



## **BEYOND THE SURFACE**

**BRINGING ATTENTION TO THE ORIGIN OF  
FOOD WITH THE FISH FINGER AS CANVAS**

LARA BENEVIDES

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Konstfack University College of Arts, Crafts and Design

Examiner: Bo Westerlund

Advisors: Martin Avila | Cheryl Akner-Koler

# ABSTRACT

## KEY WORDS

transition design  
critical food design  
discursive design  
fish finger  
overfishing  
sustainable processed food  
industrial symbiosis  
fish farming  
sustainable fish consumption  
attentiveness

The many technological processes that products go through can make consumers less related to the systems behind them and their origins. The same thing happens to food. This project highlights the implications of a food system within the global scale of today's mainstream economy and explores the possibilities for a product that originates from a more sustainable food system. Apart from re-designing a processed everyday food product, the aim of this study is to increase awareness of the pressure that the world's fish stocks are suffering due to overfishing – an issue that is being aggravated by our current food system. For this reason fish fingers (aka fish sticks), which is a well known food product in Sweden, have been chosen as the primary focus in order to make a complex issue more tangible.

By re-evaluating what a fish is, analysing current food systems and food products, making sensory explorations and collaborating with chefs, *Havsbitar 1.0* and *2.0* ("Sea Bites" 1.0 and 2.0) have been developed. It is a series of fish fingers that has been designed for a desirable future scenario, where a resilient food system has been implemented.

The aesthetics of *Havsbitar* intends to connect it to its ingredients and to the ecosystem it comes from, while maintaining the key characteristics of the fish finger as we know it today. The acceptance of the concept as a food product is an important variable to this project.

The concept is placed in the field of Transition Design. Nevertheless, the design of *Havsbitar 1.0* is a proposal that is intended to create possibilities for dialogue about an ideal industrialized commercial product. On the other hand, *Havsbitar 2.0* follows a more discursive, critical angle towards the fact that fish fingers do not resemble fish, its main ingredient. *Havsbitar 2.0* could then be placed in the field of Critical Food Design and Discursive Design.

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# INTRODUCTION

”And just as the products we design are more than tools created in response to certain physical needs, so food is required to do so much more than simply fill our bellies. In the same way that we design products for comfort, aesthetic, pleasure and emotional fulfilment, so we apply design to food not just in response to our physical hunger, but also to feed our senses.” (Catterall 1999, p.23)

Food is, for me, a channel for positive and negative emotions and memories, for comfort and affection. It is a medium to create identity and moral values, just like the objects that surround us. Food is so vital to our lives. Yet, sometimes it is taken for granted and unnoticed, at least in some parts of the world. People see themselves connected to food - and there is much that can be explored through it. Meals are not only a way to get nutrition into our bodies – they are also a way to socialize, to create a sense of belonging, to tell a story.... There is so much that can be done on this subject. This essay however, will focus on just one of these possibilities.

Let me place this study within a personal context: I grew up in Brazil, until my early twenties, in a family where food played an important role for almost everyone. My closest family members are very good cooks and some of them are professionals in this field. My mom was not one of them. In fact, she had an aversion to cooking (and did not have time to spend at the stove). Every time she would make something for me to eat (which didn't happen often), I knew it would be instant noodles or rice with frozen meatballs or chicken nuggets. Maybe that is why I am quite often repulsed from semi-prepared packaged food. What is peculiar is the emotional value that those products have on me, even though I rarely eat them. And, in my discussions with others about it, I find that I am not alone.

## FOOD AS PRODUCTS

”But as more and more food products appear on our supermarket shelves, so the intersection of food and design becomes ever more blurred. Today, food is a mass produced consumer commodity, as such has as much claim to be a designed object as the Ford motor car.” (Catterall 1999, p.23)

An exploration into what is called the “Mc'Eating System”, led to my perception that processed foods go through procedures similar to the those of non-edible products (ergonomics, usability, functionality, production methods, marketing, and so on. I then saw an opportunity to work as a designer, enriching not only the design field but also the food industry.

## AIM

The many technological processes that products go through can make consumers less related to the systems behind them and their origins. The same thing happens to food. How can we, as consumers, have a better understanding of what is behind what we eat so that we can demand change? And what can be done so that we put more value on food?

Many of the food products found in stores today make use of ingredients that are obtained in ways that contribute to unsustainable, unhealthy food systems. Yet, many consumers in western industrialized society take those products for granted.

This project highlights the implications of a food system within the global scale of today's mainstream economy and explores the possibilities of a product that originates from a more sustainable food system. Apart from re-designing a processed everyday food product, the aim of this study is to increase awareness of the pressure that the world's fish stocks are suffering due to overfishing – an issue that is being aggravated by our current food system.

## WORD LIST

I make use of some words that you may like to know more about:

**abstraction** - the process of removing or hiding characteristics from the original in order to reduce the association with it.

**artefact** – anything made or altered by humans

**critical food design** – as Dr. Francesca Zampollo describes, it is the area of design that “raises awareness, exposes assumptions, provokes actions, and sparks debate on food related issues, problems and future possible scenarios”. (Zampollo, no date)

**discursive design** – an area of design where form and functions are given to products in order to communicate ideas and tools are created for thinking, rather than for living and doing. The artefacts “has been intentionally (and usually abstractly) embedded with discourse and/ or is used to elicit discussion” (Tharp, B. and S., 2015).

**emotional value** – the same as sentimental value. The Oxford Dictionaries (no date) defines it as “the value of an object deriving from personal or emotional associations rather than material worth”.

**organoleptic profile** – the aspects of food as experienced by the 5 senses – sight, smell, taste, touch and sound

**origin** – Oxford Dictionaries (no date) defines it as the point or place where something begins or is derived. In this thesis, I will be using the term many times as “the main ingredient”, “the animal the product was made of”, “the fish specie”, “where something comes from” and “the journey behind something”

**overfishing** – as Rainer Froese describes, it means taking “out more than the stock produces” (Kaliber, 2016)

**relational consumption** – “a closer relationship between the consumer and the economic, social and ecological contexts of food production” (Murdoch 2006, p.179), which leads to “awareness of the ecological relations in which food is inevitably embedded” (Murdoch 2006, p.162).

**relational production** – “diverse local food spaces that are sustained by adherence to long-standing processes of production” (Murdoch 2006, p.161), taking in consideration ecological, economical and social contexts.

**resilience** – the capacity of a system “to deal with change and continue to develop” (Stockholm Resilience Centre, 2015).

**sensorial properties** or **sensory experiences** see “organoleptic profile”

**transition design** – design-led societal transition towards more sustainable futures, considering the interconnectedness and inter-dependency of economic, social, political and natural systems (Irwin, Kossoff, Tonkinwise, Scupelli, 2015, p.8). According to Cameron Tonkinwise, in transition design things are means to open pathways and are not finished (ID Konstfack, 2014).

**wicked problems** – problems that are “difficult or impossible to solve because of incomplete, contradictory, and changing requirements that are often difficult to recognize” (‘Wicked problem’, 2018). According to Rittel and Webber (1973, quoted in Law, 2014, p.8) they are “malignant” (in contrast to “benign”) or “vicious” (like a circle) or “tricky” (like a leprechaun) or “aggressive” (like a lion, in contrast to the docility of a lamb)’.

# BACKGROUND



With the spread of knowledge on the impact of the meat industry on the environment, consumers have been encouraged to seek alternative protein sources. Fish, chicken, pork and soy based products have been seen as “protein heroes”. However, even though this could be a good way to keep carbon dioxide from rising, few people seem to question the impact that this dietary shift could have on other ecological systems. What consequences could it have, for instance, below the surface of the ocean that we don't see?

## HOW FOOD SYSTEMS CONTRIBUTE TO OVERFISHING

In its 2015 report, The World Wildlife Fund estimated that some commercially important stocks have been reduced by almost 75 per cent since the 1970s. The world's fish stocks are under significant pressure, “with 29 per cent classified as overfished and a further 61 per cent as fully exploited, with no ability to produce greater harvests” (FAO, 2014b, cited in WWF, 2015, p.26). If this scenario continues, “several species could be wiped out entirely, causing unknown damage to marine ecosystems” (Graber and Twilley, 2016).

One of the reasons fish stocks are disappearing is that, according to Jonas Nilsson, humans have fished too intensively and exploited fish for making, among other products, fish feed and other kinds of animal feed. We have only considered the economic aspects and thought about making quick profits (Meny, 2015).

Today, as a solution for the problems around overfishing, fish products are marketed with labels like Marine Stewardship Council. However, I believe that labels are important but not sufficient, since they don't look at the whole picture (Monaco 2017). In the end, fish stocks that are still in the oceans continue to be depleted.



MSC-label on a package of fish fingers

## HOW THE “ERA OF CONVENIENCE” DISTANCES CONSUMERS FURTHER FROM FOOD SYSTEMS

Since the Second World War, the food industry has gone through large transformations. One of the positive effects of that is that processed food means that food is more accessible and last longer. Furthermore, ready-to-eat or semi-finished meals have also enabled the emancipation of women from the home (Benevides, 2017). And it is understandable that “many busy people are unwilling to spend time shopping for ingredients and preparing food when a freshly made packaged version is already on the shelves” (Aldridge and Miller, 2012, p.15).

Many of the food products found in the supermarket are made of globally sourced ingredients. The negative part comes when food is so processed that consumers start to lose a connection to its origins and the issues caused by its production. Instead, as Tomas Tengby describes, we compare prices and only want everything to become cheaper, without knowing the effort behind the food, or the rules that control the production (Meny, 2017).

## THE TASTE OF EFFICIENCY X THE TASTE OF ATTENTIVENESS IN FOOD

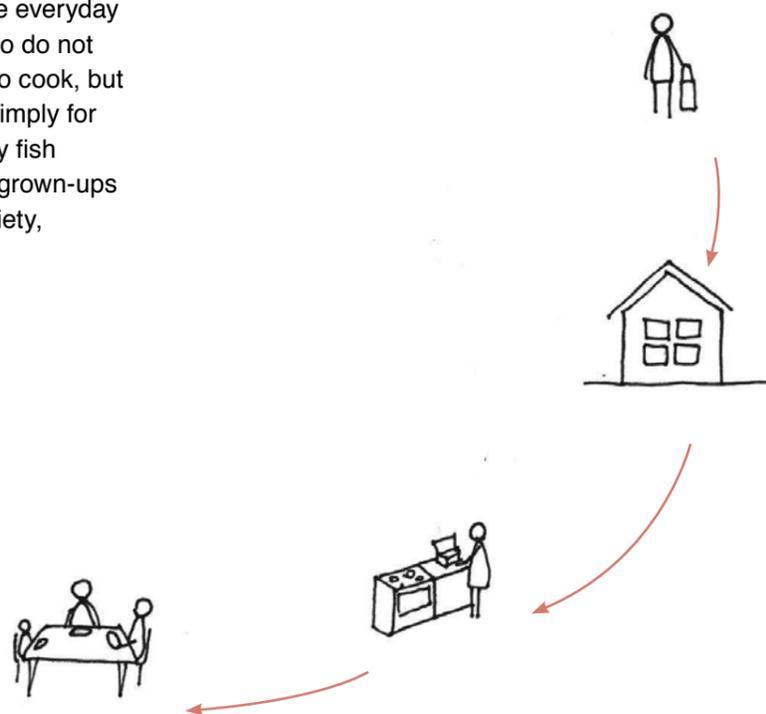
With high production speed and low prices, there are also consequences. Since the post-war era, in the hunt for more as well as cheaper and bigger land yields and the constant demand for “more and more”, food has become less tasty (Meny, 2015).

I believe that the loss of taste in food also makes consumers even more disconnected from the original ingredients. As a consequence, the respect for food and its true value is also lost more easily. Many of the industrialized products are based on traditional production methods and knowledge of perception. It is the marketing around them that makes them look different. I see a need in changing the way processed food is produced and how we consume it.

For this project I borrowed the term “attentiveness” from the Slow Food Movement. Carlo Petrini (2003, quoted in Murdoch, 2006, p.175), founder of the Slow Food Movement, explains it as attention “to the selection of ingredients and the sequence of flavours, to show how the food is prepared and the sensory stimuli it gives as it is consumed”.

# CONTEXT

The main context for this project is the everyday meal situation at home, for people who do not have time or energy (or imagination) to cook, but that still appreciate a good meal. Or simply for those who, for different reasons, enjoy fish fingers. I've been mainly focusing on grown-ups from the middle-class in Western society, specifically, Swedish.



# APPROACH

Nowadays, information about food products can be found in different places – for instance on their packages, webpages, etc. However, this information can be unnoticed (intentionally or not). Furthermore, the eater does not always access this information (children, for instance, will never read about what is inside their fish fingers). What if the food itself could bring information about its origin? Intrigued by this question, I have had my main focus on the fish finger – even though I also work with the packaging and give a hint of how the food system behind it could be structured. I consider that dealing with the aesthetics of processed food can influence the attention to what we eat. In doing so, I hope that consumers have more respect for the ingredients food is made of and that they understand that the low cost of certain food products “does not reflect its real cost”.

The acceptance of the concept as a food product has been an important variable of this project. In the research phase, I examined some very interesting projects that explored the future of food in conceptual ways. However, I have become intrigued with the possibility of discussions about how well people accept those projects on their plates and in their mouths. One example is Marije Vogelzang’s project Plant-Bones, which speculates a future scenario with edible botanical life composed by meat-like texture and skeleton (Azzarello, 2015). Would people enjoy the fact that there are bones on their plates? Another project worth mentioning is Tomorrow’s Meatball, by IKEA’s future-living research lab Space 10. It is a visual investigation of alternative ingredients and technologies that could compose future food scenarios (Space 10, 2017). One of the “meatballs” seems to be completely made of algae. The other one, by powdered meal replacement. It can be a naïve thought, but I could not stop wondering “how would people really react to it once it could be served to them in real life”?

From the design process until the conceptualization of the final proposals, I collaborated with the master in Gastronomic Sciences with focus on molecular gastronomy, Sonia Benevides and with the meal ecologist Ayhan Aydin to discuss our current food system and food processes and to get assistance in the development of an edible prototype. Since Sonia lives currently in Brazil, her support came through phone and Skype calls. Ayhan helped me by, among other things, creating a recipe based on ingredients that could be produced locally (in Sweden) and with ideas for the food system that is proposed in this project. We also discussed technical aspects of the prototypes.



Ayhan Aydin,  
meal ecologist,  
Nordisk Matutveckling



Sonia Benevides,  
master in Gastronomic  
Sciences with focus on  
molecular gastronomy

# DESIGN PROCESS

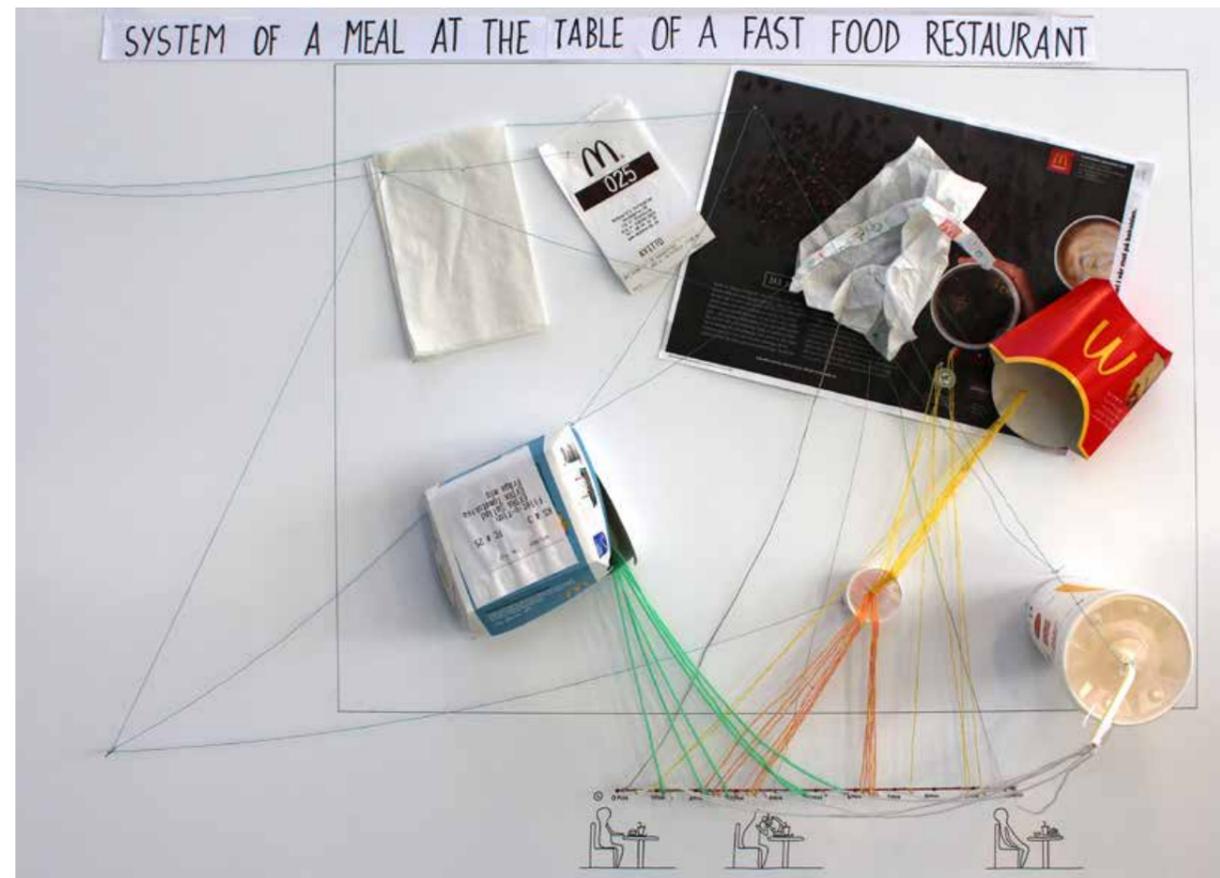
I started this thesis by exploring different food products. Motivated by my research and by the issues around overfishing, I began to focus on fish and then on fish fingers. These explorations and the reasoning behind them will be presented in this section.

## Mc'EATING SYSTEM

This is the first exploration in the thesis. Having the table top as the boundaries, this piece is an illustration of a possible meal at a fast food restaurant, with time as a variable.

Threads of different colours link parts of the meal to each other and to the diner, to allow the visualization, for example, of how food is moved on the table, in a repetitive way. A timeline of 10 minutes reveals the speed that food was is eaten.

**OUTCOME:** Making this visualization made me realize that food is treated as a product – both in terms of production and consumption. Also, that standardized food can generate standardized eating patterns. During this exploration, I saw an opportunity for applying design to the food itself. Food could be the material used to make the final product. I also decided to use processed food as a frame for my focus, since I would be able to apply design parameters to it, in the same way that I would do in designing a non-edible product.



## CONNECTING HAM TO ITS ORIGIN

The literature I was reading in the initial research, indicates that “modernist meat” shouldn’t be understood by the consumer as an animal, but abstracted, taken away from its context (van Mensvoort and Grievink, 2011, p.308). With the addition of the idea of using food as material, which I got from the “Mc’Eating System”, I shaped ham as a pig snout. It was then used as a conversation piece for discussion around how food can be intentionally transformed so that we disassociate it from the specific ingredients used to produce it.

**OUTCOME:** The reaction of repulse from the interviewed subjects and the discussions about it helped me to understand why abstraction is necessary. Taking away the connection between the product “ham” and the animal it comes from (pig) makes people eat things they usually wouldn’t eat. Furthermore, they don’t want reminders. The advantages and disadvantages of using “abstraction” as a method were one of my first discussions with chef Sonia Benevides.

Abstraction was a key step in my design process.



## THE SCALE OF RECOGNITION OF AN ALASKA POLLOCK

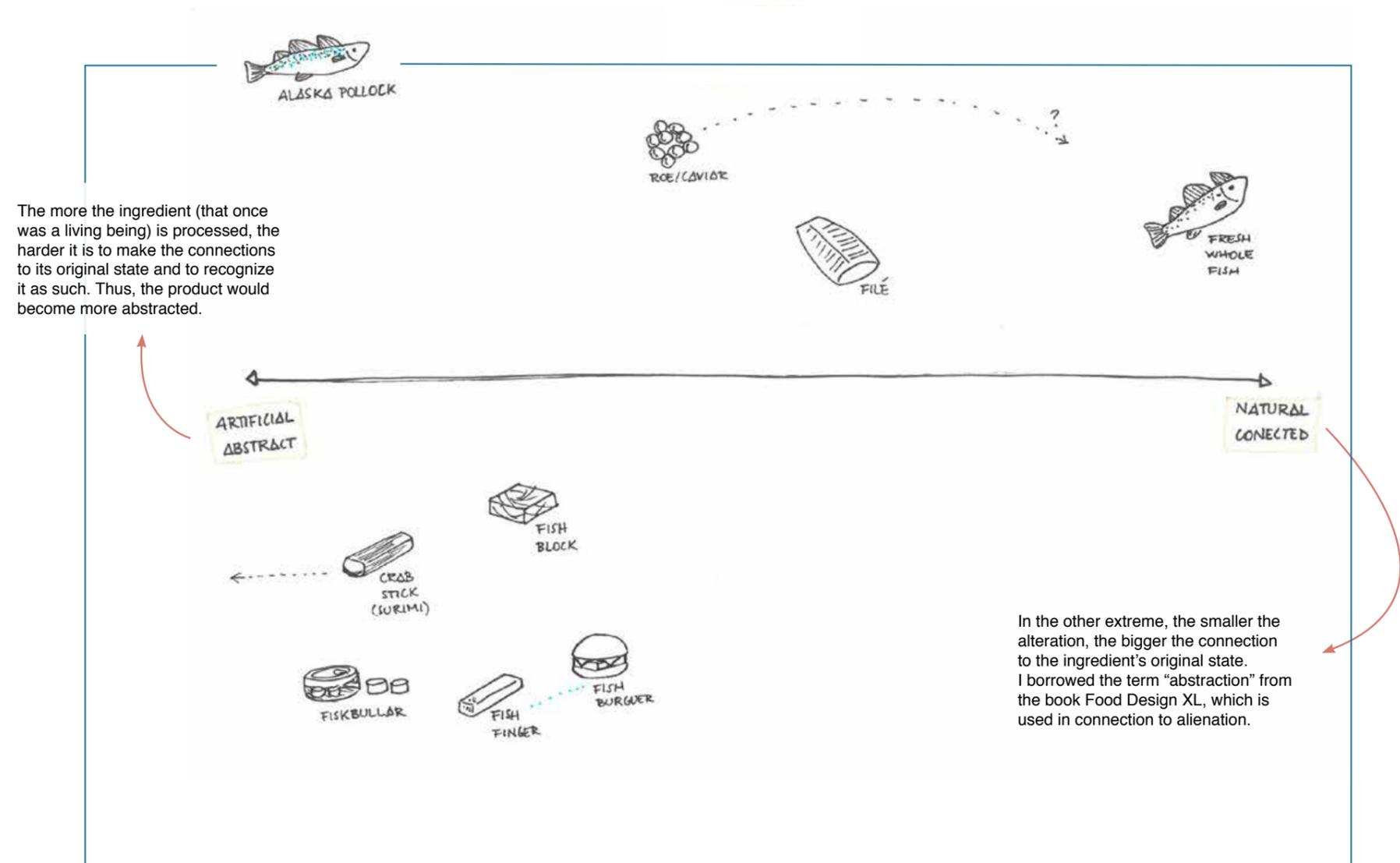
In this phase of the design process, I knew that I would work with processed food – but not which one.

Influenced by the discussions about whether to eat animal protein or not, combined with my personal empathy for animals behind food products, I decided that the product I would work with would be animal based. In order to further narrow this frame and to select the final ingredient I would work with, I made a cartography of common food products that I could find in a Swedish supermarket, having the entire animal (or parts of it) as the “natural state” in one axis and the processed version of it as “artificial”, on the opposite axis.

**OUTCOME:** During this process, I found information about the fish specie Alaska Pollock as being largely used in different fish products because of its abundance (Seafood Health Facts, no date) - which also results in lower costs). I also came across the issue around overfishing.

The different products that originate from this fish differ significantly in appearance and sensorial properties: from the entire animal in its “natural state” (with skin, head and bones) to a “camouflaged” version as breaded rectangles. This contrast fascinated me.

Influenced by these two aspects, I made the decision of working with fish as the original ingredient.



## BEING ATTENTIVE TO FISH BY UNLEARNING WHAT FISH ARE

After deciding to work with fish as the original ingredient, I bought a fish in its most possible natural state (as an entire piece that could be recognized as an animal: with head, skin and all its organs). The purpose: to have the extreme experience of the “naturally connected” origins in juxta position to the cartography I had envisioned in my mind. For this experiment, I attempted to unlearn what “fish” were and focused on being attentive to the experience of eating it.

I first watched tutorials about how to clean the fish (actually my friend did it, since the “rawness” of the experience disgusted me), then I cooked it and ate it at home, while discussing this experience with my friend. Eating fish with bones was a very mindful experience, reminding me about how I used to eat fish in Brazil. The day after, when I heated the leftovers in the microwave and had a very short time to eat lunch, the fish bones made my lunch only more stressful.

**OUTCOME:** The entire process, from cooking to eating, took a lot of time. On the other hand, eating the fish while seeing its skin, bones and texture gave me much greater connection to the fish as an animal – and the bones made me feel the “exclusive” value in the fish. This embodied experience brought me understanding around the advantages of eating products like fish fingers, which were in the extremity of “abstraction/artificial” in my cartography.

When the fish was cut into pieces (as opposed to being whole fish), what made the fish meat recognizable as “fish” were the texture of the meat, the fishy smell and the scales of the fish. Those characteristics were taken into account later in the process and applied to one of the final results



# THE GLOBALIZATION OF THE FISH FINGER

In my readings, fish fingers were often the classical example of an abstracted form of fish, since they do not resemble fish in appearance or in taste or texture (Stummerer and Hablesreiter, 2010). I decided then to investigate this product a bit further.

Based on the information available on the packaging of one brand of fish fingers, I visualized the origin of the fish used in the product. Actually, in this brand, one single fish finger is made of three different species of fish.

Even though the mapping was based on one single brand, this scenario can resemble how the fish industry works today. According to Aftonbladet's article "Fiskpinnens skräckresa" ("The Fish Finger's Frightening Journey"), the cod used in the fish fingers of the brand Findus (one of the most popular in Sweden) is caught very close to Sweden, in the Northeast Atlantic Ocean (off the Norwegian coast). Then it is sent to China to become filets and then sent back to Europe to become fish fingers (Ahlborg 2005).

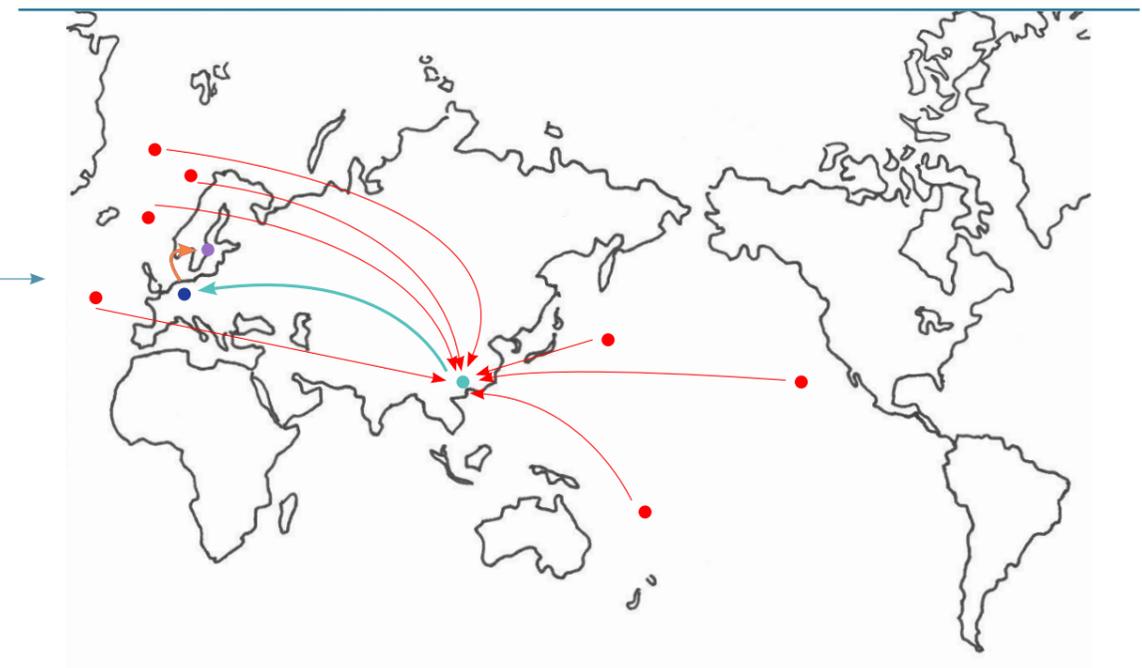
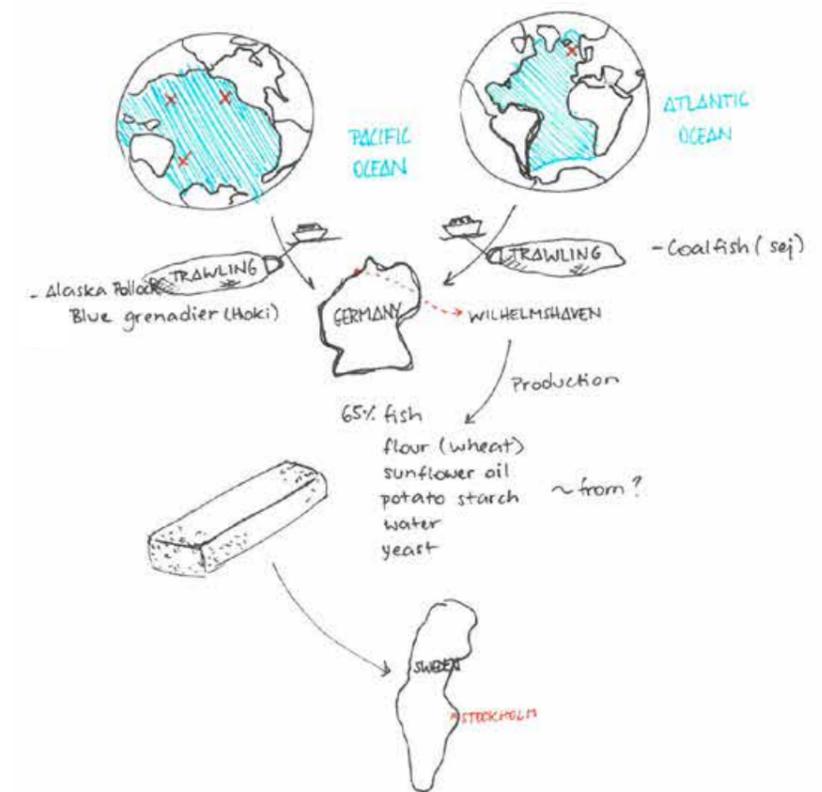
**OUTCOME:** Through this visualization, I made three observations: the first was about how this product in fact disconnects eaters from its origin (in contradiction, this is one of the reasons for its success). The second was regarding the food system behind this product. Today, most of the global food system is linear, where the different parts and actors involved are not interconnected. I was reminded that, through my research, my proposal should have a relational production behind it. Even though my focus is on the meal situation, I would have to consider that our current food system has to be restructured so that the planet's resilience can be maintained. The third and last observation was that, even though the information about the origin of the fish was already on the packaging, by demonstrating these facts through illustrations it becomes more apparent than merely using texts.

"How could the fish fingers themselves bare information about its origins and still be pleasant to eat?" became a question I wanted to explore further.

Meanwhile, I was having my first meeting with Ayhan Aydin, to present my project and discuss how the system behind fish fingers could be more resilient.

## FISH STICKS

### THE JOURNEY



SE 15 FISKPINNAR			DK		
Fiskpinnar - skurna från block, praktiskt taget beredda**, panerade, förstärkta, individuellt dupphysta. **Även om alla ingredienser har valts för att avlägsna benen, kan några ben finnas kvar.					
<b>Ingredienser:</b> Fisk (65 %), vetemjöl, solrosolja, potatisstärkelse, vatten, jäst, kryddor (paprika, vitpeppar), salt.					
*Fiskarter: A) Alaska Pollock (Theragra chalcogramma) fångad i Nordvästra Stilla Havet FAD nr 81. B) Alaska Pollock (Theragra chalcogramma) fångad i Nordöstra Stilla Havet FAD nr 87. C) Sej (Gadomus aoteanus) fångad i Nordöstra Atlanten FAD nr 27. Fångade i Island, Barents Hav, Norska Havet, Spetsbergen och Björnön, Nordhavet. D) Hoki (Macrurus novemacanthus) fångad i Sydvästra Stilla Havet FAD nr 81. Fångad med red. För kvävsprocent om ursprung: se märkning bakom datum för hållbarhet (se sidofält).					
Näringsvärde för en portion på 150 g					
Näringsvärde per 100 g			Näringsvärde per 150 g		
Energi	795 kJ/190 kcal	1704 kJ/285 kcal	74 %	Energi	795 kJ/190 kcal
Fett	8,7 g	12,2 g	17 %	Fett	8,7 g
av varav mättat fett	4,9 g	5,4 g	7 %	av varav mättat fett	4,9 g
Kolhydrater	17,4 g	26,1 g	39 %	Kolhydrater	17,4 g
av varav sockerarter	0,3 g	0,4 g	2 %	av varav sockerarter	0,3 g
Fiber	0,3 g	0,4 g	1 %	Fiber	0,3 g
Protein	11,3 g	17,3 g	25 %	Protein	11,3 g
Salt	0,83 g	1,28 g	21 %	Salt	0,83 g

The fish are caught in different parts of the ocean and then sent to Germany to become fish fingers. Upon further investigation about the production of fish fingers, I learned that, after being caught, the fish are frequently sent to places like China to become a frozen block of fish filets and then shipped to other countries in Europe to finally become fish fingers and only then to end up in Swedish supermarkets.



## A SEA OF PRODUCTS

The experience of eating fish in its original state (which I called “natural”) permitted me to be attentive to its different textures, colours and smells. Still collecting input about what fish are, I tried the other side of my cartography (the “abstract” extremity) with existing products in the market (not only products containing fish, but also “fish substitutes”). I also invited others to eat with me and discuss the experience during a workshop.

**OUTCOME:** It was hard to pay attention to the experience of eating some of the products. Fish balls, for instance, had a mushy consistency that made me want to finish them as soon as possible. As Ayhan brought up in one of the meetings, bringing attentiveness to processed food would indicate the need to work on producing attractive textures and flavours.

During the workshop, it became clear that fish fingers have become such a strong icon since its invention that adding too many fish features to it would make the product unrecognizable as such. I felt the need of a deeper understanding about what fish fingers are in order to be aware of how much I could change it.

I also observed that the way the product is opened and poured into the cooking utensils can increase or decrease its value.



# THE FISHNESS OF FISH

## A FORM EXPLORATION

Based on the sensorial explorations of fish and other products, I developed a three-dimensional cartography with the parameters of “natural x artificial” and “connected x abstracted” (which I used in the cartography of the Alaska Pollock). The intention was to push the extremes of “fish” (connected) and “non-fish” (abstracted), based on the complexity of shapes, textures and surfaces, to find key qualities and to apply them to the final concept of the fish fingers.

**OUTCOME:** Production processes need to be rationalized in order to maximize the use of resources of production. In the case of fish fingers, a geometric rectangle has been used traditionally to adapt products to packaging and to the needs of transportation and stacking. With this form exploration, I could get ideas about how to add “fish qualities” into a geometric shape, by changing its surfaces and making small adjustments in the fish fingers’ rectangular form (see more in the section “Shape, Size & Thickness”).

Many people reacted to the colour blue, arguing that the colour is not instantly associated to food products. Since I wanted to create a product that would be accepted as edible, I skipped this idea. The colour that I could apply to the fish fingers was something that I talked about with Ayhan and Sonia during my process.

The aesthetics of abstraction were decreased by slightly distorting the rectangle to resemble the silhouette of the body of the fish. Patterns were also used for expressing features of fish (both skin and meat).

Subsequently, I started to merge the “fishness” that I could find in the “natural” axis to the forms from the “abstracted” axis in order to make the abstracted forms more connected to fish.



I considered pushing the “artificial” axis of fish by applying the colour blue (often associated to water in the Western society) on the surface of the fish fingers with the intention of making the connection to the environment it comes from.



**NATURAL**  
CONNECTED  
CONCRETE

**ARTIFICIAL**  
DISCONNECTED  
ABSTRACT

# THE ANATOMY OF A FISH FINGER

The breaded and frozen fish fingers we know today were "born" in 1929, when Nathan Hutching and Retros Persad developed a "quick freezer" consisting of two metal plates, where the freezing process took place. The results worked better on fish cut into slim, regular shapes. So in 1930, Hutching and Persad started to market their product in the USA (Stummerer, S. and Hablesreiter, M. (2010), p.137).

The shape and ingredients of the breaded and frozen fish fingers as we know them today have been practically the same since its invention toward the end of the 20's. This means that changing fish fingers would mean changing a food icon.

With that in mind, I deconstructed a fish finger (from a design perspective) in order to understand its semiotics. I also invited Ayhan to analyse this product, from the frying to the eating process. He took on the responsibility for developing a new recipe for the fish fingers.

**OUTCOME:** From this investigation, I worked further with form in order to know how far the fish finger could be altered and still recognized as such. The feedback I got from fish finger eaters was applied to the development of the final results.

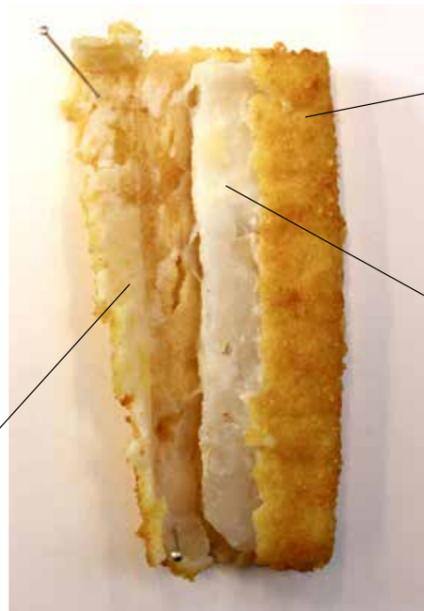
The parameters I worked further with were "surface (graphic)" and "shape, size and thickness".

## SURFACE (GRAPHIC)

In discussions with Ayhan and with fish finger eaters, I learned that the breading is an important part of this edible artefact. Taking this away would interfere on its recognition (both visual and sensorial). I decided to apply a graphic pattern on the breading in order to make the connection to water and to indicate the core ingredient.

### INGREDIENTS:

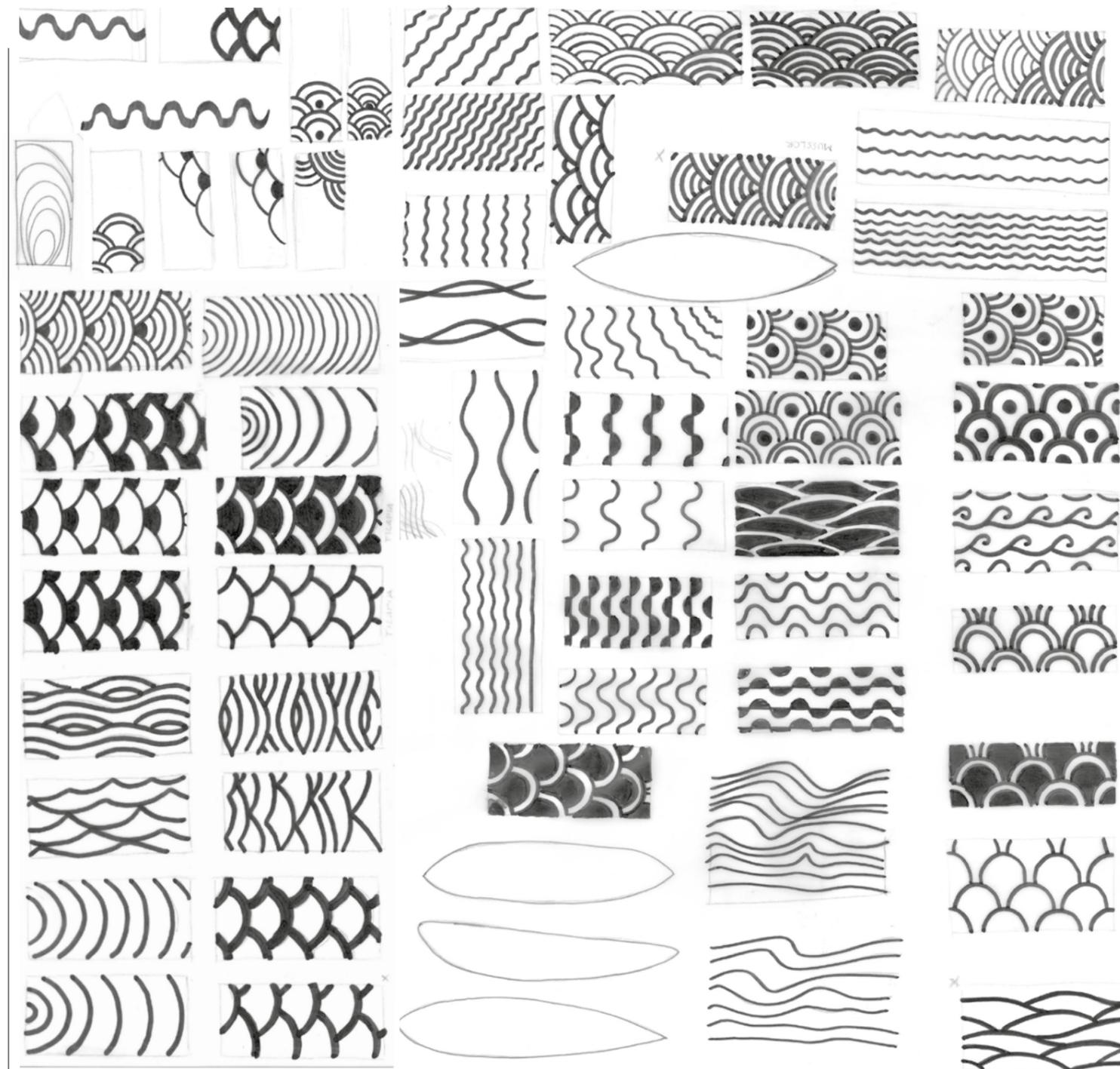
- FISH
- FLOUR
- SUN FLOWER OIL
- POTATO STARCH
- WATER
- YEAST
- SPICES
- SALT



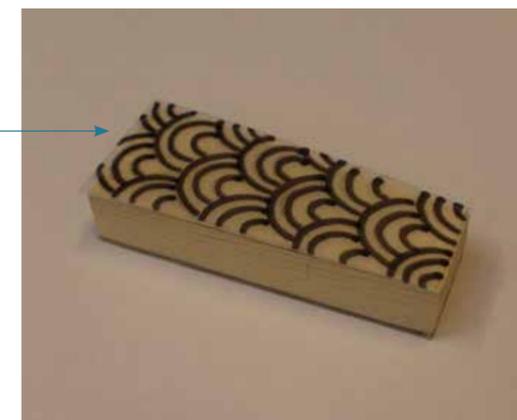
BREADING

FISH  
(ALLASKA POLLOCK,  
COD OR MIXED  
DIFFERENT SPECIES)

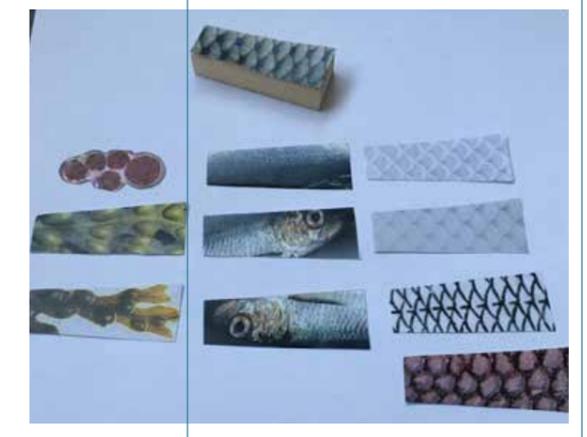
LAYER OF MUSHY MATERIA



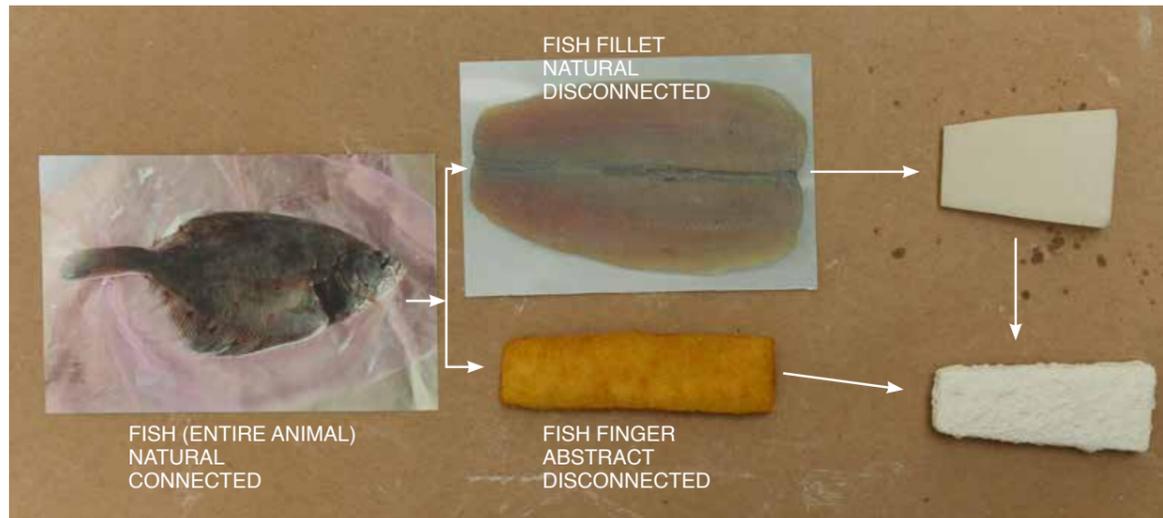
Most of the patterns were inspired by the Japanese pattern "seigaiha", used in many occasions for making allusion to water and to the main ingredients.



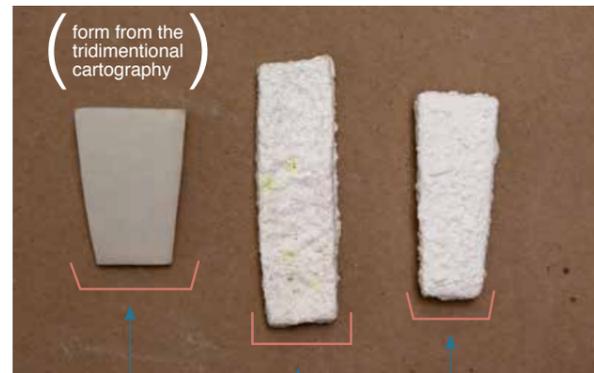
Suggested by Ayhan, the fish species used as ingredients could be herbivorous. In addition, mussel and algae could be used in the recipe (not only to enhance the flavor, but also as a main ingredient).



## SHAPE, SIZE & THICKNESS



When it came to size, elongating or shortening the shape too much would take away the recognition as fish fingers.



The exploration "The Fishiness of Fish" gave me the insight of altering one of the fish finger's extremity in order to increase its connection to fish and, at the same time, make the shape more interesting visually.

I used a shorter length and, instead, made a thicker fish finger with the intention of increasing its value.

## PROTOTYPING WITH FOOD

Here are some attempts of prototyping with food as material.

Prototyping with food made me realize that the end result is a living material, which will be affected by moisture, time and other factors. This means that merging aesthetics (in particular the patterns) with Ayhan's recipe would require the expertise of food engineers if the proposal were to lead to large-scale industrialization. In order to avoid getting stuck in this process, I decided to limit my attempts to the patterns on the edible artefact to the experimental phase.

For the final presentation, I presented the aesthetics of the concept and the audience could then feel the organoleptic properties by tasting samples made by Ayhan.



I used tofu for getting different shapes and used algae powder to make the patterns



(photo credits: Ayhan Aydin)



In parallel to my explorations, Ayhan developed the recipe.

As a solution for the ephemerality of food, I cast the prototypes in a crystal and used non-perishable materials for imitating the surface that I had designed.

# PROPOSAL

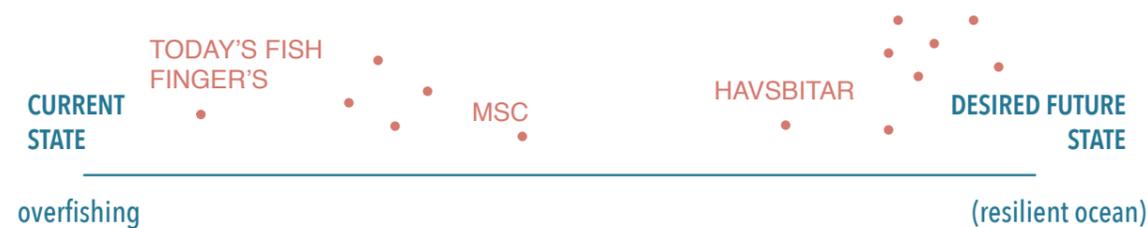
As the final result for this project, I developed *Havsbitar* (“Sea bites”). It is a range of fish fingers that departs from a desirable future scenario, where a resilient food system has been implemented. The aesthetics of *Havsbitar* intends to connect it to its ingredients and to the ecosystem it comes from (water), but keeping key characteristics of the fish finger we know today. Together with Sonia Benevides and Ayhan Aydin, I could also develop the organoleptic properties of the concept – making the eating experience even more tangible.

My proposition starts from a desirable future scenario, where a more resilient food system has been implemented. For this reason I position this project in the field of Transition Design, since it not only questions our current food system, but also proposes a concept that can open pathways towards a scenario (ID Konstfack, 2014) where a more local, resilient system is the norm within the food industry. Nevertheless, *Havsbitar 1.0* is a proposal that is intended to create possibilities for dialogue about an ideal industrialized commercial (as in profitable and marketable) product. On the other hand, *Havsbitar 2.0* follows a more discursive, critical angle towards the fact that fish fingers do not resemble its main ingredient - fish. The aim of *Havsbitar 2.0* is to create awareness by today’s fish finger eaters. Hence, it could be placed in the field of Critical Food Design and Discursive Design.

The proposal acknowledges that making people stop eating fish would not be realistic at this time. An option, that could be done in order to maintain the fish stocks in the sea is to decrease the amount of fish consumed today by, for example, combining it with other ingredients and farming it. Fish farming would also avoid the long distances that food travels until it arrives on our plates.

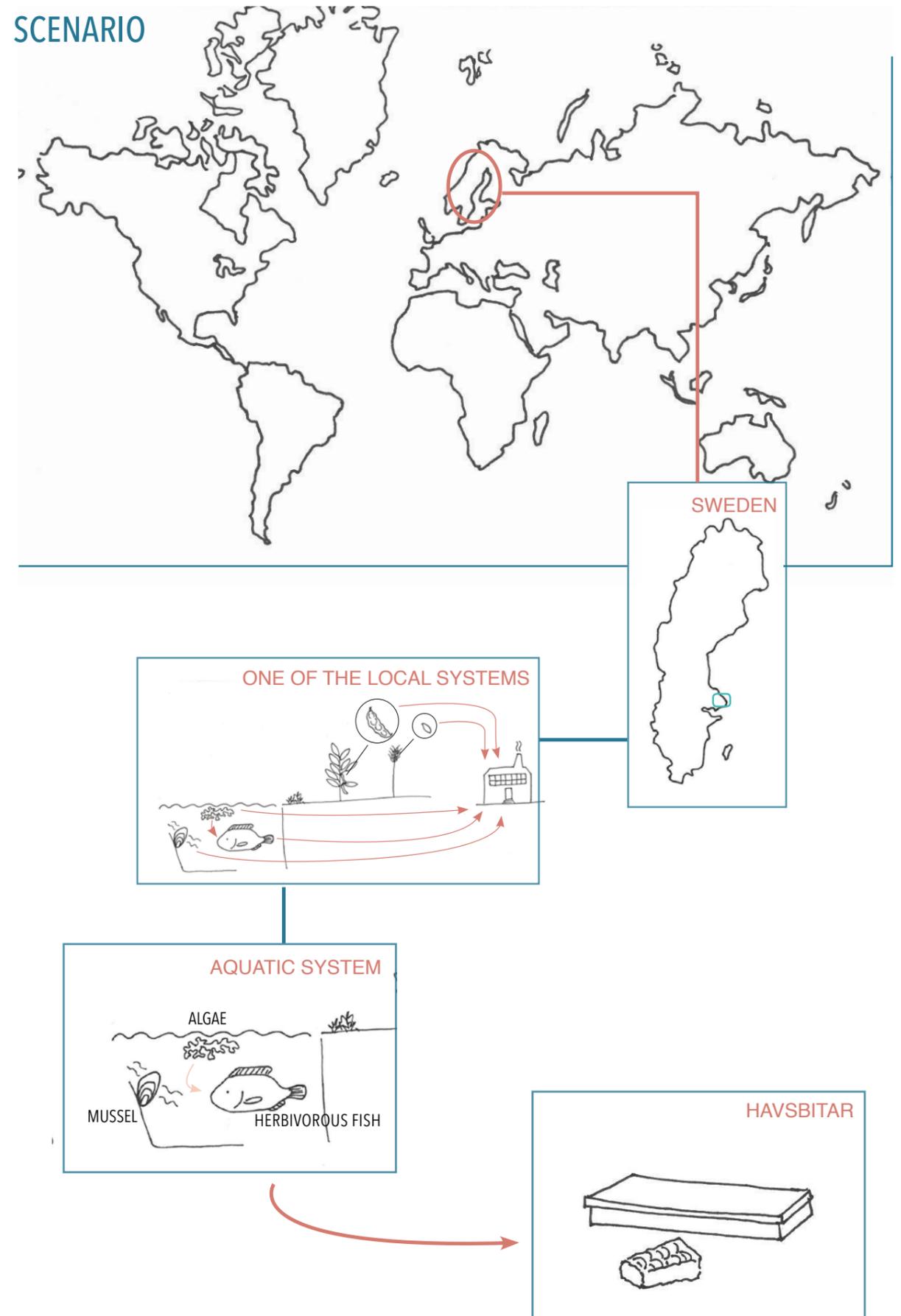
It is important to notice that, with this proposition, I do not mean that fishing from the oceans should be banned completely. However, a resilient system is one that is based on balance. Wild fish could be obtained in sustainable ways, consumed in smaller quantities and receive more value. As I recognize that I’m dealing with a wicked problem, which “can’t be cured” (Law 2014), I propose a “heterogeneous, multiple, partially decentred” solution, “responsive rather than fixed or large scale in character” (Law 2014).

This concept could represent one ideal way of producing ready-made food that could replace today’s fish fingers.



(graph based on the video of Terry Irwin’s presentation at Head, Heart, Hand: AIGA Design Conference (AIGAdesign (2016))

## SCENARIO



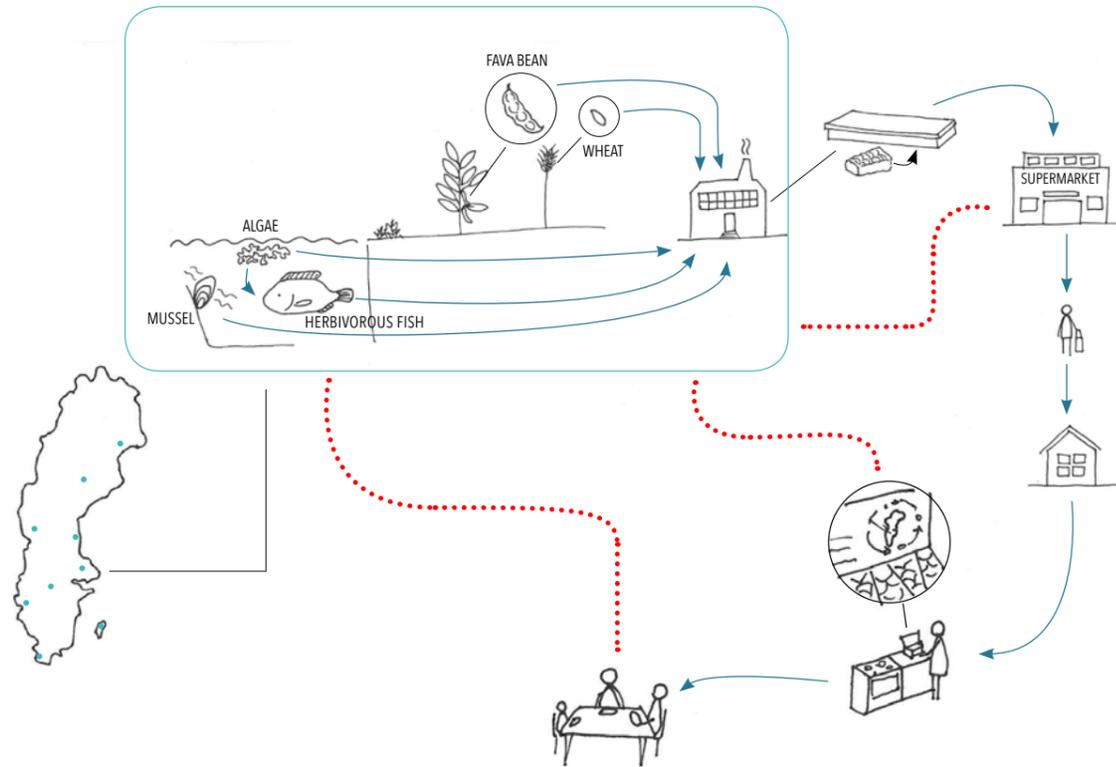
## HAVSBITAR'S FOOD SYSTEM

For this project I haven't focused on production of the ingredients in details. But my proposal is dependent on it in order to exist.

It is enough to know that the production of *Havsbitar* makes use of industrial symbiosis, where the surplus resources from one process are captured and redirected as a new input into another process (International Synergies, [www.international-synergies.com/our-approach/what-is-industrial-symbiosis/](http://www.international-synergies.com/our-approach/what-is-industrial-symbiosis/), no date). In addition, the aquatic part is based on Recirculating Aquaculture Systems (RAS), where the water used is filtered and reintroduced in the system – and waste can be used as fertilizers for what is grown on land (The Conservation Fund, 2016). Those micro systems are spread in Sweden, close to different cities, so that the production becomes more local. By doing so, the ingredients do not have to be transported such long distances to reach the final consumer.

The reason I propose the implementation of fish farming on land instead of in the sea is that farming fish on land is a more controlled system, lowering the risk of the possible escape of farmed fish into the wild - which can cause unbalanced ecosystems (Law 2014).

RAS is already used in Sweden, namely by Gårdfisk and Ekofisk. Swedish agribusiness Simris also grows algae on land using a sustainable closed system (Simris, [simrisalg.se/en/about](http://simrisalg.se/en/about), no date). This means that farming fish and algae on land, in a sustainable way, is not in such a distant future (at least not in Sweden).

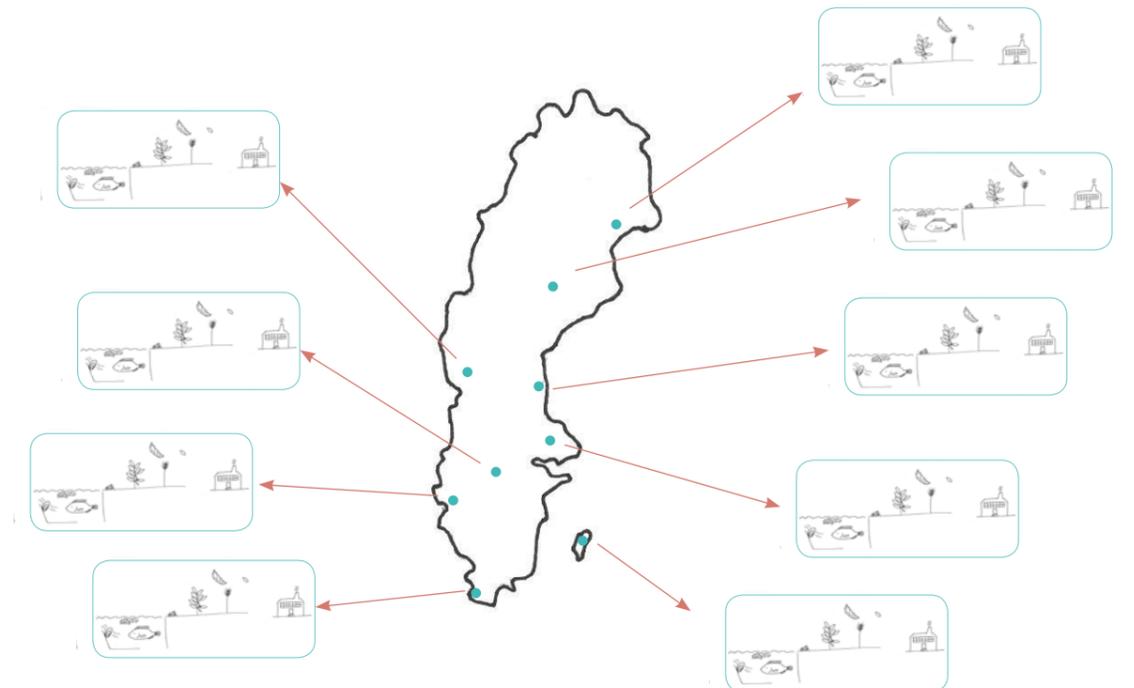


The links in red are when users may be indirectly connected to the fish finger's origin.

## TODAY'S FISH FINGER



## HAVSBITAR

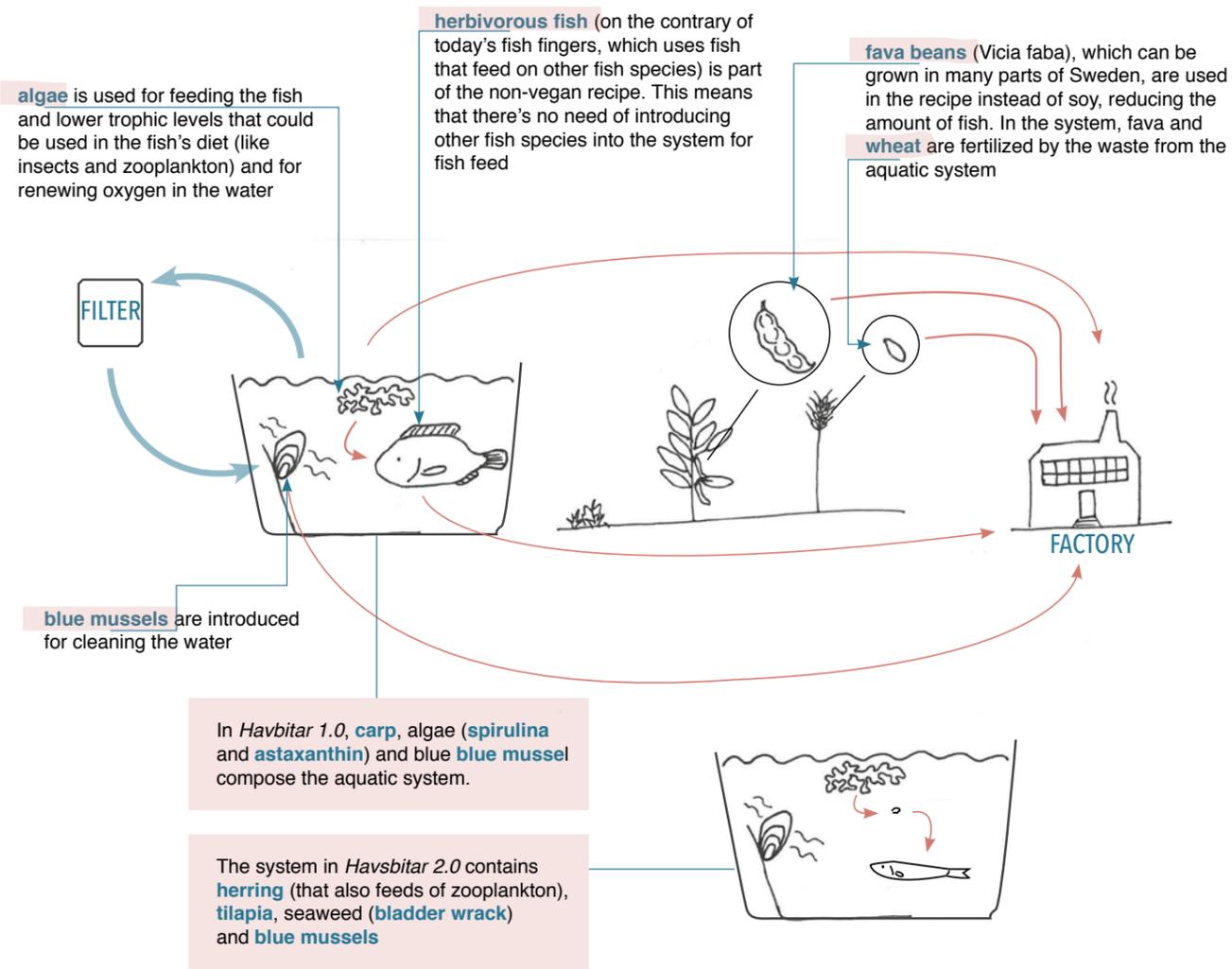


## INGREDIENTS

The main ingredients used in *Havsbitar* have the sea as origin. Besides being part of a symbiotic system, they improve the organoleptic properties of an industrialized product. It is also important to mention that it has taken just a little bit of each of the living parts involved.

In the *Havsbitar* that contains fish, Ayhan worked with seaweed and mussel for achieving a umami taste, enhancing the eating experience of the fish fingers. According to him, a cheap way of getting umami is by adding yeast (a method that is used for today's fish fingers). In the vegan version of *Havsbitar*, only seaweed is used for this purpose.

The system in *Havsbitar 2.0* contains herring (that also feeds on zooplankton), tilapia, seaweed (bladder wrack) and blue mussels. Except for the tilapia, all those organisms are found in the Swedish coast. Since this version of fish fingers is used more as a critical piece, I worked with those ingredients to permit the observer to recognize and feel more empathy for the proposal during the Spring exhibition. Tilapia, whose farming has been criticized, for among other things, the damage to the ecosystems in poor countries (Rosenthal 2011) is now appearing in Swedish supermarkets, farmed locally, in a more sustainable way.



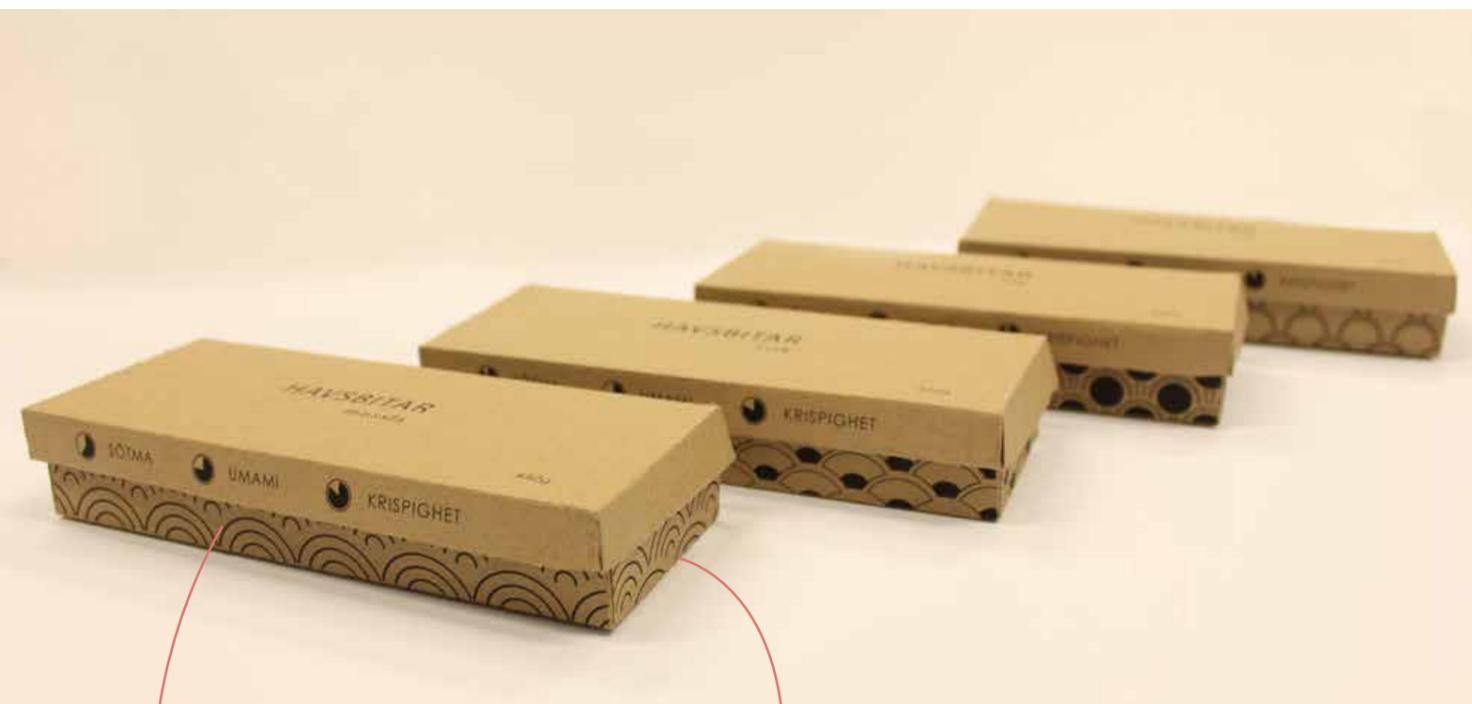
## HAVSBITAR 1.0



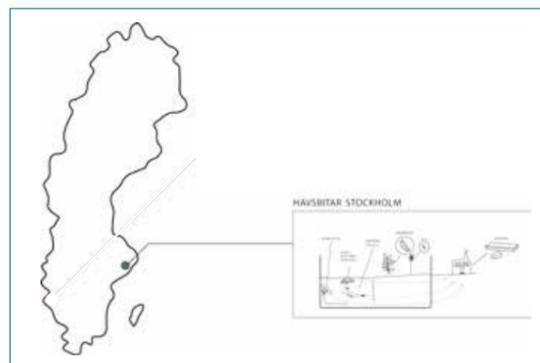
## THE PACKAGING OF HAVSBITAR 1.0

Even though the packaging borrows elements from Japanese graphic design, the Swedish identity is applied by using some elements that Swedish graphic design is known for: clean, simple typeface and a few simple shapes.

The *seigaiha* patterns were applied on the outside of the packaging to reinforce the connection to water and to the main ingredients.



Graphs were used to indicate the sensorial properties of the fish fingers: sweetness, umami and crispiness



A map of Sweden is shown on the outside of the packaging to clearly indicate where the fish fingers come from. It also shows how the different ingredients are interconnected.

Most of the packaging decreases the physical and visual connection with the product. In the case of the fish fingers, the first contact with the content (apart from the image) is when it is poured into the cooking utensil.



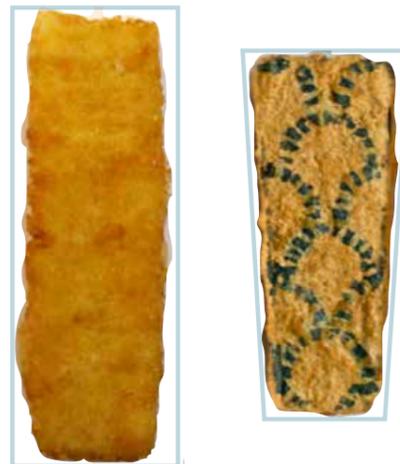
The way the packaging opens allows a connection with the content – and also increases the product's value.

## THE AESTHETICS OF HAVSBITAR 1.0



*Havsbitar 1.0* takes into consideration that the disconnection between the product and its original ingredient (fish) is what makes fish fingers successful. In this case, abstraction is applied to its favour. At the same time, its patterns indicate what is inside without creating disgust in today's fish finger eaters. This also opens up discussions around how the aesthetics of industrialized food could be improved so that people think it is attractive.

Even though the attempts to apply patterns to the surface of edible artefacts is to be limited to the experimental phase, there are several possibilities for the manufacturing of patterns on *Havsbitar 1.0*. They could be printed on the fish bits with spirulina algae (which would also be used as fish food within the system). Another possibility could be to sprinkle the powdered algae on the surface with stencils.

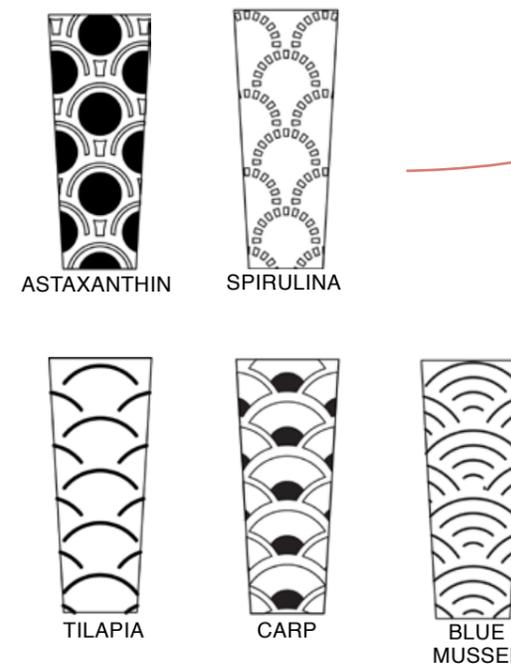


The form of *Havsbitar* was developed to appeal and engage the eater. Aesthetics was used for increasing the value of the product (and its ingredients).

An additional alternative would be to make an elevated structure that, when roasted, would brown and reveal the patterns. This last proposal would also have the function of indicating when the fish finger would be ready.

There are many aspects that would have to be developed in this version so that it could be placed on the market. Hence, introducing it as a "commercial product" would not be suitable in its current stage. However, I believe that the concept, after some adjustments and collaboration, could be introduced to the market as an innovation. Until then, it could be used as a comparison to today's fish fingers, in the hope that different actors would begin to question the way fish fingers and other products are currently produced and consumed.

In my version of the Japanese *seigaiha*, the patterns were made from an abstraction of each main ingredient (different fish species, algae and mussel). In this way, the connection to the origin (the ingredient) is made, in a subtle way.



*Havsbitar 1.0* is supposed to be a pre-cooked frozen product, warmed up in a frying pan (or oven). Thicker fish fingers not only become more stable – they also gain more value. Besides, a thicker fish finger means more "crunchy surface" – a parameter that fish finger eaters love.

After the presentation at Konstfack, I observed that the use of the aesthetics of a commercial product created a distraction from the discussions about overfishing and the way food is produced today. Instead, the focus was more on marketing strategies. For this reason I decided to alter the surface of my proposal, creating *Havsbitar 2.0*.

## HAVSBITAR 2.0

*Havsbitar 2.0* has a critical angle towards the fact that fish fingers do not resemble its main ingredient - fish. The pattern on the breading indicates what is under the surface, reminding the eater what they are eating.



## THE PACKAGING OF HAVSBITAR 2.0

In order to increase the connection of the product with Sweden and to intensify the association with water, I met graphic designer Lina Sponberg. We discussed contemporary colours, typefaces and other elements of Swedish graphic design that make connections to water.



The package for *Havsbitar 2.0* is printed in tones of blue for different regions. The connection to water was also enhanced by a few rhythmically structured waves..

As in *Havsbitar 1.0*, the packaging allows a connection with the content – and also increases the product's value.



## THE AESTHETICS OF HAVSBITAR 2.0

The shape of *Havsbitar 2.0* is the same used for *Havsbitar 1.0*. However, *Havsbitar 2.0* indicates the main ingredient more clearly by using Kenya Hara's method of "exformation" in order to show how little we know about the origin of today's fish fingers. As Hara explains in the book *Designing Design*, 'exformation does not mean "making known", but instead, "understanding how little we know"' (Hara 2007, p.371).

The surface of *Havsbitar 2.0* would be more difficult to replicate in an edible version – the colours and details might disappear because of the oil from the frying process. However, it may be possible to either print the pattern directly on the coloured breading or to print it first on an edible paper, which could then be applied to the breading.



TILAPIA



BLADDER WRACK



HERRING



# SPRING EXHIBITION

The space I got for Konstfack's Spring Exhibition was quite dark and, due to its location, the sounds in the room became a bit muffled. I made use of those qualities to create the feeling of being under water, strengthening this by using the colour blue.

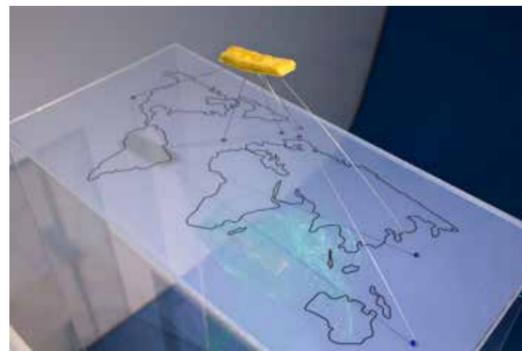
I organized two "sub-spaces": one where *Havsbitar 2.0* was contextualized in the scenario of a local food system in Sweden and the other, further inside (where the sound became even more muffled), with today's fish fingers and a world map showing that a single fish finger comes from different parts of the world.

The initial idea was that the podiums would be like aquariums filled with water to enhance the connection of water as origin. Due to some impracticalities, I had to readapt the idea by using empty acrylic boxes.

Some visitors got shocked when they saw the global map – they did not know that fish fingers could be made from fish that came from different parts of the ocean. Others associated it to tilapia or salmon due to its pink colour.

I also got feedback about how the transparency regarding the ingredients could be improved and how the packaging could be as poignant as its content.

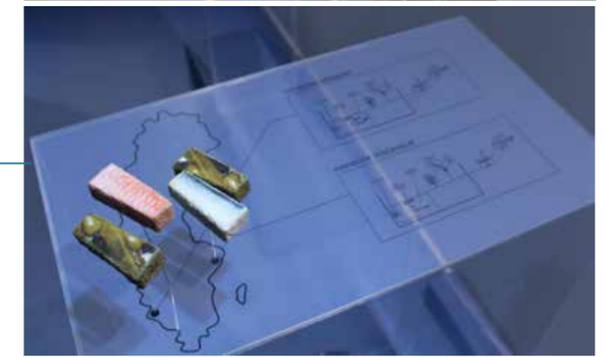
During the exhibition, many people said that *Havsbitar 2.0* was beautiful – which was a confirmation that while this artefact was reminiscent of a "rough truth", it was still desirable.



From the "global system", one single fish bone hung from a fishing net, as a metaphor for a lifeless sea and narrating that, if fish continue to be caught at the same pace as they are today, this is the scenario we may encounter. Also, the fish bone reminds the visitor that the fish finger was once a living being.



Under *Havsbitar's* system, there was a small aquarium with seaweed, to indicate a closed living ecosystem.



# DISCUSSION

If *Havsbitar* were to be produced and sold on the market, it would start as an expensive product. This could lead to two scenarios: one in which the final price could be lowered by subsidies from the Government, since it would support Swedish local economies and the country's self-sufficiency. The other in which, as it happens with many technologies, the product would be expensive and attained by few groups and only later become accessible to the mainstream of society.

One feedback that I got about *Havsbitar 1.0* was that the pattern of seigaiha makes a very strong association to Japan – which means that the connection to Sweden was not as strong as I had intended. The patterns are one of the aspects that could be further developed by, for instance, making use of traditional symbols from different Swedish regions.

During the Spring Exhibition, I heard more than one parent explain to their kids that the “pink” *Havsbit* was made of salmon (when it is actually tilapia). This gave me two insights: one is that tilapia seems to still not be a fish that is part of the Swedish food culture; and the other is that consumers are so used to seeing certain fish without the skin that they have been alienated from the fish's original appearance as an animal. Salmon actually has a very silvery skin – but it's associated with the pink colour from its meat. Could *Havsbitar 2.0* be used to re-educate people about the visual characteristics of fish?

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