden’s most famous leather trading markets is held once a year in Växjö in the middle of February.¹

The material that has been used for this project has been gathered in the same way as hunting is carried out in Sweden; the hunting in Sweden is carried out by only taking out the surplus out of nature in order to maintain the natural biological balance in nature. Inspired by this way of living, I aspire to only take the material surplus from the companies in order to try to maintain the material balance. To be able to preserve the material balance in nature and be sustainable it is important that all the material is taken care of once it has been harvested and, in that way, economize, or to “snåla”, with natures resources. The word “snål”, to be cheap, has been used to explain the mentality of habitants of Småland in a negative way. Instead of using it negatively I would rather encourage that mindset of economizing with resources. For generations different resources has been “snålat” with in Småland and this project wants to encourage that mindset as it is slowly disappearing.

¹ Nationalencyklopedin, Historia, https://www.ne.se/uppslagsverk/encyklopedi/l%C3%A5ng/sm%C3%A5land/historia [Accessed: 2019-04-09].
Personal connection
I come from a family of hunters. When I was 17 years old, no one in my family was longer active hunters. I wanted to continue the heritage of hunting from my family and therefore I decided to take hunting license. Since I started hunting it has become a big part of my life. For me, and most of the hunters in Sweden, hunting is not about killing animals. It is about reconnecting with nature, going back to your roots, socializing with your hunting team and to sit in a hunting tower out in the forest and think, meditate and feel that we humans are a part of nature. The part where you kill an animal is of course the aim of the hunt, although it is not too important. During my now three years as a hunter I have only shoot an animal once, but I have spent many days out in the forest without shooting. But even these many days have been just as pleasant and rewarding as that one day I got the chance to shoot an animal.

Wood making and hunting is sort of the same for me. There are few things as satisfying as being able to work with material that comes directly from the forest. It helps me, just as hunting does, to reconnect with nature and appreciate and be thankful for what nature can provide for us. I also feel that I connect with the rural heritage of Sweden with wood making. The skills and techniques that goes in to making something out of wood is slowly disappearing. Therefore, it gives me satisfaction to learn these methods in order to be able to, in the future, pass some of this knowledge forward.

Collaborators
In this project, I have chosen to collaborate with Strömslunds Snickerifabrik AB and Swedese. Both these companies are located in Vaggeryd, Småland which is of great importance since the project aspire to work locally within Småland’s boundaries. Also, both Strömslunds Snickerifabrik AB and Swedese produce furniture, although they use different production methods and materials which results in different types of waste.

Strömslunds Snickerifabrik AB
Strömslunds Snickerifabrik AB is a carpentry company based in Skillingaryd, Småland, Sweden and are specialized in producing smaller collections of furniture for designers. Strömslunds have been active in Skillingaryd since the 1940’s and started their production with making Rococo furniture. The product value lays in the possibilities of solid wood and to produce smaller collections of furniture.² Their production is targeted towards so called ”Lego production”, which means that several companies produce a product together. With this way of production, it is possible to save time since each different factory makes the part that they are specialized in,

which guarantees the best possible outcome of the product. Strömslunds does not design any furniture by themselves, they only produce it. I have recently made a group project together with Strömslunds about waste and it was here I first met them. In that project we decided to focus on the sawdust and how we could make use of that waste. Due to that they produce smaller collections of furniture for a limited period of time, sometimes for only one to two weeks, it is difficult for them to predict what type and amount of waste that the production will cause.

After several visits at Strömslunds it was possible to map out what kind of waste that was commonly produced. The most commonly produced waste is off-cuts from solid wood from the first stage of the production, where they raw cut all wood to pieces that are more manageable to work with. These off-cuts are excellent pieces of wood and suits perfectly for a furniture that uses straight, thinner pieces in the construction.

Strömslunds only buys wood from FSC-certified suppliers but Sara Larsson have mentioned during our discussions that it is difficult to actually know if the FSC-certified wood that is bought actually have been grown and harvested in an ethical, sustainable or even legal way, due to that it is difficult to back track the supplier since there are a large amount of parties involved.

**Swedese**

At the same time as my group did a project together with Strömslunds, some of my classmates were doing a project together with Swedese. Swedese is one of the most renowned carpentry companies in Sweden and were founded by the famous furniture designer Yngve Ekström, the designer behind the well-known Lamino chair. Together with Bruno Mathson, Alvar Aalto, Arne Jacobsen and Paul Kjaerholm, Swedese formed the core of the term “Scandinavian Modern”.

Swedese is only working with wood laminate. The wood laminate is ordered in precise sheets with only 1 to 2 centimetres of marginals. Therefore, already in the first step of the production they have cut down on a great amount of waste. Wood laminate is a waste efficient way of producing products since the amount of wood waste is minimal. Swedese claim to constantly be working with minimizing the waste they produce. They have been producing many of the same chairs for more than 70 years and therefore they have been able to continue working with reducing the waste over a long period of time. Also, employees are encouraged to take waste from the production for private use. For instance, in the production step where they are working with wool, some of

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4 Sara Larsson; Owner of Strömslunds. Meeting at Strömslunds Snickerifabrik AB (Vaggeryd) 2019-03-07.

5 Ibid

the employees use these scrap pieces to make their own saddle covers for bikes or plaids to sit on when they are hunting. Even the small scrap pieces out of foam at the packaging is taken care of by sending it to ReMida that is a creative up-cycling station for schools where kids can make use of and be creative with waste material.7

Despite Swedese’s strive for minimal waste, they face problems as well. Especially concerning how to make use of the excessive leather. Since they need large and undamaged pieces of leather for their chairs, they must throw away leather to a great extent, due to damages in terms of scars and mosquito bites.8

The leather is bought from Elmo, a leather company located in Svenljunga about one and a half hour by car from Swedese’s factory in Vaggeryd. Elmo sells leather from animals from the meat industry in Småland.9

Aim and project idea
Based on the background presented above, the aim of this project is to help Strömslunds Snickerifabrik AB and Swedese to make use of the waste that they produce.

Theory: Tools and solution
In order to reach a solution for these companies’ waste issue, two theories will be applied; industrial symbiosis and circular economy.

Industrial symbiosis
Industrial symbiosis is a production method including various companies collaborating in order to make use of each other’s resources and waste materials. According to this theory, collaboration between companies is more advantageous for both parts rather than working on their own, since the method reduces waste and promote development. A good example of this is a couple of industries in Kalundborg in Denmark where all companies are connected by the sewage system and chimneys. For instance, one of the companies is Novozymes that produces enzymes. When their process of making enzymes is done their fermenters contain both bio mass and

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8 Christina Bergström; Quality control and environmental manager at Swedese. Meeting at Swedese (Vaggeryd) 2019-02-28.
phosphor. In the next factory this biomass becomes bio gas and the phosphor is made into fertilizer\textsuperscript{10} instead of being scraped out and thrown away. Swedese and Strömslunds could, by applying industrial symbiosis together make use of their waste and produce a product that they can benefit from both in terms of making profit but also saving money on waste handling services at the same time as they are becoming more sustainable.

**Circular economy**

Most industries today are so called linear economies, which means that raw materials are used in the production of a product and after the product's lifetime the product will be thrown away and become waste. The linear economy causes massive pressure on our environment and is not a sustainable way of producing.\textsuperscript{11} Circular economy is a sustainable alternative to a linear economy. The following are the steps a company must follow to work as a circular economy.

1. **Design out waste and pollution**

Waste can be decreased already at the design stage. Here the designer can, by using waste efficient ways of producing a product, minimize the amount of waste that will be produced at the production stage.

In circular economy there is the biological and the technical cycle. In the biological cycle waste becomes food or nutrition. When a biological product has served its purpose, it is designed to go back to the biosphere without causing damages and, for example, become fertilizer or bio gas. This enables a new material to grow and to be used in another product. In the technical cycle a product is designed to circulate within the system. It can be a product that is easy to repair, renovate or re-use. An example of this is car leasing. The car company keeps the ownership of the car and the responsibility, but the consumer is the user of the product.

2. **Create resilience through diversity**

Diversity needs to be valued characteristics in a world like this that is constantly developing and changing. A product must then be able to be used for as long time as possible while it must keep its value regardless new needs and trends.


3. Use energy from renewable energy
Production systems must be run on renewable energy.

4. Think in systems
In order to make a circular system it is needed to think and work with how different parts of a system is affecting other systems. In a circular economy, everything is seen in its relation to its surroundings.

5. Waste from one system is nutrients for another
When a product made from biodegradable and unhazardous material have served its purpose and lost its main function the remaining value of the material will be used in other applications before it will be brought back to nature to become nutrient. A product that has been designed to withstand time and tear will eventually brake down. When it does it has to be possible to produce new products out of the broken down one12.

Today Swedese do work as a circular economy. They produce products that will last through time, and they provide a service where they repair old furniture’s that comes from Swedese. Although they lack circularity in the production step where they handle leather because of the great amount of waste.

Strömslunds Snickerifabrik AB could be considered a hybrid between linear economy and circular economy. They produce furniture of high quality that will last through time but when they break and need repair, Strömslunds does not offer a repair service. Strömslunds make some efforts to minimize their waste and to make use of the waste that they have, but they can still take greater action to reduce their waste to a larger extent and therefore become more circular. As mentioned before, Strömslunds struggle with the waste reduction and it is difficult because they produce smaller collections of furniture for a limited amount of time which makes it difficult, and sometimes nearly impossible, to foresee what type of waste they will have. Some of their waste is being sent to ReMida13 and some is taken home by the employees to be burned in their stoves, but the majority of the waste is taken away by a waste handling company where it gets burned and becomes energy.


**Solution**

To illustrate the solution of industrial symbiosis combined with circular economy, I decided to design a chair made from waste material from Swedese and Strömslunds; leather from Swedese and solid wood from Strömslunds. Inspired by the heritage of Småland and a close connection with nature, I decided to make a chair for still hunting and other outdoor activities. The waste material is suited for a chair that is light, portable and stands weathering, which is another reason for designing a hunting chair.

The cycle below illustrates the proposed solution.

![Desired circular economy of the furniture industry](image)

**Design process**

**Design Brief**

The specifications for the product was that it must be light and portable but still stable and stand the tearing of weather and wind. All treatment of the materials must be harmless to nature. It was not an alternative to use non-natural oil treatment for either the wood or the leather. Not only the material has to be re-used, also one or
two designs must be re-used and developed in order to take the re-using one step further.

There is a lack of proper chairs for still hunting and today there is no hunting chair on the market that is targeted towards still hunting. During still hunting the hunter sits and waits for the animal in a small hunting cabin. The cabin can be as simple as a regular hunting tower but with walls and a roof to protect the hunter from different weather conditions. This enables the chair to be a bit larger and a bit heavier than the camping stool that is commonly used at driven hunt. During still hunt, unlike driven hunt, the hunter sits for hours and waits and does not walk around much with the chair and change locations. Therefore, the hunter needs a comfortable and stable chair. The chair should also be suitable for other outdoor activities, such as bird watching or camping.

**Research**

At the start of the project I decided that the research process will be research through practice, since it is a natural part of an industrial design process. A practical project (for instance an industrial design process) demands practical research. Also, since I was provided with limited waste materials, the design must obey to the possibilities and limitations of the given materials. In order to find the different possibilities and limitations, it is convenient to apply research through practice. Furthermore, it seemed as a suitable choice of working in terms of connecting with the heritage of Småland that contains practical skills. Lastly, I was inspired and encouraged to conduct research through practice at a lecture and workshop held by associate professors Lena Håkansson and Anthony Wagner at LNU Design Department. The practical research will be complemented by theoretical research in order to present well-grounded results.

**Collaborators impact**

Swedese and Strömslunds have mainly supported this project with waste material and information about how they as companies work. Both Swedese and Strömslunds have been updated throughout the sketching and building process but they have not influenced the design decisions. I decided to mainly let the waste material determine what type of product that is possible and not possible to make. It has felt more like a relationship and a connection between me as a designer and the material in a way where we have both been communicated on equal terms and levels.

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14 Lena Håkansson and Anthony Wagner; associate professors at LNU Design Department. Lecture and workshop on “How to conduct research through practice” at Linnaeus University (Växjö, Sweden) 2019-02-01.
**Ideation**

**Collage**
By starting out with making collages of furniture it was possible to choose a suitable format for the chair. The two formats that caught my eye was the Director’s chair and the Safari chair. I am fond of the simplicity and the cleanliness of these two designs and thought that a hybrid between these two concepts would make a great chair for hunting.

**Hybrid**
A hybrid between a Director’s chair and a Safari chair would fulfil my demands of the design and function of the chair. A Director’s chair is portable, light and stable. A Safari chair is designed to work for people that travel, especially outdoor close to nature. Both chairs have a similar construction. When the user sits in the chair the persons weight creates pressure down to the ground which tightens the side frames.
of the chair. The user works as a reinforcement in the structure of the chair and becomes a part of the construction.\textsuperscript{15}

Moodboard

When the decision to make a hybrid between a director’s chair and a safari chair was made, it was time to make a moodboard to get the feeling of what I wanted to get out of the design of the chair. It felt like I was making two aesthetically different moodboards that conflicted with each other. The first one is natural and rural and nature is the centre of the feeling one get from the moodboard. The second moodboard has the aesthetics of the 1930’s with its sharpness, timelessness and modernity. After some thinking I concluded that they do not need to conflict with each other. It is possible to combine this two aesthetics in a way that works and creates a harmonic hybrid.

\textit{Moodboard 1.}

Prototypes and drawings

1:10 scale prototype
To be able to get a sense of the measurements and the construction of the chair, I made a study of the form of the chair that I had in mind. After some quick and dirty sketches, I picked one version and made a quick drawing with measurements in AutoCAD LT 2019. To be able to gain a better understanding of the construction and complexity of the design, I made a 1:10 scaled down prototype in foam board. The dimensions felt good, so I went on to the next step.

1:1 scale prototype
Now it was time to build a full-scale prototype. In order to make a cheap and easy-made prototype, construction wood was used. Therefore, thicker pieces of wood had to be used, otherwise the construction would become too weak and increase the risk
of breaking during tests. This resulted in a prototype that was a lot heavier and unmanageable than the desired final product. The aim for this prototype was mainly to see so that the dimensions worked and that it was comfortable and usable in a hunting scenario.

To avoid that the chair would only fit me and my preference of sitting positions, body measurements and shooting platform preferences, the prototype was field tested not only by me but also by two hunters from my hunting team. After testing it we all wrote down feedback of the chair on post-its and taped it on to the chair. The feedback I received from the two hunters was that it was comfortable to sit in, created a stable shooting platform and that it is necessary to have a proper chair when still hunting. Also, they thought that the chair created a natural and stable platform from where they felt confident to shoot from but that it was too heavy in its construction. This, as mentioned before, were because of the cheap solid wood that was used for the prototype. It is not suitable to construct a chair out of that type of wood.
Gathering material

*Swedese*

The first material gathering trip went to Swedese where I met up with Christina Bergström. This was the first meeting with Swedese and I got a thorough guiding at their facility in Vaggeryd where all wood work and some of the textile work is being done. After the guiding in Vaggeryd we drove to Äng that is located approximately 40 minutes by car from their facility in Vaggeryd. At Äng Swedese do all their leather and most of their textile work. It is from Äng the leather for the final product is gathered from.
Gathering material at Swedese.
Strömslunds Snickerifabrik AB
The other trip went to Strömslunds to gather solid wood. To get some guidance of what type of wood that would work for my chair I got to talk to the wood expert at Strömslunds. He suggested mahogany or oak for the chair, but mahogany was probably the best he said due to its property of resistance to humidity. They had a lot of mahogany waste so it was just for me to take as much as I could fit in the car.

Gathering material at Strömslunds Snickerifabrik AB.

Back to sketching and drawings
With the material gathered and feedback collected from the two hunters it was time to make the final version of the chair. It was a mix of quick dirty sketches and making drawings in AutoCAD LT. The obstacle I was struggling with at this stage was to find the correct angle for the legs in relation to the upper frame of the chair. After a lot of error, I decided to wait with the legs and first build the upper frame of the chair and measure it physically.
Wood working

It was finally time to get back to the wood work shop and start working with the mahogany. At first, I thought that it was going to be hard to work with mahogany since it is such a hard sort of wood, but it was very yielding to work with and it behaved exactly like I wanted it to behave. It was my first time to use the lathe and even this turned out good. I think that the hardness of the wood was in my favour and made it easier to lathe.

When the upper frame was done it was possible to determine the angle of the legs. It turned out that it was as simple as 45°. When the angle was determined I ran towards another obstacle; to find a place where I could find milled brass hinges and brass trestle hinges. After trips to K-rauta, Bejiers Bygg and other hardware stores, I asked one of my tutors Stephan Hruza, workshop educator, where to find hinges. He gave me the advice to look at Beslags Specialisten and there I found what I was searching for. Attaching the hinges was a bit tricky because I found out that the circular saw makes angular cuts one to one half of a millimetre askew. It was manageable when I was working with the hinges but when I milled canals for where the seat is going to run through it did not milled the same depth all the way. The solution turned out to be plugging the canal and go over it in the mill again. The trestle hinges were also a bit tricky and needed some modification due to that they were mirrored. In order to attach
them as desired on the chair I had to drill out the rivets, inverse it and hammer in new rivets. When the new rivets were on it was time to screw the hinges on to the legs. To match the brass hinges, I used brass screws which was a mistake. Two screws broke when they were almost completely screwed down which resulted in a lot of struggle of getting them out. When the two screws were out, I filled the hole with chemical wood and bought zinc plated screws that are nearly the same colour as brass.

The legs are attached in the middle with a carriage bolt. At first the idea was to plug the holes for the bolts with wood like I had done with the rest of the drilled holes in the chair. But that would conflict the circularity of the chair since it would not be possible to disassemble the chair and therefore it would not be able to sort and recycle the three different materials (leather, wood and metal). I played with the thought of using the rear part of a shotgun shell, after all, it is mainly a hunting chair. When I tried to fit a shotgun shell into the hole it fitted perfectly. The part of the shell that I am using is made of brass, just as the hinges, so in case of recycling it will be sorted together with the hinges and the carrier bolts.
Treatment
To make the chair resistant to weather and wind I used Osmo satin hard wax oil. It is a fully nature-based oil wax that is harmless for humans, animals and nature when its dry. The oil wax makes the chair water repellent and durable. I wanted to use a product that does not give the mahogany a deep shine, both from an aesthetical aspect but also from a tactical aspect. When you are hunting the last thing you want is to bring something that is shiny and reflects light which will scare away the animals.

Leather work
From earlier experience of trying to sew in leather with the sewing machines at the university, I decided that it would be better to hand in the leather to someone that has a machine that is made for leather sewing. It turned out that both cobblers in Växjö had closed for good. It was no-longer an option to not sew the back and the seat for the chair on my own.

To be able to get the best result I contacted Lena Håkansson, associate professor and textile expert on LNU Design Department. After a good meeting with valuable information I started sewing. I have quite a lot of experience of sewing in textile, but leather is different. Textile is much easier to work with because it is much thinner and lighter to sew in than leather. It took me some try runs and after a while the backrest and the seat were done. The leather is quite stretchy, but it still works and looks good.
Result

Final product
Considered that it is my first furniture made on my own, I am very pleased with the final result. It has taken many hours in the wood workshop and a couple of hours at the textile workshop. It is a special feeling, something rewarding in making a product with your bare hands and be involved in the whole process through out the project.

Compared to a regular directors’ chair, the seat is higher off the ground. A hunter uses either boots or rubber boots with a higher sole than regular sneakers. This makes you taller and therefore you need a chair that is higher. A chair that would be lower than 45 centimetres will be difficult to get up from when you are wearing boots or rubber boots because the angle of the knees is less than 90°.

The legs are imbricated to each other to gain a more stable platform with a broader contact platform to the ground. On a regular director’s chair one side of the legs are inside of the frame of the other pair of legs which creates a smaller contact platform to the ground.

Instead of using textile as in a regular director’s chair I am using leather just like in a safari chair. Leather is used to gain a better resistance towards weather. Leather will also age beautifully and gain a unique patina.

In terms of sustainability in the design it is not just made of recycled waste, it is also fully recyclable due to that it is possible to separate each material from each other.

To referral back to the two hunters that helped with the testing of the full-scale prototype they I meet up with them again to let them test the final version and receive feedback of what they thought of the chair. They both found the chair comfortable and easy to transport and said that they both would like to have a chair like that to use when still hunting.
**Exhibition**

**RE:**
When we (BA/MA Design + Change and BA Visual Communication + Change) started working with the theme and title for the exhibition, we wanted to ground it in the common theme of all three programmes; sustainability. Therefore, it was necessary to highlight the sustainability aspect in our different projects. We chose to do that with the prefix “Re”, which we together motivated as following:

“Re is a way to show the reworking of things, ideas and concepts, showing that our work is accumulative, building, transforming, reiterating and reappropriating what has been; our cycles of thought, behaviour, and practice.”

Re is a suitable prefix as it was able for all students to come up with a Re-word for their project. My Re-word is “Revalue” in order to highlight our view of waste material and how it should be revalued. Re worked as an efficient method of explaining and introducing the visitors to the sustainability theme of both the exhibition but also our programs. Re works as a link between theoretical and topical frameworks within each of the projects and repositioning of design as a response to current practices and perspectives. With Re our desire and aim was to help others to see the structural and systemic problems that we see in today’s society.16

The final title and subtitle for the exhibition was *Re; an exhibition about change and transformation.*

**Process of making the installation**
I knew from the beginning what I wanted. A white podium, an explanatory text and the chair. A direct and focused installation where the focus was fully on the chair. The chair was going to attract the visitors and create curiosity so that they wanted to know more about the chair. In order to get information about the chair their focus is then directed to the explanatory text. The installation was planned as a sort of two staged rocket. First the chair that attracts the viewer and makes them want to know more and then the explanatory text that explains the project.

At first, I wanted the installation to be a three-stage rocket. The first way to attract attention was planned to be a large vinyl print of the title on the side of the podium to plant a seed of curiosity and target the focus towards the chair and at last, to gain knowledge about the project, the explanatory text. The idea was to have the vinyl print in DIN Pro Black. I decided to not go with this idea of the vinyl print due to decisions made in the group that were working with the graphic design of the exhibition. They

had decided to print the title on the explanatory text in another font than I considered for the vinyl print. Therefore, it felt weird to have the title printed two times and in two different fonts.

The placement of the installation was at first not so exciting due to that it felt static, strict and boring. After tutoring from my teacher Terje Östling we agreed on that it would be more interesting to instead move the podium to the opposite side of the wall and not align my podium to the others. This created a more interesting installation; it draws attention as it breaks the order from the rest of the installations, and it helps the exhibition to feel more dynamic.

**Challenges**

The personal challenge for me to work in an exhibition setting was to tell myself that my installation was done. I wanted a clean impression and a feeling of simplicity, in order to let the chair speak for itself. To not disrupt the focus from the chair I decided to not use anything else than the chair, a white podium and an explanatory text in my installation. This resulted in a fairly quick and time efficient installation process, but it was difficult for me to let it go and to tell myself that it was finished. To overcome this challenge, it was necessary to install everything, test different setups, let other people look at it and them tell myself that it was done. The thing that helped me the most the let it go and stop working with it was to get feedback from fellow students and teachers as it helped me to tell myself that I am, in fact, done with my installation.

Another challenge for both me and the chair was to move the chair from the forest, its context, and into an exhibition, as far from the forest as one can come. To exhibit the chair in a totally opposite environment compared to the forest created an interesting contrast but also a sort of uncomfortable feeling for me as the designer and maker of the chair. The chair does fit in nicely in an exhibition setting and the viewer does probably not feel and experience it weird or misplaced in the exhibition setting, although for me it just felt a bit strange. The reason could be that in my opinion the chair mainly and only belongs in the outdoors or the fact that I, even though I have
been exhibiting several times before, is not yet used to and fully comfortable with
exhibiting my work in a museum setting.

**Insights**
If you are going to have an exhibition, it is crucial to have proper communication. It
should be clear for everyone involved what is happening and what needs to be done. You
can never be too clear. If you do not understand something, then ask. I can reassure
you that if you are wondering something or feel that something was unclear, someone
else probably feels the same.

We had a lot of obstacles due to catastrophically bad, and to a large extent, no
communication at all. Things turned out wrong, people edited other students’ texts
without informing them and sending it away for print. Some people lost their
exhibitions spaces when rearranging etc. At the end, the exhibition was successful,
although some things in the process could have been carried out differently.

At last, as an exhibitor it is beneficial to accept the fact that things will go wrong. To
use one of my favourite quotes: “*Improvise, adapt, overcome.*” Gunnery Sergeant
Thomas Highway, Heartbreak Ridge.

**Analysis and discussion**

**Did I reach my goal?**
In terms of making a chair for still hunting and nature enthusiasts the project have
reached its goal, although some obstacles and changes appeared during the design
process. It is a functional chair that works well outdoors and is durable against harsh
weather conditions. Another aspiration of this project was to encourage my
collaborators to become more circular and start working with industrial symbiosis,
which also has been successful. In the beginning of the project I knew that it was
needed to have realistic views on this ambition and that my collaborators presumably
would not instantly accept the concept of circular economy and industrial symbiosis.
Fortunately, both Swedese and Strömslunds liked the project and thought that it was
an interesting idea and approach. It is not clear if they are willing to make reality of
this concept in a near future, although I consider having achieved my goal since the
project has planted a seed of change at my collaborators.
**Beneficial – how?**

A collaboration between Swedese and Strömslunds would result in a new product that they can profit from. The chair would be fairly cheap to produce due to that it is made from material that has already been bought and would otherwise go to waste. They would also need to buy less material since they are making use of all the material that they buy. A new product would increase the work load and result in more jobs which benefits the municipality.

Hopefully this collaboration could also work as a platform for further cooperation between Swedese and Strömslunds and that they even start to cooperate with more companies with in Vaggeryd. Such a cooperation would benefit the whole local community in terms of economic growth.

**Possible improvements**

Naturally, there is always room for improvement. If I had better foreseen obstacles in the production stage of the chair, they might have been prevented. Although, the obstacles often led to better solutions than the planned ones. In terms of design decisions, the legs of the chair could be improved. In order to gain a more interesting design language, the angles of the legs could be changed to avoid making the angle of the legs as symmetrical as they are now to gain a more dynamic feel.

**Conclusion**

In conclusion, this project demonstrates how the furniture industry could benefit from industrial symbiosis and circular economy. Waste material does not necessarily equal garbage; most of the waste in the furniture industry is material of good quality that still has not reached end of life. The key insight that I want the reader to take with them is that you do not need to search as far as you believe in order to find quality material to work with.
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