Knitting Sitting with The Fisherman
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Fisherman and throw net
Abstract

The scene of a local motorcycle taxi driver hand-knitting a small fishing net at his stand next to a canal will never fade away from my childhood memory. It was the first time I saw the life behind the fishing net. Throughout my textile practice, I’ve reconsidered the fishing net with curiosity and nostalgia. Behind its mesh and diamond shaped structure, I see craftsmanship and the story of its creation. I would like to preserve and encourage these precious values in the net with my Master project *Sitting with The Fisherman*. The fishing net is reinterpreted to everyday life with a trace of stories within it. The net becomes a tool to gather people together like the fishing net does in the fisherman village. This project will be a pilot idea to others in different contexts, to preserve their precious traditional craftsmanship, to keep it alive by transforming the skill and technique to a new interpretation.
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1. Introduction

1.1 Intention and question

I would like to preserve and encourage those precious values in the fishing net with my Master project Knitting Sitting with The Fisherman. This project will be a pilot idea to others, in different contexts to preserve and encourage their precious traditional craftsmanship, to keep it alive by transforming the skill and technique to a new innovation.\(^1\)

*How can I make a new interpretation of a net making technique for everyday life that preserves its story by containing all the ingredients of my hometown memory and my Industrial design background?*

1.2 Delimitation

The starting point of this project was inspired from my own hometown memory of a fishing net. I decided to represent the story of my own hometown memory, Industrial design education background and textile practice through this project. A design thinking process and creative approach to problem solving from industrial design are used as a project development guideline. An essential idea of conceptual design (Postmodernist tradition) is used to shape my design. The project focuses on the handmade technique of the fishing net called “reef knots”. I would like to challenge the typical rectangular shape of fishing nets with the new design translation of the net’s character to a sitting circle that is relevant to everyday life usage. This offers a different definition of the fishing net to the user.

I choose to not include engineering process of the sitting circle in my study. But focusing on concept, appearance and material of the outcome. Since the sitting circle made of new formula of materials, process and structure, it might not be able to sit on at this stage. The sitting circle requires engineering development in the future.

1.3 Overview of the report

First I will tell my own personal memory through narrative. The craftsmanship and slowness in the fishing net will be revealed through experimentation, research and observation in the background chapter. In the theory chapter, I will reflect on my working process by using a design-thinking approach as a guideline. I will go deeper into my design process in method part II and discuss the design development, material selection and aesthetic choices. Then the result will be presented which will be followed by discussion about the project and a conclusion.

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\(^1\) innovation | inə vəˈSHA(ə)n noun
the action or process of innovating. • a new method, idea, product, etc.
2. Background

Hometown memories

I am a Thai textile designer, crafts investigator and learner with an industrial design background, who has moved across the world to enhance a perspective of my practice. I grew up in a small province called Kanchanaburi, which is surrounded by mountains, rivers, ponds and lakes. Growing rice is the main agricultural activity in the area since around 2800 BC\(^2\). Rice fields are always located near a water resource such as river, pond or canal. My family has owned a rice field for five generations. We spent our weekends at a cottage by a pond, which was surrounded by the rice field. This is the reason why my childhood memories always relate to river culture. Every time I recall memories about home, one of the most prominent memories that appears in my head is my hometown scenery, the rice field and a familiar fishery scene. My first strong memory about the fishing net was a local motorcycle taxi driver hand-knitting a small fishing net (hand catching net) at his stand next to a canal while waiting for a client. This special memory will never fade away. It was the first time I saw the life behind the net, it was not just a small part in the hometown scenery. Kanchanaburi is located in the west of Thailand, just two hours away from Bangkok, the capital. Because of its location and natural resources, Kanchanaburi has changed from an agricultural society to an industrial agricultural society. We are moving fast and leaving many important things behind. Local people have left the agriculture life and knowledge that was passed on from older generations to work in factories. For approximately the past twenty years, the number of industrial estates has increased rapidly in many areas. Most of the local people prefer to work in factories for a fixed income rather than relying on nature. The local people no longer catch fish for domestic purposes. The fishing net used to be part of everyday life but now it is only used by fishermen in the fishery industry.

\[\text{http://www.thairice.org/html/aboutrice/about_rice1_1.html}, \text{ 23032015 The information was originally published in Thai Encyclopedia for juvenile by Appointment to H.M. the King of Thailand Volume 3, “Rice”, 1977}\]

\[\text{The Economist Newspaper, Aug 3rd 2013 From the print edition: Asia, 22092014}\]
Craftsmanship in Fishing net

Now I am in Stockholm for higher education. These past ten years, I was training in Industrial design school and practicing as Textile designer. Four years ago I moved to Chiang Mai, a province in the north of Thailand, for work and gained more experience. The local people and the hill tribes are renowned for their hand making skills. I had a great time learning many new techniques from the makers such as embroidery and patchwork. Unfortunately they got unfair payment for the special work that only a small group of people can do. As is the same in India, many fascinating handmade textiles are created with unique Indian craftsmanship i.e. sequined embroidery and block printing. The makers work hard by spending a great amount of time on the textile pieces. Sadly they earn a small income as well. They are treated as workers and not craftsmen. Why? These skillful people deserve to be honored in every way. From my education, journey and career, I now look back on my background with different eyes. I observe the fishing net with curiosity and nostalgia through my practice. Behind its diamond shaped structure, I see craftsmanship and the story behind. It has motivated the starting point of my master’s degree education with the following questions: Why has the fishing net never been considered textile? Why are the honor of the net maker, the craftsmanship and the story of the net’s creation forgotten?

When I started the Textile in The Expanded Field course at Konstfack, I used the fishing net as a center of experimentation to answer my starting point question: “Why has the fishing net never been considered textile?” Even the hand making process is similar to knitting. From the spring semester to the autumn semester 2013/2014, this question led me to textile courses to understand the relation between textile producing techniques and the fishing net. I experimented in different weaving and knitting techniques that give a net-like structure. I also explored other possible connections of the net’s appearance to textile techniques such as screen printing and dyeing. For weaving, the threads are required to work in both directions. Vertical threads (warp) with the same length are fixed with the loom and only a horizontal thread (weft) interweave to create a piece of textile. However, from my personal experience, the knitting process is most similar to the hand making process of the fishing net. A yarn travels horizontally layer by layer to create the net piece. A net knitting needle is passed up through the previous mesh and bound around that mesh. This hand knitting process needs the help of a measuring stick to form a standard size mesh for the whole net piece. Hands, mind and eyes work together as practiced skill to create the fishing net.

From a literature research about fishing net’s history, so far I found two books that assure my conclusion about knitting fishing net. The book from 1869 “The Industries of Scotland, their Rise, Progress and Present Condition.”

**KNITTING** or weaving fishing-nets is one of the oldest branches of the textile manufactures of Scotland. Many centuries ago the dwellers on the shores of Caledonia knew how to twist the fibres of flax and hemp into traps for fish; and for many years past the manufacture of nets, lines, and other engines for capturing the finny tribes, has been an important branch of industry in the towns and villages adjoining the sea. It became customary for the wives and families of the fishermen to spin and weave the nets required for their mutual support. The domestic spinning
For more than 150 years, knitting fishing net and knitwear were domestic work especially in Scotland. A similarity in tools and hand techniques were used, from the very beginning process of yarn spinning to knitting. With their profound knowledge in knitting fishing net as well as knitwear, provided solid fundamental for the invention of net loom. The fishing net and knitwear closely develop to industrial process. This is the reason why Scottish does not separate fishing net from knitting. The book “The Industries of Scotland, their Rise, Progress and Present Condition.” Also described fishing net production process as weaving, except there is no relation between technique and process. It is only because fishing net was producing from machine’s called “Net loom”. And fishing net was domestic work in the fishermen’s family. Woman and children gather together to make the net. Hemp and Flax were main material for making the net and then cotton replaced them in 1870s. The 2nd book “Rope, Twine and Net making” also mentioned the relation in technique of hand knitting and fishnet making.

"Net-making by hand very similar to knitting. You can 'cast on' the chosen number of meshed, and you can increase or decrease by braiding twice into the edge mesh or by braiding to mesh together."  

Net knitting is done quite differently today than in the 19th century, in both the west and the east. Most net is made by machine. In some small-scale fisheries, fisherman hand knit hand catching nets themselves, but they use only man-made material such as nylon or polyethylene. Making a fishing net by hand requires a high degree of skill. Young fishermen had to spend time to practicing before they were able to make a net. The skill was passed down from generation to generation. In the hectic world of today, this skill is only used for maintenance, there is no time left for creating anymore. The precious value of craftsmanship and the story of its creation are forgotten.

I decided to explore the traditional net making technique. The first step was to learn to make the fishing net myself from the French Encyclopedia. It was not easy and very frustrating. Then I asked Amica Sundström, our textile technique teacher, to teach me this specific skill. It was much easier; my questions got answers. From this experience I now understand the importance of the net making knowledge being passed down from generation to generation. We practiced with cotton first because from Sundström’s experience, she knows that cotton can create a firm knot, which made it easier to learn. After that I used the hemp yarn, original fishing net material. At first it was difficult. A 100 cm x 50 cm net piece took me more than twenty-four hours to knit. The first two rows of mesh were the hardest. It was truly a practice of the hands, mind and eyes. After some time I began to understand the specific material characteristics of hemp. I was able to knit a better mesh in the following rows. When my very first fishing net piece was finished,
I was so proud on myself and thankful of the teacher’s knowledge. Later on, I found out the name of the net making technique I’d learned. It’s called reef knots.

I began researching deeper into the reef knot method and got exciting information about those who have used it.

Reef knots are used in the Far East and were used in Roman times. In simplest terms, the braider passes the needle down through the mesh instead of upwards before throwing a hitch.\(^7\)

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8 Anthony Sanctuary, Rope, Twine and Net making, Buckinghamshire, 1996, p. 16
There are also many different types of knotting techniques for making fishing nets, but one particularly interesting hand braiding knot was developed to use in the manufacture of machine-made fishing nets. Other complicated patterns are created for appearance and not simply to use as fish catching tools.

The Birdport knot is still a sheet bend, but it is made round the fingers of the left hand and the needle is inserted as a single movement, in contrast with the two stages of forming the fisherman’s knot. This is the method used by net machines. ...Other patterns tend to create a design rather than a plain row of meshes and are more allied to macramé work.  

From my personal experience after creating my first hand made fishing net, the connection of making and pleasure became apparent. Then I recalled my knowledge about the Arts and Crafts movement¹¹. William Morris says *“for the people and by the people, and a source of pleasure to the maker and the user”*¹². Morris suggested the idea that making could lead to pleasure, not only in the end result but also in the craftsmanship. But Morris’ idea about the Arts and Crafts movement was impossible to accomplish. Why? Was it too idealistic? His idea failed to offer pleasure to everyone; it was impossible for makers to enjoy necessary labor-intensive production time and unaffordable products. Only wealthy customers appreciated the end result of the making. What if the maker is the user, or the maker gets results by making the piece? Will there be pleasure?

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⁹ Anthony Sanctuary, Rope, Twine and Net making, Buckinghamshire, 1996, p. 16
¹⁰ Anthony Sanctuary, Rope, Twine and Net making, Buckinghamshire, 1996, p. 14
¹¹ The Arts and Crafts Movement was one of the most influential, profound and far-reaching design movements of modern times. It began in Britain around 1880. [http://www.vam.ac.uk/content/articles/t/the-arts-and-crafts-movement/](http://www.vam.ac.uk/content/articles/t/the-arts-and-crafts-movement/ 14032015
In the summer of 2014, I took a research trip with hope of answering those questions. I interviewed small-scale fishermen from the east coast of Thailand. Phetchaburi is located on the east coast at the northern end of the Malay Peninsula, which in the Gulf of Thailand. Ban-Laem district is one of the oldest fishery villages in the country. The district is like a small complex village for fishermen. Everything that is related to fishery is there; a wooden shipbuilding factory, a dried seafood factory, a fishing net shop and a house. The eastern trawl\(^{13}\) is catching method which uses a net built in a conical shape. The net is pulled through the sea by one or two fishing ship. The position of the net in the water column is controlled by the length of the warp and by varying the speed of the vessel.\(^{14}\)

On my trip I visited the fisherman house. The members of the fisherman group were between the ages of thirty and fifty and were working on net maintenance under the house. The fishing net is the center of their life. Fishermen spend time together while working with the net. Talking and sharing are common activities when they gather. The fisherman house was built in the traditional Thai architecture style.\(^{15}\) The residential building is influenced by Thai architecture from the 1690’s and was built on head-high stilts. This fisherman house was built around 1950. The area under the house is for working, storage and lounging. When I visited, the fishermen were sitting on the floor under the building, relaxing and working while listening to music. We had a conversation about the fisherman lifestyle, traditional fishing techniques, material and the future of small-scale fishery. These local fishermen had started their fishing careers at about the age of eighteen. All of them are connected to fishery in different ways; some of them had gained net fixing skills when they were boys. A fifty-six year old man, who is the third generation group leader, had answered my technical question with kindness. He’d said, “Normally I won’t tell anyone but you...it is my family’s secret knowledge”.

\(^{13}\) https://web.sfos.uaf.edu/wordpress/arcticeis/?page_id=456 24032015
\(^{14}\) Robert Lauth, UAF School of Fisheries and Ocean Sciences, http://fish.gov.au/fishing_methods/Pages/nets.aspx 24032015
\(^{15}\) http://www.amita.co.jp/museum/docs/trawl1.htm 24032015
\(^{16}\) Thai traditional architecture – for Thai building house on height stilts is common to all parts of the country. It offers protection from dirt, hostile wildlife, thieves, and most importantly from the monsoon floods, which affect all of Thailand. The traditional Thai house is ideally adapted to its environment. The open high-pitched roof facilitates air circulation. Open windows and walls in combination with a large central terrace provide ideal ventilation and offer relief from the hot and humid climate. Information from http://www.orientalarchitecture.com/thailand/statewide/thaihousesa.php by Thomas Knierim 23032015
Then I asked about the handmade fishing net and why they’d stopped using it. The answer was, “It’s too slow. We do not have time to waste”. He recalled from his childhood memory that even then all the nets were made by machine. Only some small hand catching nets were hand knitted. He also explained the net building processes of machine made fishing net, how to select the appropriate size of the net’s mesh to fish, where and how to put net’s floats and weights on, what kind of net weight to use, what shape it should be, how deep, material, etc. I asked him how he knew all this. He said, “I just know. It’s from my experience”. From my observation he was fixing the fishing net with the reef knots method, the same as the technique I’d learned at Konstfack. Even though all the fishermen use machine made nets, they still require hand skill to be built and repaired. The fishermen made their own measurement tool for a specific use. My last question was about his thought of the future of the small scale fishery. He answered my question simply. “We will not stop fishery. If they won’t do this nobody is going to do, there will be some of us continue this work.” He told me about the former youngest man in the group, who had left to build his own team. “He is the next generation,” the group leader had said.

From my interview, I would say the fishermen gain much more than fish. 134 years later, William Morris’ quote works there in Phetchaburi. I can feel pride, honor and strong connection to them and their fisherman lifestyle. A net might be less important to others but a part of the fisherman’s spirit lives in the fishing net. It is about more than just a career and harvested fish. Their work and everyday life is intertwined together as the life of a fisherman. It is lifetime career. Even when senior fishermen stop working on the ship, they still pass on traditional knowledge to the next generation. It is such an honor to pass down your family’s secret knowledge. The craftsmanship is in every step of their work that requires specific practicing skills. Although everyone uses machine-made fishing nets today, all the fishermen still have the skill of making nets by hand. The hands, mind, and eyes still work together.

Slowness in Fishing net

Every skill takes time to practice and learn. The amount of time it takes to learn something relates to the complexity of the skill. In the 19th century, knitting a fishing net in Scotland would take five weeks to complete. From my research with a group of fishermen in Phetchaburi Thailand, I got an answer as to why they stopped hand knitting fishing nets for their trawler method. The answer was, “It’s too slow. We do not have time to waste”. They complained of slowness and of time. What’s wrong with slow?

As Carl Honoré mentioned in “In Praise of Slowness.”

“When things happen too fast, nobody can be certain about anything, about anything at all, not even about himself.” All the things that bind us together and make life worth living—community, family, friendship—thrive on the one thing we never have enough of: time.” 17

17 Carl Honoré, In Praise of Slow, United States, 2004, p. 21
Honoré sees fastness as blindness, when things happen too fast. Then he reminds us to see the positive aspects of slowness that makes life worth living. “A life worth living” relates to quality, which can come from many approaches. From my own net making experience and my experience from interviewing small-scale fishermen, I found the relation of slowness to quality and value.
3. Method (process – practice) PART I

Investigation of Slowness

I had a chance to investigate deeper into the relation of slowness to quality and value in a course called “Making history - Going public” at Konstfack in the autumn semester of 2014. Pleasant slowness is an experimentation of the fishing net technique in a larger scale. The project offers slowness to the commuter of Telefonplan station\(^\text{18}\) by inviting them to participate in a quality experience. The intention was to slow down and catch attention from Telefonplan’s commuters, who rush walking to the station. It is also a metaphor for the forgotten present time of people who are trapped by technology and rush only with their own thoughts. I successfully caught people’s attention but unfortunately it was snowing that day, so no one stopped to continue making the fishing net.

My personal idea about the relation between quality (value) and slowness changed throughout my project. Because I practiced making fishing nets for so many hours, the fine quality fishing net was completed in less time. I am now making nets faster and the quality still remains the same. I decided to leave the concept of slowness and keep only the important core of the net making practice, which is craftsmanship and its stories. This led me to finalize the research question of my master project Knitting Sitting with The Fisherman.

“How can I make a new interpretation of a net making technique for everyday life that preserves its story by containing all the ingredients of my hometown memory and my Industrial design background?”

\(^{18}\) Telefonplan subway station locates next to Konstfack. It is in Hägersten ,Stockholm suburban area.
Pleasant Slowness, Telefonplan. 2014
4. Theory (contextualization)

From years of training as an industrial designer, I’ve learned there are many design methods to approach my research question. A design thinking method from IDEO\(^\text{19}\) is introduced all over the world to educate industrial designers. From my personal experience, this approach has been taught in industrial design programs in KMUTT\(^\text{20}\) in Thailand, at the industrial design institute in FHNW\(^\text{21}\) in Switzerland and also in a design thinking course at SSES\(^\text{22}\) in Stockholm. In 2011, IDEO launched the Design Thinking for Educators Toolkit, a diagram of the design process. This toolkit is designed to help elementary school teachers create solutions for everyday challenges. I apply the design toolkit process to my master project because it has more potential to adapt to my conceptual design\(^\text{23}\) project that focuses on the maker, the designer and the user experience. This simple version has similar processes, methods and tools to the process IDEO uses to tackle some complex challenges of human-centered design\(^\text{24}\) based projects, which focus on user experience in terms of physicality and psychology with a product (service, space, etc.).

One of the design thinking method’s main focus is function. It is quite contrary to my personal preference of communicating my design. I chose to leave function. I decided to shape my design concept with the essential idea of conceptual design, which focuses on concept rather than function. I see the association of design thinking and conceptual design as a train journey. Design thinking helps me find possible train routes to my destination. Conceptual design is my own personal preference to design my own journey. I can choose the connections, at which stations to stop and change, as well as the experience gathered along the journey.

Design thinking approach

The design process is what puts design thinking in action and design thinking is a process for problem solving. The process always uses a project progression guideline with steps to follow. If a new problem occurs during the process, the last three steps (ideation, experimentation and evaluation) can be repeated as a loop until the problem is solved.

For a clearer picture, I would like to give the example from a legendary VDO about the IDEO working process from 1999\(^\text{25}\). The VDO is about a shopping cart design project for a supermarket in America that lasts five days. David Kelley CEO of IDEO started by giving his explanation on the design process.

He said “The point is that we are not actually expert at any given area, we are kind of expert in a process of how to design stuffs. So we don’t care if you give us toothbrush, toothpastes

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19 IDEO (pronounced “eye-dee-oh”) is a world famous American design firm found in 1991 that takes a human-centered, design-based approach to design the products, services, spaces, and interactive experiences.
20 King Mongkut’s University of Technology Thonburi (KMUTT), School of Architecture and Design
21 University of Applied Sciences and Arts Northwestern Switzerland (FHNW), Institute of Industrial Design
22 The Stockholm School of Entrepreneurship (SSES)
23 European design movement in 1990s started in Holland. Given concept was seen as more important than form, there was no uniform stylistic approach among designers of this movement.
24 DesignThinking begins from deep empathy and understanding of needs and motivations of people.
25 ABC News, The Deep Dive, ABC News Home Video of Nightline on 02091999 - IDEO Shopping Cart 14032015
tube, tractor, space shuttle or chair. It’s all the same for us. We want to figure out how to innovate by using our process applied to it.” He approaches every project in the company with the design process. Designing a shopping cart starts with brainstorming by an eclectic background team. They analyze the problem and categorize it. Safety is an important issue. Then they divide themselves into groups and do research to find out the first hand data from people who use, make and repair shopping carts. They observe supermarkets, talk to supermarket staff and gather information from producers and repairmen. Kelley also talked about his design trick. The trick “is to find the real experts so you can learn much more quickly than you could from doing it the normal way by trying to learn about it yourself.” After the research observation, the design team gets back together again to analyze the information they have and to help build each other’s ideas. This is followed by sketches and voting for buildable ideas. Mock-ups from different design concepts are made. The group comments on mock-ups and takes good elements of each concept and put them together in the final design.

The final outcome of the project is considering issues such as shopping behavior, child safety, and maintenance cost. In the end, the shopping cart has two removable shopping baskets on top with hooks to hang shopping bag after shopping. They not only design the cart but also a new way of shopping. The customer can leave the cart and take a shopping basket to a crowded area. To conclude, the shopping cart prototype is presented to users to get feedback for last state refinement.

**Conceptual design**

Ever since I was an industrial design student, my favorite designs came from the conceptual design movement. I appreciate the honest way of making that relates to craftsmanship, the sense of humor and the story within it. Communicating the story through design and leaving the open question to the user (audience) with an honest appearance of the making is my design language. It harmonizes with the conceptual design context. I decided to use the essential idea of **conceptual design** to help shape my design concept.

A conceptual movement sought to revive a rational, highly conceptual approach to design. It refined the concept of design in a radical way, so that design would be thought of as a culture force rather than simply a mean of making functional objects for industry. Accordingly, for the Conceptualists, form followed concept rather than function. This rational, theoretical approach to design tended to blur the boundaries between design, art, craft and industry; it played with the ambiguities between “high” and “low” art, favoring, in fact, the beauty of the banal; and it revealed in the idea that objects could have multiple layers of meaning.

With its strong philosophical and aesthetic basis, the Conceptual movement became a major force in European design during 1990s.  

The final outcome of “Sitting with The Fisherman” has meaning in different layers. It has a poetic layer from my hometown memory with the story of its creation.

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It has a reinterpreting layer of the net making technique to new translation. There is also a layer of design that challenges the users expectation in the fishing net’s character. And the final appearance layer is chosen material and creating process. These layers can answer some part of my research question. “How can I make a new interpretation of a net making technique for everyday life that preserves its story by containing all the ingredients of my hometown memory and my Industrial design background?”

I compared the IDEO design thinking process to my own personal preference process of Design Thinking for Educators Toolkit and my conceptual design idea. IDEO chose the first hand information about the shopping cart by only researching with experts in the field. But I choose to do both by doing research at the fisherman village and by learning to make the fishing net by myself. It’s less effective but gives more pleasure. IDEO focuses on function and users. In this case they are supermarket customers, children, staff and repairmen (everyone along the using process). But my main focus in the Sitting with Fisherman project is concept rather than function. I pay more attention to preserving and encouraging precious values in the net than designing a functional (ergonomic concern) outcome from it. On the other hand, the new shopping cart offers a new way of shopping since supermarket customers take only a shopping basket from the cart and walk around. The final outcome of my master project will give new interpretation to the fishing net.

Design Process diagram

27 Design Thinking for Educators Toolkit, IDEO, 2011, p. 16
The diagram from IDEO was provided to educators as a part of Design Thinking for Educators Toolkit project 2011. I reflect on my working process by using design-thinking approach as a guideline since the beginning. Each phrase of the process can be linked to the report chapters as listed below.

**Phrase 1 Discovery** (Understand the problem, Prepare research and Gather inspiration)
*Background*: Hometown memory.
It is the starting point of my master project. I looked back to my background with textile practice, which leads to the first step in my research question, “Why has the fishing net never been considered as textile?”

**Phrase 2 Interpretation** (Tell stories, Search for meaning and Frame opportunities)
*Background*: Learn to make fishing net, Experiment with textile techniques and Research the observation of the fisherman village in Phetchaburi.
The first step research question took me to the textile techniques courses to understand the relation of textile and net making technique. From my personal experience, I found that the fishing net is made in a process similar to knitting. The research observation in Phetchaburi enlightened me about the stories of life behind the fishing net. Then the project was named “Knitting with the Fisherman”.

**Phrase 3 Ideation** (Generate ideas and Refine ideas)
*Background - Method (process – practice) PART I*: Examine craftsmanship and slowness in fishing net.
From experiments, research and observation, I gathered knowledge about the fishing net. I left slowness because I have learned that I can create handwork faster and with quality. Then the idea was refined to finalize my master project research question, “How can I make a new interpretation of the net making technique for everyday life, that preserves its story behind by containing all the ingredients of my hometown memory and my industrial design background.”

*Theory - Method (process – practice) PART II*: Design criteria
From a combination of the design thinking approach and conceptual design, design criteria are set as the tracks to help accomplish my research question. If my master project was a journey, design thinking would be options of routes to the destination; conceptual design would be the preference of the experience of the journey. Design criteria are lists to help complete the prospective journey. The final outcome of my project is defined by the design criteria. The project name was changed to “Knitting Sitting with The Fisherman”.

**Phrase 4 Experimentation** (Make prototype and Get feedback)

**Phrase 5 Evolution** (Track Learning and Move forward)
After I figured out my final research question, I began the practical design process. These three steps can be repeated as a loop until the research problem is solved to the desired result.

Method (process – practice) PART II – Result: Sketch idea, design the direction, material experimentation, mock up, feedback, material selection and prototype

Ideation phrase is used to generate ideas for the final outcome of my Master project with many sketch ideas. The mock up and material experimentation result selected ideas, which will be evaluated to narrow down the ideas. And then the survival idea will be refined in this loop until the desire result is reached.

5. Method (process – practice) PART II

From design thinking and the essential idea of conceptual design, I set myself the design criteria as a track to help accomplish my research question.

“How can I make a new interpretation of net making technique for everyday life, that preserves its story behind by containing all the ingredients of my hometown memory and my industrial design background.”

**Design criteria**
- Bring back the fishing net to everyday life
- Tell the story of life behind the fishing net to the user through the final outcome of the project
- Display the fishing net’s characteristics; airy, repetitive and made by a yarn that travels horizontally layer by layer to create the final outcome.
- Offer a different definition of the fishing net to the user

**Bring back fishing net to everyday life**

From my intention of my master project to preserve the precious net making craftsmanship and keep it alive by transforming the skill and technique to a new innovation, I would like to bring back fishing net to everyday life as the outcome of the project that combines the past and the present of fishing net stories.

In my hometown, the fishing net was used by the local people to catch fish for domestic consumption in everyday life. From my research observation in the Phetchaburi fisherman village, the fishing net is also a center of the group, fishermen sitting around sharing their life story while working on the fishing net. In the 1800s in Scotland, it became customary for the wives and families of the fishermen to spin and weave the nets required for their mutual support. The fishing net will be alive in everyday context again as a tool to gather people and connect them together.

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28 David Bremner, The Industries of Scotland, their Rise, Progress and Present Condition, Edinburgh, 1869, p. 312
Definition of everyday life

Everyday life from my personal experience in Stockholm is “fika”\(^\text{29}\). Friends in Textile department gather at our common sofas and chairs and drink coffee together. Talking and sharing is always part of “fika”. In architectural context from A Pattern Language: Towns, Buildings, Construction books\(^\text{30}\)

. . . A group of chairs, a sofa and a chair, a pile of cushions – these are the most obvious things in everybody’s life – and yet to make them work, so people become animated and alive in them, is a very subtle business…the rough shape of a circle. When people sit down to talk together they try to arrange themselves roughly in circle.

Everyday life from both my personal experience and architectural theory have a group of sitting objects or a pile of cushions. People come and sit together and eventually arrange themselves roughly in a circle. My first idea was to design a stool but that is only for one person. In “fika” there is at least two people. So I would like to design a sitting object for a group of people that can adjust to a circle shape. Not only will the fishing net craftsmanship become alive but so will the people become in this sitting circle.

The conceptual design movement is examined in four different perspectives: designers reinterpreting found objects; designers reinterpreting everyday object; designers reinterpreting archetypal objects; and designers dissolving the line between art and design.\(^\text{31}\) A sitting circle reinterprets found objects; This is because the fishing net is a found object and its skill and technique is reinterpreted to an everyday object.

Design development

In this phrase, three steps of the design thinking approach can be repeated as a loop until the research problem is solved to the desired result. It can be used in any size of problem.

< > Phrase 3 Ideation < > Phrase 4 Experimentation < > Phrase 5 Evolution < >

First idea

As mentioned above, my first design idea was a stool that would keep the fishing net’s character of a yarn traveling horizontally layer by layer to create the outcome. The net appearance was transformed to a random pattern with the faded color character of used net. My idea was to use 3D printing technology, but it would lose the core idea of preserving craftsmanship. The reinterpretation would be drawn too far to be connected to the handmade fishing net. The 3D printing technology would become bigger than the design concept. Rope (fisherman tools) was considered instead of 3D printing technology but the connection to the fishing net would still be absent. I later intended to use the same design

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\(^{29}\) Fika is Swedish for a coffee break that’s more about socializing than drinking coffee. And something sweet is also welcome. Information from [https://sweden.se/culture-traditions/fika](https://sweden.se/culture-traditions/fika) 25032015

\(^{30}\) A Pattern Language: Towns, Buildings, Construction, Oxford Univ. Press, 1977, p. 858, 859

\(^{31}\) R. Craig Miller, Penny Sparke, Catherine McDermott , European Design Since 1985: Shaping the New Century, Denver, 2008, p. 184
but change the material to fabric but there would still be no connection between the stool and the fishing net. The first idea was presented and got feedback that it had a pattern only at the front or the back view, the left and right view showing just flat surface. So I decided to go back to < > **Phrase 3 Ideation** < > to generate more ideas.

*First idea stool: Sketch, Paper mock up, 3D printing rope stool, Fabric stool*
Second idea

I looked back to my design criteria and trying to fulfill the entire list, I came up with a second design in a round shape, which could solve the problem of the First idea having a pattern in only the front or the back view. The second design brings back the repetition characteristic of the fishing net to the stool. It uses only one piece of folded fishing net to create the seat. The stool would be made of yarn in fishing net technique and be coated with Epoxy resin\(^\text{32}\) to be strong enough to sit on. The fishing net is reinterpreted to a group of stools with a trace of stories within them. The net needle will be left with the stool to leave the trace of the life behind its creation to the user. A paper mockup of the stool was unstable, which led to another idea of a rocking chair to enhance the unstable properties. A fun rocking chair using feet to control it relates to the fisherman’s posture while making a net. Feedback from the presentation of the second idea is that the design still lacks a feeling of togetherness, even if it is a group of stools.

\(^{32}\) [ˈpäksə] noun (pl. epoxies) (also epoxy resin)

an adhesive, plastic, paint, or other material made from a class of synthetic thermosetting polymers containing epoxide groups. / It has a wide range of industrial applications, including metal coatings, use in electronic and electrical components, high tension electrical insulators, fibre-reinforced plastic materials, and structural adhesives commonly used in boat building.
Second idea stool: Paper mock up

Second idea stool: Rocking chair made one piece of fishing net folding. Net needle - a trace the life behind its creation
Third idea

The idea of the sitting circle came in connection to everyday life and the feeling of togetherness. It is a development of the second idea by keeping the net needle and the net character. I came up with two design directions. The design direction above (A) connects the stools with a yarn. But I was still not satisfied with the overall look of this design. The repetition of stools represents more of an industrial made process than the beautiful character of a handmade net. In the design direction below (B), the whole seat is connected as an organic shape that made of one piece of net. It loses the repetitive characteristic of the fishing net but keeps the airy and flowing character.

Design evaluation is introduced to help make decision on design directions.

**Direction A**

*Pro*
- Strong “designer” appearance
- Communicate “A new interpretation of the fishing net to the user”
- Repetition and airy character

*Con*
- User (audience) loses track of too forward interpretation
- All same design (Industrial production image)
- Lack of connection feeling

**Direction B**

*Pro*
- Strong craftsmanship appearance
- Keep original net character “Single yarn”
- Honest communication fishing net to user (audience)
- Airy character
- Connection feeling
- Can apply textile technique to design (i.e. drapery)

*Con*
- Lose “A new interpretation”?
- No challenge to user (audience) perception about fishing net
Fourth idea

From design evaluation, Direction B is chosen to refine the design to a sitting circle. The main material of this idea is toile because of its softness and tactility. So the net needle was replaced by a long piece of toile, rolled on the floor. Ulrika Mårtensson, my tutor, made the comment that the new refinement loses the essential idea of the conceptual design that blurs the boundary between art and design. It has no pattern or format. The sitting circle becomes a random piece of net. The fishing net is reinterpreted as art rather than design. I agreed with her and tracked back to design criteria that is set to help answer a research question. This new refinement is not blending into the everyday life context. The net needle is replaced by a piece of rolled toile, which might not represent the net making technique. The repetitive character is absent in the work and it does not challenge the users expectation about fishing. I was lost so I decided to go back to <> Phrase 3 Ideation <> to generate more ideas again.

Forth idea Sitting circle: Hanging net
Fifth idea

I looked back to my third idea and took the good elements of each design direction and put them together in the fifth design. It will contain: Design appearance with sense of craftsmanship, Communicate “A new interpretation of fishing net to user, Repetition and airy character, Connection feeling, Same design but different (not Industrial production image), Can communicate the life behind its creation to user (audience).

In the idea generation phrase, a final development idea can fulfill the entire list of design criteria. It can bring back the fishing net to everyday life by reinterpreting it to the sitting circle. It can tell the story of the life behind the fishing net to the user through the final outcome of the project by leaving the hand making trace (net needle) to provoke the user’s curiosity. It can display the fishing net characteristics; airy, repetitive and with a yarn horizontally traveling layer by layer to create the outcome. It offers a different definition of the fishing net to the user by giving a new interpretation of the fishing net’s usage. It has a delicate appearance but is strong enough to carry heavy weight. (The sitting circle requires engineering development in the future.)
Fifth idea Sitting circle: A final design

Fifth idea Sitting circle: Paper mock up
The final development design is a module of the sitting circle that connects two stools to one bench with different heights to create a rhythm and reduce sense of repetitive industrial made of design. Instead of having many stools as Third idea (A), I decided to have one lower bench in the middle of sitting circle. Fifth idea brings back the net repetition character to the folding pattern of the sitting circle. A single yarn is used to knit a piece of net to create the connected modular seats. It will be made of yarn, coated with Epoxy resin on some parts to keep the shape. The user can sit on the hard seats or the soft loose net on the floor. The user can feel the connection of all of the seats. The fishing net is reinterpreted to the sitting circle with a trace of stories within it. The net needle will be left with the stool to leave a trace of the life behind its creation to the user.

The connected seats are designed as modules, able to be arranged together to create a big or small sitting circle. The soft loose net of the connected seats offers the user the ability to arrange the seats themselves.

A paper mockup was made to help refine the proportion of the final design. The dimensions of the seats came from research of existing products combined with experiments on mockups from the first and second ideas.

Stool dimension W: 30cm x D: 30cm x H:40 cm
Bench dimension W: 60cm x D: 35cm x H:30 cm

After studying the paper model of the bench, I decided to reduce the depth of the bench to 30 centimeters, the same depth of the stool, so that all of the seats can be made from a single long net piece.
Material selection

I am applying three steps of my design thinking approach to the material selection phase as well. The design thinking can be repeated as a loop until the material problem is solved to the desired result.

Phase 3 Ideation Phase 4 Experimentation Phase 5 Evolution

The material experimentation process runs parallel with the design development process. Material experimentations aim to find an effective combination of materials and making technique as well as to find the desired appearance of the sitting circle.

Hemp and flax were net materials in ancient time, until around 1870 when cotton replaced them. When the Industrial Revolution came along, the base became nylon or plastic. My design reinterprets the fishing net. To step forward, I would like to use material that translates fishing net to the same level of design.

At the Stockholm furniture fair 2015, I gathered information about Interface, a carpet company that uses recycled fishing net to create their carpet. Fishing nets are made from Nylon 6 which is the same as carpets. Net Works is an organization from Interface that buys marine net waste from the fisherman village in the Philippines and Cameroon. The project helps people to earn a fair income and also helps the environment. The wasted net is sent to The Netherlands to be recycled to NET EFFECT™ nylon yarn and then woven into a carpet. NET EFFECT™ is a perfect material. It is a new translation of the fishing net in my design. Interface kindly gave me a material sponsorship for my Master project. NET EFFECT™ yarns has a limited color range, so I chose to work with blue shades because of the limitation on the material and blue is also the symbolic color of water that connects to my hometown memory and sea.

A seat made from nylon yarn needs help from a reinforced material. The recycled fishing net yarn tells the story while the reinforcing material helps strengthen the outcome. Carbon fiber and aramid fiber are used in the car, boat and spaceship industry and also for functional garments such as bullet proof vests, industrial gloves and motor racing shoes. A composite yarn is aided by Epoxy resin to freeze the shape and make the reinforced material stronger. Because Epoxy is a toxic chemical, I looked for another option to make the yarn stronger from a tutorial with Johan Paalzow, a teacher from the sculpture studio at Konstfack. Unfortunately, Epoxy is my only option right now. I am searching for a future replacement for Epoxy resin. Acrodur® Acrylic binder for fiber bonding and high-fiber composite molding is a less toxic option.

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34 David Bremner, The Industries of Scotland, their Rise, Progress and Present Condition., Edinburgh, A. and C. Black, 1869, p. 312
Material experimentation I

“Wood glue is an option if you prefer not to use Epoxy.” It was a suggestion from a friend. I made a sample with acrylic yarn coated with wood glue before I could use epoxy at Konstfack. The wood glue could not keep the three-dimensional shape of the acrylic yarn, so Epoxy resin is my only choice. I made a hand sized fishing from NET EFFECT™ yarn knitted with Aramid fiber. I was trying to dye the color of Aramid from yellow to blue but it turned green afterwards. During the knitting process, the aramid yarn frayed all over the piece. But Epoxy made the piece very strong. The net pattern felt breakable after the application of epoxy, which was because the pattern was too thin. Epoxy took over the felt tactility. After I applied Epoxy on NET EFFECT™ yarn knitted with carbon fiber, both materials turned strong but the carbon fiber became smaller and brittle. There is an interesting type of felt made from recycled PET bottles. I would like to try the epoxy application on normal felt first. If it gives a desirable result, I will try to find the recycled bottle felt.

Material experimentation I: left- Acrylic yarn coated with Wood glue, right: all sample coated with Epoxy (clockwise) - NET EFFECT™ yarn knitted with Aramid fiber by fishing net technique, Spray painted Felt cut in fishing net pattern and NET EFFECT™ yarn knitted with Carbon fiber.
Material experimentation II

I learned from my mistakes in my experimentation and have made a thicker pattern for the felt. I took it out of the mold after 24 hours as instructed, but the shape changed afterwards. I have learned to leave the piece 72 hours before taking it out of the mold. Felt with Epoxy coating is not strong enough because the shape turns flat after hand compression test. From my research exploration, textile knitting is similar to the fishing net making technique so I would like to experiment on NET EFFECT™ yarn knitted with carbon fiber in two techniques. The carbon fiber frays all over the knitting piece, both materials become strong and unfortunately the frayed Carbon fiber turns into tiny pins.
Material experimentation III

I returned to experimenting on toile because the Fourth idea required soft tactility. I got the best result from Toile net in the Pleasant slowness project. Toile coated with Epoxy is not strong enough to sit on since both sides of the seat bend to trapezoidal shapes. Epoxy coated Toile is left to dry on a solid box. The Epoxy coating the Toile at the flat surface on top becomes hard transparent plastic that has fabric inside.

Material experimentation IV

This material experimentation phase ran parallel with the Fourth - Fifth idea generation. I tried to solve the Carbon fiber pins problem by experimenting on a bigger size of Carbon fiber rove. But the bigger rove still did not work. In the meantime, I experimented on a closed net pattern that the user can sit on top of in a larger scale (Fourth idea). I was wondering if I could use only NET EFFECT™ yarn and Epoxy coating. I used different amounts of NET EFFECT™ yarns to find an effective combination of yarns, net pattern size and Epoxy. The bottom left picture shows an experimentation on how to create layers from a single net piece and how to dry the Epoxy coated net on an airflow mold. The net dries with a better result; it does not have any over coated area. It is made of four NET EFFECT™ yarns with a three-centimeter high pattern. The yarns are too thick after the Epoxy coating but the pattern proportion is perfect for the design. I wanted to try thicker NET EFFECT™ yarns as seen in the bottom right picture. It is an experimentation on enlarging the fishing net made from a textile knitting tube. The complicated structure soaked up too much Epoxy. When it dried, it became very strong but also over coated.
I experimented by using only NET EFFECT™ yarns with frequent fishing net patterns but it was still not strong enough. After the Epoxy coating dried, it lost the shape during hand compression test. So the seats need to be made of Reinforced material + NET EFFECT™ yarns, coated with Epoxy, dried on an airflow mold and left to rest 72 hours before take it off the drying mold. The fishing net pattern in three-centimeters high and is suitable for the design proportion of the sitting circle.

Material experimentation IV: all sample coated with Epoxy (clockwise) – NET EFFECT™ yarn knitted with Carbon fiber by textile knitting technique, NET EFFECT™ yarn knitted in closed knitting pattern, Layering fishing net from NET EFFECT™ yarn, enlarged scale fishing net pattern from textile knitted NET EFFECT™ yarn, NET EFFECT™ yarn knitted in closed fishing net pattern
Material experimentation V

The fifth idea is to create a piece of net folded in a repeated pattern to create a sitting circle. The fray problem from the Carbon fiber and Aramid fiber rove could not be solved by any making techniques, even the yarn spinning process. But I found a new incredible material Aramid sewing yarn to replace them. It can be used with a sewing machine. The usage is for sewing bulletproof vests or racing shoes. If it does not fray during the sewing process, I think it is perfect for my design. Aramid threads are spun together as yarn to get the same thickness as NET EFFECT™ yarn. The experimentation below is to test the strength of the new material after the Epoxy coating. It is also to find the right amount of combination yarns by focusing on appearance and strength.

The top right sample was chosen to knit the sitting circle; it combines two NET EFFECT™ yarns and two spun Aramid yarns. After Epoxy coating it has a pretty good strength but not as strong as pure Kevlar yarns. The sample’s color combination became the same colors as the Swedish national flag or colors of IKEA. I do not want to communicate any of these messages through my design.

Material experimentation V: all sample is created by fishing net technique and coated with Epoxy (clockwise) – 2 NET EFFECT™ with 2 spun Kevlar yarns, 40 threads of Kevlar yarns, 3 NET EFFECT™ with 2 spun Kevlar yarns.
6. Result

The yellow color of the Aramid yarn is the principal color to work on. I have asked Interface for NET EFFECT™ yarns in others color to combine with yellow. The color range is quite limited and I am not willing to communicate any new messages through new color combination. I choose deep blue color because I still prefer to imply the color of water. Then gray is chosen to complete the color combination. A composite yarn has yellow, deep blue and gray within it.

The fishing net is reinterpreted to the sitting circle, a final outcome of my Master project “Sitting with The Fisherman”. It brings back the fishing net to everyday life as connecting two stools to one bench (seats) with different heights to create rhythm of design. The sitting circle is made of a single composite yarn. The sitting circle made from NET EFFECT™, the recycled fishing net yarns and strong Kevlar yarns. Then Epoxy resin is applied to some parts to keep the seats in shape. The user can sit on the hard seats or the soft loose net on the floor. The connected seats are designed as modular furniture. It could be arranged together with other modules to create a bigger sitting circle. By using one module, the sitting circle is suited for 4 - 5 people. The soft loose net between the seats offers the user the chance to arrange the seats themselves. The net needle will be left with the seats as a trace of the life behind its creation to the user.
Overall dimension of sitting circle: approximately W:150 cm x L:200 cm
Stool dimension W: 30cm x D: 30cm x H:40 cm
Bench dimension W: 60cm x D: 30cm x H:30 cm
I could imagine a sitting circle in an office or a school lounging space.
Prototype making process: Stool – Epoxy coating

Final design: Stool prototype – Sitting with the Fisherman
7. Discussion about the method/process

**Knotted Chair**

The final outcome of my Master project is the sitting circle made of recycled fishing net yarns and Aramid yarns. It contains my hometown memory, my Industrial design background and traces of the story of its creation. My sitting circle has a lot in common with the iconic Knotted Chair from Marcel Wanders\(^{36}\). He is an influential designer in the Conceptual Design movement. I chose to use the essential ideas of Conceptual design in the design of the sitting circle.

![Knotted chair by Marcel Wander, 1996](http://www.marcelwanders.com/products/seating/knotted-chair/28032015)

*Marcel Wanders' Knotted Chair 1996, made of Aramid rope wound around a Carbon core, hardened with epoxy, was widely published as soon as it was made, and rapidly came to define a certain way of designing in the 1990s. It had the appearance of hand-knotted macramé but also incredible strength and durability. The chair grew out of a project called Dry Tech, a collaboration which aimed to combine the rough-and-ready low-tech aesthetics of Droog Design\(^{38}\) with the high-tech materials of the Aviation and Space Laboratory of Delft University of Technology. Once the fibres had been hand-knotted and soaked with epoxy, the form was draped upside-down over a mould to get the shape of the seat and back.\(^{39}\)*

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\(^{36}\) Marcel Wanders is one of the most influential Dutch designers of Conceptual Design period (b.1963)


\(^{38}\) Droog design is group of Dutch designer found in 1990s. They are initially associate with Conceptual design movement.

\(^{39}\) [http://collections.vam.ac.uk/item/O115748/knotted-chair-chair-wanders-marcel/28032015](http://collections.vam.ac.uk/item/O115748/knotted-chair-chair-wanders-marcel/28032015)
The knotted chair is made of Carbon and Aramid fiber cord with an epoxy resin finish. Dry Tech’s project objective is to experiment with high tech fibers and handcraft techniques. The high tech material was a starting point of the project. A starting point of my Master project Sitting with the Fisherman came from my hometown memory and my idea of preserving craftsmanship in the fishing net. The sitting circle is the outcome of the project, made of Aramid yarns combined with NET EFFECT™ yarn and coated with Epoxy resin. My material selection process pays attention to the material that harmonizes with fishing net story. Aramid fiber helps to strengthen the story while NET EFFECT™ yarn contains a beautiful story in itself. It is also a new translation of the fishing net just like my design.

Both projects are created by handcraft techniques. The book Rope, Twine and Net making mentioned macramé work based on the fishing net making technique but tended to create a more beautiful appearance than the normal plain row mesh functional net. The knotted chair made from macramé technique developed macramé to the three-dimensional shape of the chair. The sitting circle reinterpreted the fishing net character to the repetitive layer of the design. The objective of the Knotted chair creation is an experimentation on high tech materials. The only concern was about the user’s sitting function. My new translation of the fishing net usage is the sitting circle that focuses on creating a connection behavior in the group of users. It brings back the fishing net to everyday life as the combination of the past and the present of fishing net stories. The fishing net gathers fisherman to sit together. The sitting circle will gather people together in a new context.

About the knotted chair Wanders said: “I wanted to make a product that doesn’t look industrial, a design that shown that it is lovingly made especially for someone, with the same kind of aura as an old worn down wooden cupboard. Knotting is a technique with which you can achieve this artisan atmosphere.” This product was later industrially produced, but its appearance remained craft-like.

The main technique of the Knotted chair is low-tech macramé handwork. Wander aimed to send the message that it was hand made by someone. The appearance of the Knotted chair and the sitting circle send the same message of the life behind the creation. Furthermore, a fishing net needle will be left with sitting circle. It is not only leaving a trace to the user (audience) but is also offering a chance for the user to continue making the fishing net. Both projects challenge the users perception in its airy appearance of textile seats that are strong enough to sit on.

Marcel Wanders works from the 1990s always inspired me. He made a great result out of the unique properties of material and techniques under limitation of technology at the time. Wanders used high tech technology but still integrated craftsmanship in the work. I would like to follow his step by combining my industrial design background and textile practice with other craftsmanship techniques.

40 Anthony Sanctuary, Rope, Twine and Net making, Buckinghamshire, 1996, p. 14
41 Camila Escallon, Droog Design: Sense and Experience: Creativity, Storytelling, and Innovation in Contemporary Design, 2012, p. 48 originally published in Marcel Wanders in Eugen Huis & Interieur (November 1996), in Droog Design (Firm), Simply Droog: 10 + 3 Years of Creating Innovation and Discussion, p. 183
Examination

During examination I have got many interesting comments and suggestions, one of them that I took to develop my project is to explore deeper in “sitting circle”. There is another potential rather than making the seat to communicate to audience in Spring exhibition. I look back at the analysis to the sitting circle conclusion. It came from personal experience with fika and architectural theory that have a group of sitting objects or a pile of cushions. So I decided to go back to Phrase 3 Ideation to find what is deeper definition of sitting circle.

I took a step back and see the sitting circle in bigger picture. It is a gathering tool. The fishermen are sitting together as a group because they are working on the fishing net. People are sitting and having coffee together in fika to getting to know each other or to catch up. In the office, a group of seats in common area is the place to meet the colleague. There is always the purpose of gathering together but it never has the specific rules of sitting. Gathering together does not need to be only on the seat (chair). On the other hand the fishing net is a tool to gather fishermen together. I could use fishing net as gathering tool.

Outcome for Konstfack Spring exhibition 2015

I would like to use the fishing net to gather people together by offering experiences as the outcome of the project. The fishing net making workshop resulted in the gathering of people. I worked on the hanging net every other day during the exhibition. The audience could decide how they wanted to participate. They could come to learn how to make the fishing net or watch or just sit and have a conversation about the net. The story behind its creation was told during the workshop.

The final development for Spring exhibition can also fulfill the entire list of design criteria. It can bring back the fishing net to everyday life by reinterpreting it to the gathering experience. It can tell the story of the life behind the fishing net to the user through the final outcome of the project by showing and shearing fishing net stories while working on the fishing net. It can display the fishing net characteristics; hanging, airy, repetitive and with a yarn horizontally traveling layer by layer to create the enlarged scale fishnet. It offers a different definition of the fishing net to the user by giving a new interpretation of the fishing net in new context.

Design development

I took the Fourth idea from the design development and then refined the concept for the Spring exhibition. The design thinking method is used to analyze the definition of the sitting circle and to design the possibilities of experiences I could offer to the audience. As I mentioned before I chose to leave the function and shape my design with the essential idea of the conceptual design that blurs the boundary between art and design. I believe the design thinking method is already part of my thinking process because I used it to make decisions during the whole year, but the conceptual design always speaks louder. If I followed only the design thinking method, the outcome of the project could be an object with function. But since I chose to shape my design concept with conceptual design, the outcome of the project was “experience sharing”.

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The Fourth idea is the idea that felt the most appropriate to communicate to the audience in exhibition. Its simplicity of fishing net pattern in enlarged scale could send direct message about the story behind its creation. From the sketch (page 25), the two meter width of the enlarged scale fishnet made from Toile hangs from the ceiling and continues to the floor in a circle shape which allows the audience to sit on it. I used the fishing net as a gathering tool in the exhibition. Then I came up with the gathering activity to invite audiences to the hanging net. The fishing net making workshop resulted in the gathering of people. I worked on the fishing net during the exhibition. Everyday the net grew and the overall shape changed as well. The choice of participation was up to the audience. The audience could sit on buckets or the soft loose net on the floor. If the audience preferred to learn how to make the fishing net, the knowledge was ready for me to offer. They could either sit on the floor learning how to make a net with me or just stand by to observe. The audience could also sit on the net and have the conversation about its stories with me.

An old idea is having some part of the Toile net coated with Epoxy resin to be strong enough to sit on. After many lessons learned in material experimentations, I choose to keep the tactility and softness of the material by not using Epoxy. This Idea was developed to include plastic buckets into the net for the audience to sit on. The buckets were bound underneath the net. Sitting on buckets is the same experience as the fishermen have while they are working on the net. The buckets also become a conversation piece. I had the idea to gathering other stuffs like chairs, floor cushions and sit-able objects underneath the net. But it might confuse the audience to other direction such as recycle so this idea was dropped.

Material selection
Toile was the main material in the Fourth idea. But I replaced it with idea of NET EFFECT™ yarns that knitted it into long tube (as lower left sample in page 33). Knitting technique is chosen because of its similarity to net making technique. In experimentation of NET EFFECT™ yarns with knitting machine, it didn’t work well. The yarns fray and stuck in the machine, as it wasn’t designed for machine knitting process. So I decided to drop this idea. Forcing the material has never been success method for me. At the end I chose tricot as the main material, it is a fine knitted fabric made of fiber. That has soft tactility and cozy feeling with stretchable property. The long tricot fabric was cut into 20 centimeter width for knitting the fishing net.

I chose to work with various shades of blue and turquoise because of the limitation on the material and time. Blue and turquoise are also the symbolic color of water that connects to my hometown memory and color of the sea in Thailand. I prefer to use mixed colors of fabric to represent lively connection points of fabric in the big net rather than using one plain color
Sitting with The Fisherman, Konstfack Spring exhibition 2015: 1st day
8. Discussion

Collaboration

I choose to not include the engineering process of the sitting circle in my study. I focused instead on the concept, appearance and material of the outcome. So far I have gotten comments to collaborate with others, such as those who successfully made Carbon fiber or Aramid seat. But my sitting circle is made of new formula of materials, process and structure that no one has ever done before. I have asked Carl Cyrén, Konstfack Interior Architecture student, about carbon fibers because he succeeded in making a stool from Carbon fiber called “Carbon Crafts”. The knowledge was not enough to complete my engineering process, because each seat has a unique design and making technique. I would prefer to collaborate with an engineering school to develop strength and construction together. Moreover, it would be great if I have a chance to develop NET EFFECT™ yarn in various dimensions.

Konstfack Spring exhibition 2015

The exhibition took place between 13 – 24 May 2015. At the hanging net, I continued worked on the fishing net during the exhibition for 45 minutes every other day. I did not put sitting invitation sign at the net but only place the net making workshop schedule on the floor to indicate the audience. I left participation choices up to the audience. I decided to offer different type of experiences with intention to gathering various types of people; one was workshop and another one was fika. Most of the audience were standing, gathering around and observing the workshop. Some of them came close to ask about the project.

Net making workshop

On the sixth day of the exhibition, it was quiet Monday afternoon. I had a participant I have been waiting for. As usual I invited the audience, who was looking at me while I was working on the net sit. An old lady came to talk to me. I invited her to sit but she asked to sit on the floor with me to learn fishing net making technique. I have shown her a few times how to make fishnet. She could do it easily herself, I was impressed. She told me that she grew up in archipelago not far from Stockholm. She already knows how to make the net but it was really long time when she made the last knot. When she was young, she was helping her family bind the fishnet. Recall a childhood memory made her happy. She also asked about my net making experience. We were shearing our fishing net stories. Then it led to another personal life stories, she is a mother of Konstfack alumni. This was the same experience as the fishermen have while they are working on the fishing net.

My second fishing net making participant is Konstfack Textile alumni. This was the second time she came to the exhibition, it’s especially for learning the fishing net technique with me. She would like to learn because she came from fisherman family but it was a shame that she could not make it. She will apply this knowledge to her waving practice. It was a first time for her to learn net making technique. So we spent about an hour practicing fishing net making technique together, while sharing our life stories that relate to fishing net and textile.
Both of my remarkable audiences have background that related to fishing net in their childhood one way or another as I am. It was such a great pleasure to have these quality participants. My fishing net making knowledge passed down to others. The participants came on the quiet afternoon, it also was relaxing atmosphere to learn net making technique and share their life stories during net making time.
**Fika like the fisherman**

At Fisherman village in Thailand, fishermen drink Thai ice tea or ice black coffee during afternoon break. It's quite similar to fika in Sweden with coffee and some dessert. I decided to host fusion afternoon break of Thai fishermen and Swedish fika, by invited audience to sit on the net having Thai ice tea and cinnamon bun. The intension was gathering more audiences together and shearing stories behind fishing net through the conversation. I could gather a lot of people around the net but only about 15 people willing to sat on the net and buckets for fika. Thai ice tea, bucket and fishing net were the topics of conversations with audiences. It was great experience having good conversation while working on the net. But no one wanted to learn net making technique during crowded fusion afternoon break.

The experiences from Net making workshop and fika gave different results. I could broaden fishing net stories to audiences easily through fika conversation with audiences who’s gathering around the net. The net making workshop could gather less but quality audiences. The audiences and I could exchange our stories. The net making technique knowledge passed down to others. Both activities are needed to complete “experience sharing”.

**How project can be improved**

In the future, I would like to develop the appearance of the net. I want to experiment on faded dying color. It’s similar to faded color worn fishing net. It was my first time experience to sharing experience to audience in exhibition. Sitting on the floor seems to be problem for Swedish and elderly. I have got comment about the height of buckets and sitting posture on the floor that isn’t common in Sweden. I would like to develop on the height of the sitting circle to Swedish context aim for gathering more audience. It could be wooden structure underneath the net that still keeps fishing net’s characters (i.e. hanging, pattern, airflow). This development could bring fishing net to public space.

Shearing fishing net making experience in crowded graduation exhibition context was not ideal situation. There was many factors involve. I prefer to exhibit in craftsmanship related exhibition or fishermen related exhibition. Then I could have more audiences that willing to take part in experience offered.
Sitting with The Fisherman, Konstfack Spring exhibition 2015: first day & last day
9. Conclusion

*How can I make a new interpretation of a net making technique for everyday life that preserves its story by containing all the ingredients of my hometown memory and my Industrial design background?*

My research question took me to a memorable journey. Thanks to my childhood memory that motivated me to the project starting point. One important thing I have learnt from countless material and technique experimentation is do not force the material. I have learnt to apply its original property to my design. Using *design thinking method* with essential idea of *conceptual design* broadens my perspective about definition of Industrial design. I challenged myself not to design an object for the outcome of the Master project for Spring exhibition. It became “experience sharing”. I used my industrial design background to design the experience. The stories and knowledge of fishing net were sharing in the exhibition.

All ingredients of my hometown memory and Industrial design background are contained in my Master’s degree project Sitting with The Fisherman. I believe *Sitting with The Fisherman* project could preserve and encourage precious values in fishing net to others by bringing it back to everyday life. The net becomes a tool to gather people together like the fishing net does in the fisherman village in Phetchaburi, Thailand. The fishing net hand making skill will alive in new context. A trace of the life behind the fishing net will remain. The scene of a local motorcycle taxi driver hand-knitting a small fishing net will never fade away.
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