
A COASTAL HERITAGE
SHIPYARD AND BOATING-HOUSE
IN ISHINOMAKI, JAPAN

CONTENT

Vision	4
First Encounter	6
Introduction	8
Context- AREA	10
Context - SITE	14
Project - FUNCTIONS	20
Project - ARCHITECTURAL POTENTIAL	22
Project - BOAT-BUILDING AND SAILING	24
Problematics - POST TSUNAMI COMMUNITY	26
Problematics - FISHING INDUSTRY	26
Problematics - TSUNAMI COUNTERMEASURES	26
Method	36
Time-line	36
Deliverables (preliminary)	36
Program (preliminary)	38
Bibliography	38
References	39

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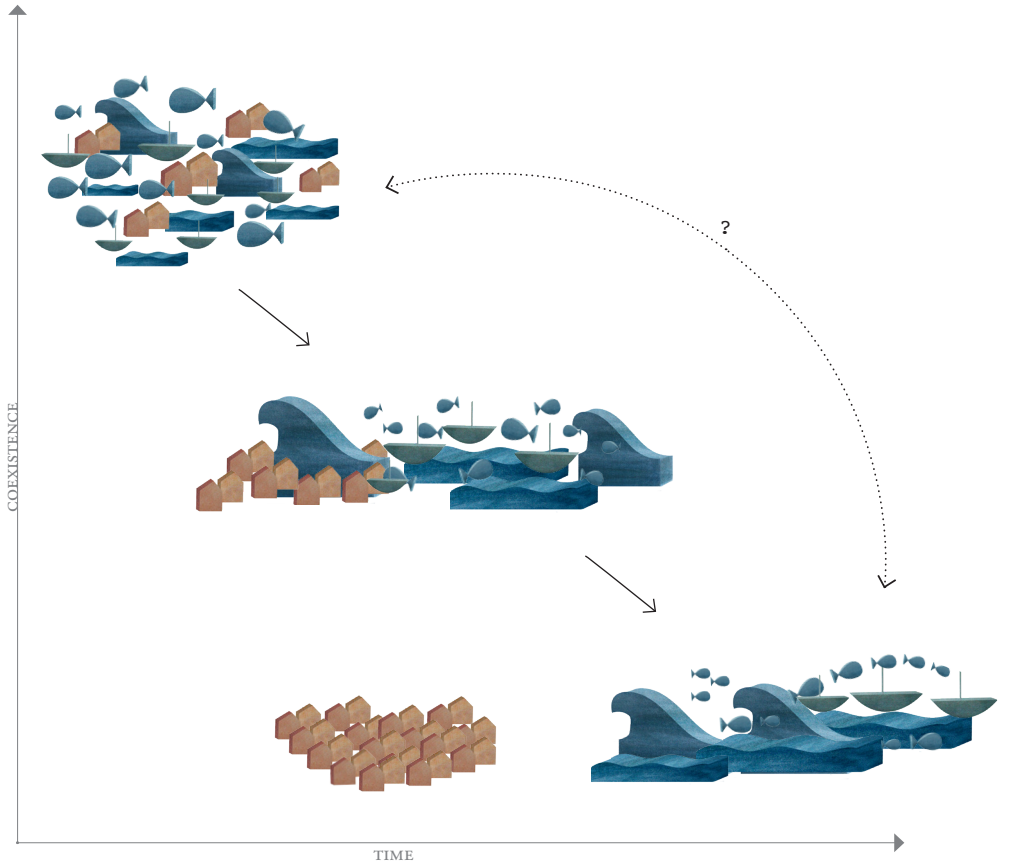
Supervisors: Runa Johannessen and Dag Petersson

VISION

It is my primary goal to create a building which would work as a generator to combine the complex fields of tsunami protection and community rebuilding, through the seemingly contradictory double function of protection and exposure. An architectonic hybrid which is one part seawall, one part shipyard and boating house, to be located in a residential area with strong connections to small-scale fishing industry. This part of the seawall will manifest itself as an integrated part of a building that has the opposite goal of the seawall; to make the sea accessible, and usable.

I wish to incorporate schools and education, so that they can tap into the existing – but declining – sea-knowledge and craftsmanship of the fishing industry, establishing a solid foundation of understanding of urban marine culture. The use of firsthand experience and education will be the basis of a re-connection strategy for Ishinomaki and, as a primary goal, seeks to re-establish the coastal city's coexistence with nature.

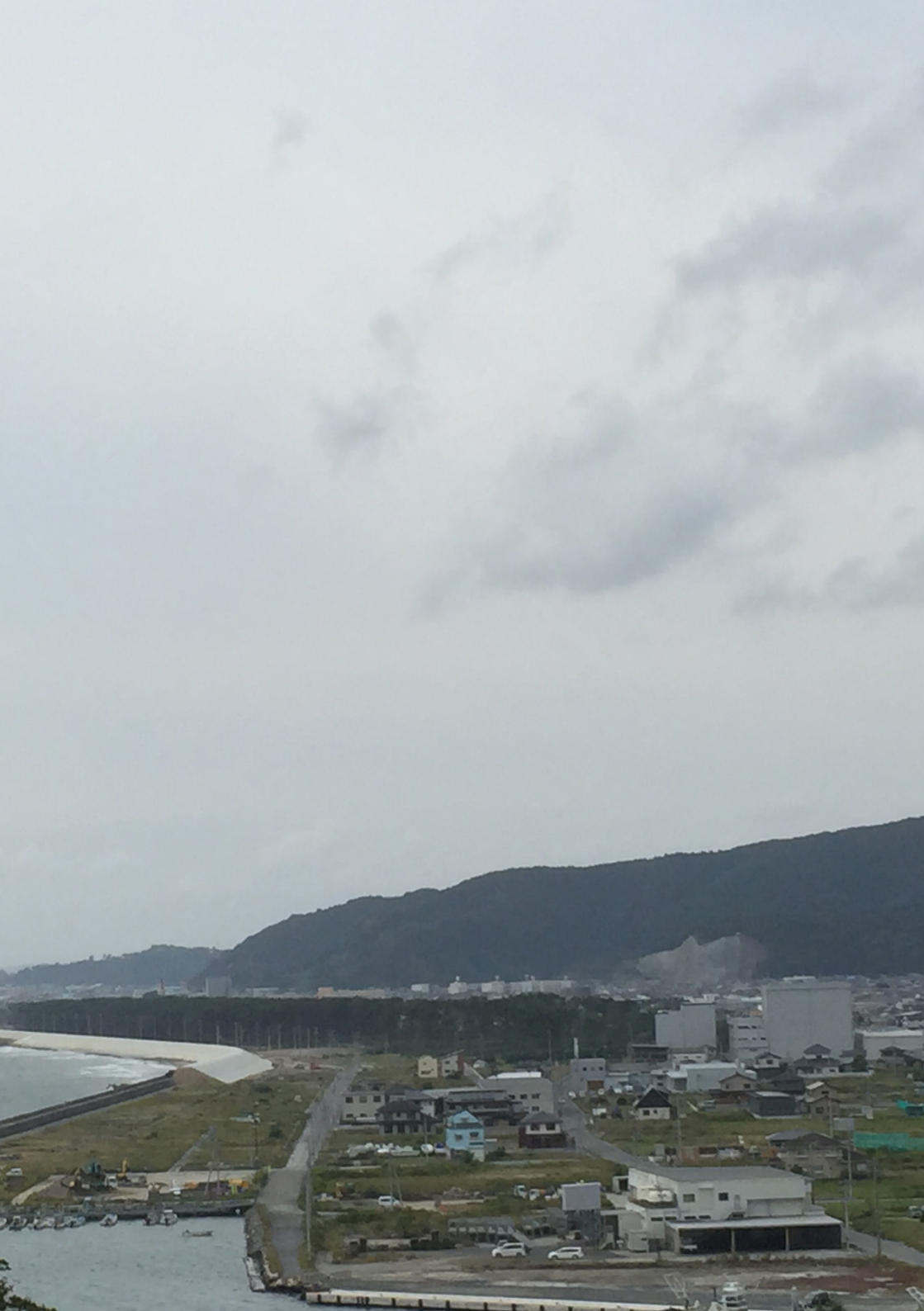
The conception of the sea, and its inherent dangers, will merge with the conception of sea as the source and fountain of local cultural life. It will work as a means to help re-establish good, safe and solid communities by being a reminder of the forces of nature, while at the same time granting access to the pleasures of nature, resulting in a holistic growth of the common bonds of unity.



FIRST ENCOUNTER

Seated in an airplane some 1000 feet over the Japanese East coast, watching the land disappear and reappear between the clouds beneath. The coastline seems oddly clear, almost highlighted, with a long soft straight line, few curves and cold grey color. It continues for miles and miles. The shoreline becomes clarified, and it amplifies the difference between land and water, inside and outside, the shore becomes wall and the land becomes fortress.





INTRODUCTION

The definition of a tsunami is a long high sea wave caused by an earthquake, submarine landslide, or other disturbance.

It origins from the late 19th century Japanese, from tsu 'harbor' + nami 'wave'.

This project has its focus in Ishinomaki City, Miyagi Prefecture, on the north east coast of Japan, where the department of PA-CS had a 3 week study-trip in October 2015. The points of interests for our study-trip were the response and rebuilding strategies precipitated by the 2011 Great East Earthquake Tsunami.

My inquiries in Japan revolved around the land-water connection, with a special interest in the ongoing seawall project, a tsunami countermeasure which will cover 60 percent of the coast when finished.

Japan is the quintessential island nation, which throughout its history has had a profound connection to the sea and its inherent dangers. Sustenance, commerce, industry and culture are woven into a fabric of life which is dependent on, and inseparable from, the sea that surrounds it. The threat from the deep, in coexistence with an ancient culture dependent on its close relation to the sea, is, among many other things, what makes Japan utterly interesting. Especially now, when a technologically modern society has had a change in perception of how to live with, and control nature.

This knowledge has become the foundation of my project; the seawall superstructure challenges the Japanese coexistence with nature, and creates a tension that will be explored in this project.



Context – AREA

My site is located in Watanoha, a district within Ishinomaki, west of the city center and on the transition between coast, built-out flatland and forest covered hills. This area has a diverse local context: residential suburbia, shopping district, small scale fishing ports, fish and oyster related industry, 3 schools and, a bit further out on the peninsula, a fishing academy and a historical tall ship museum. Industry occupies the zone near the water's edge and there are few land-water interactions not linked to industry. Geographically you have the protected bay, the little channel connecting bay and sea, and the coastline with no natural protection from heavy seas.

The seawall, a tsunami countermeasure, will be built here, and it is the only place in Tohoku in which the national government has permitted a residential area to exist next to the seawall. This raises an interesting opportunity to see how the wall could relate to its neighbors, and be integrated in my project. How can the wall protect, and yet be an inviting, active and generating element in the area? My aim is to challenge and use the wall – this fascinating and intrusive monolithic super structure – creating possibilities to interact, and be a more comprehensive and civic infrastructure.

This residential area north of the site, is a post-tsunami tabula rasa. When I was there 5 original buildings were left, and only two were newly rebuilt. There are no restrictions to building there, yet, 5 years after, few are returning to their old plots. Disaster trauma, devaluation of the land, 7,4 meter high seawall as your neighbor, apprehension of next catastrophe, absence of old community, are a few of the reasons. The area is just one out of many demonstrating the hesitation of former residents to restart and rebuild their old lives. This particular area needs an addition that can work with its location to ensure the area recovers a function that proves attractive.

All over the world people strive to fulfill their dearest dreams to live by the sea, an intimate connection to which is this areas great strength and value. Here they need to have the opportunity to take advantage of their location, to be able to enjoy its potential and benefits every day, so that they may not just exist in fear of – but truly live with – the sea and its dangers.





Watanoha area, panorama to the south.



Watanoha area, panorama to the north.



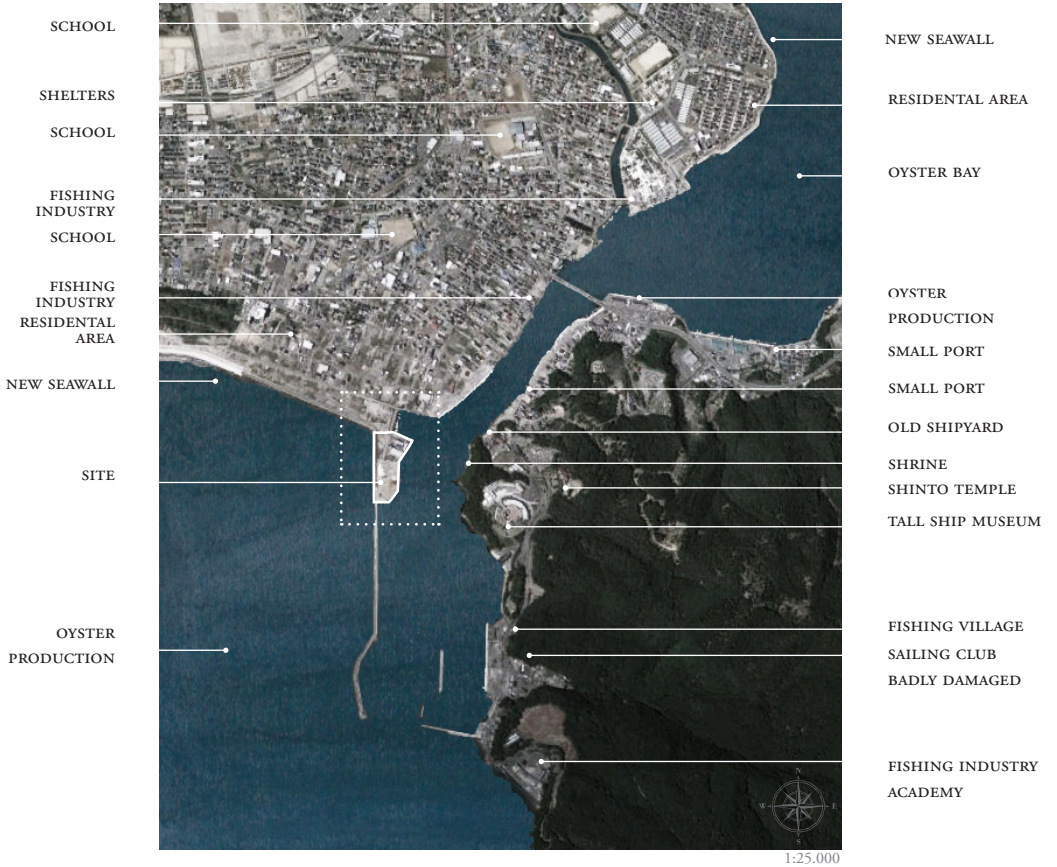
Context – SITE

An old shipyard established across the bay in 1926, was damaged in the tsunami, but kept up production until 2014, when it was torn down due to the new seawall project. It was a key backbone industry for the local area, mainly working with small and medium fishing boats, and old, traditional Japanese wooden boats.

The site sits just across from the old shipyard, on the tip of Watanoha, where the inlet to the bay starts. There are two existing industrial buildings on the site, which I propose to relocate to further inn, to fill the dead space along the existing industrial area.

Along the coast there is mainly industry, and very few public areas at present time. To the east and north there is a protected water-edge and small bay, that is only in temporary use. The ocean and the seawall are claiming the west side of the site, and to the south is one of the few unblocked vistas of the horizon. It was frequently visited just for this reason in the period that I was there. People would get out of their cars, and just sit there in their camping chairs, on the edge, letting the eye be drawn out along the concrete, to find the horizon.

The site is a link between suburbia and industry, man made and nature, protected and unprotected, people and the sea. Which affords the creation of a project, taking advantage of all existing contexts using them to create a resilient and generating addition.





New modified breakwaters stretching south from site. The unblocked vista to the horizon.



View from the west, the old seawall and site. The hilly peninsula in the background.



The coastline further out towards the peninsula, in the background the site.



The site from opposite side of the channel. Looking west.

Project – FUNCTIONS

The project will work as a mixed organization of production and learning. Nearby schools will be linked up to a boat building, sailing and water adventure programs, where the new and the traditional crafts of boat building will be taught. The building will be open for the public, with evening courses, equipment rentals and an exterior landscape inviting a interaction with the ocean. Directly or indirectly the spaces created in this project are a mix of water-related functions. They can be divided into production/creation, maintenance, storage, user facilities, outdoor facilities and defense structures.

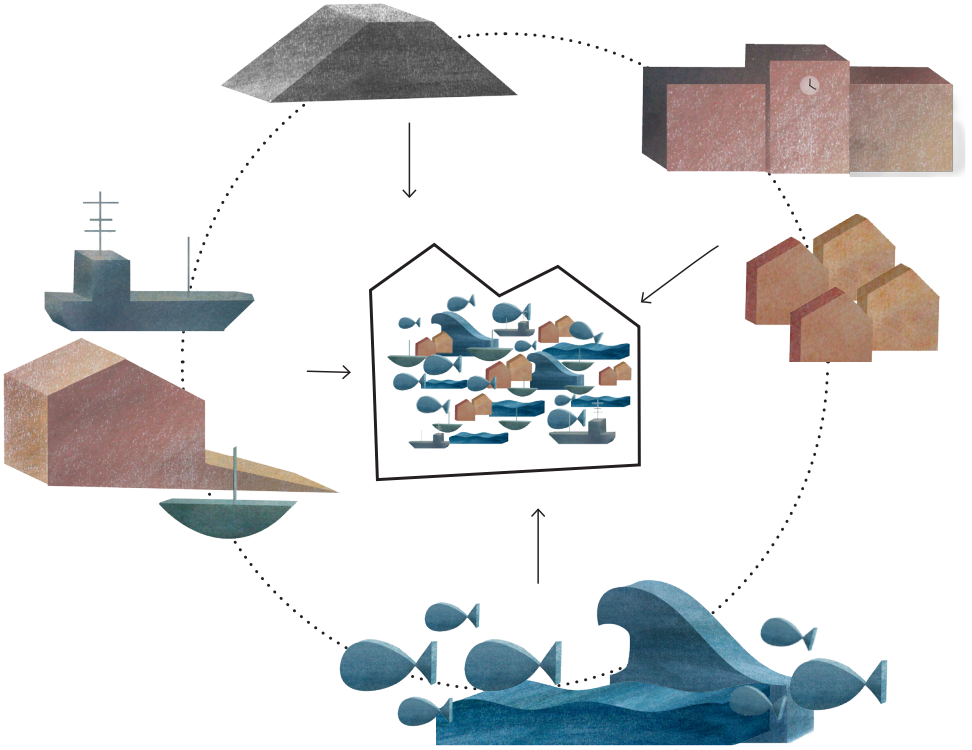
The boat building and repair halls will be divided into two spaces, one for wooden work and one for metal work, with storage and workshops. Here students will learn to build wooden kayaks and sailboats, and will acquire basic skills with metal work while repairing modern fishing boats. These halls will be the heart of the house, here the essence of seamanship will be shown in the building structure, organization, production and details.

The maintenance halls are for the boating-club, where all the equipment is stored, maintained and made ready for a new season. This will have easy access to the outside, docks and launching gear.

Within the project the kids, the staff and the local community will have a sea-clubhouse at their disposal, a multi-space for social gatherings and seasonal public functions, with the best view of the coastline on this side of Ishinomaki. Dressing rooms, kitchen and a small gym will be a part of the building.

The structure will operate as a public space, not only in the use of its buildings, but through the processing of the surrounding landscape. The outdoor facilities include a small marina for the club's boats, temporary docking possibilities, storage areas, repair and production space. For the non boaters the project will be a public sea-piazza, a place to stay, fish, bathe or have a picnic while watching the regattas. The building's functions and activities will increase the awareness of its presence by reaching out of its structural frame and activating the land and sea around it.

The seawall will become the building and will have a character that, while diverting from the original shape, retains its original function. The shape will be explored in relation to its new functions and the additional structures.



Project – ARCHITECTURAL POTENTIAL

Of great importance will be how the project works to integrate the seawall, its functions and its physical appearance, to understand and work with its massive construction, to be able to add to it and as well as manipulate it. The maintenance and life span will be important areas to explore: will the whole structure have the same time-frame? Will it respond to flooding in the same way? Maybe one part will be washed away, and rebuilt, while the other parts will be standing strong? I visualize the structures as young brothers out to sea, the boating club and the boat-building halls will accompany the seawall – two playful and cheeky, the other solid and calm.

The interaction with seawall is a chance to investigate the dilution of zones: what is safe, and what is not? How does a safe place look? How can its material play a stronger role? Plasticity of concrete will be explored through its expression and reception.

The meeting with the sea is essential: it needs to shield and protect, as well as grant access. The site's two-sidedness will influence this, however I also wish to explore the exposed side, ocean side of the site. It is here the forces and the grandness of the sea are at their best.

To achieve the apparent contradiction of protection and exposure, the design needs to modulate the surface and the exterior to be usable areas, places to frequent; protection itself becomes habitable. The form could use displacement of walls and space, as a means to create openings and to divert forces of the sea. The walls will appear both static and dynamic in their dance with the sea, using its energy to create spaces of amplification, as well as protection.

I visualize the boat building space as not overly grand in its expression; functional and simple yet homey and livable, everything having a reason, a function, the construction inspiring the users in its expression of detail and of simplicity. The industrial character, the boat-builders soul, both inherent in the structures functionality and beauty, will frame the space within its set of design parameters, marrying the detail and the whole.

The boating club encourages play and spontaneity; the frame is utilitarian, but there is room for organized chaos inside and out. Masts, sails, boats, kayaks, canoes, ropes, fenders, booms, oars, children and their life jackets (the list goes on), and all of it has its place, and all in buzzing activity.



Project – BOAT-BUILDING AND SAILING

The essence of both wooden boat-building and sailing is the fact that you are working with nature. You're not taming or fighting it, you are cooperating with it. You can't control the wind, but you can trim your sails.

Boat-building is a craft consisting first foremost of optimized function, so much so that it's process is on the edge of creating art. The boat-builder must learn to see the potential in a piece of wood, working with the shape and the grain, discovering the techniques that will liberate that potential existing within. This demands patience, keen eye for detail, extensive labor and a trained hand. It is an ancient school of life.

It is strange that wooden boat-building has been so nearly forgotten, because Japan's is famous for their woodworking, and because the country depends so much on the sea. Douglas Brooks, boat-builder, writer and researcher, answered my queries about Japanese wooden boat-building:

"... given my now 25 years of work documenting Japanese boat-building I see the only hope for the future of the craft in a boat-building school. The traditional apprentice system simply no longer works: no young person will devote six years of their life today, largely unpaid, to learn the craft. That is why I am the sole apprentice for all five of my teachers."

Seamanship, the art of being at sea, is about learning to work with the conditions: wind, wave, currents, fog, forecasts, and about learning to respect them. The possibility to be out on the sea, to feel the forces, to understand and to use them, is the key aspect of a boating club.

Seamanship is also a mentality: be prepared, be attentive and resourceful. The grand Eastindiamen frigates plying the trade routes between Europe and the far East in the 1600-1800's, had with them enough timber, rope and canvas to rebuild their entire rig twice. This shows the mindset of realizing, and being prepared for the dangers of the sea.

I see the possibility transferring a mentality of seamanship into the project, encouraging to be as resourceful, resistant and as attentive to its detail and construction, as the boat-builder is to his joinery, and as a seaman is to the movement of his vessel, the set of his sails.



A view of the bow of the Sabani (fishing boat from Tohoku area) showing the huundu fastenings, along with cedar tunnels used to fasten the bow transome.
Photograph by Douglas Brooks.

PROBLEMATICS

POST TSUNAMI COMMUNITY

The impact and destruction in Ishinomaki after the 2011 tsunami, was enormous and overwhelming. Small fishing villages along the peninsula were literally wiped away, and large residential and industrial areas lay in rubble. In the 5 year timespan since, reconstruction and countermeasures initiated have mainly manifested themselves in large-scale construction projects, rebuilding the infrastructure and re-establishing the industrial sector, especially fishing industry and port facilities. Reconstruction aid for local communities – to help re-establish normality and move inhabitants back to their properties, or into new, relocated, permanent homes – has not been a high priority. Community, and the life of the individual have in many cases been neglected, and it's therefore difficult to re-establish the coastal areas as living and thriving communities.

FISHING INDUSTRY

The strongest historical and traditional connection to the sea, the life of a fisherman, is withering. Sea-knowledge, craftsmanship and the great understanding of the empowerment, complexity and the wonders of life on and by the sea, is soon to be a distant memory. This tradition and knowledge, in the face of a declining industry, needs to be passed to the next generations to re-establish a common link to the sea, where it will transform into a new maritime character, and keeping knowledge and traditions alive.

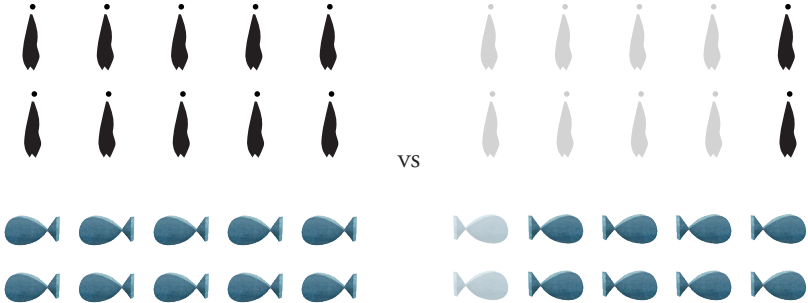
TSUNAMI COUNTERMEASURES

The seawall is one of the biggest tsunami countermeasure projects, started in the period after the 2011 Great East Tsunami. It runs 402 km along the coast and will, when finished, cover 60 percent of the Japanese coastline. The height varies from 3-17 meters, the width from 10-30 meters.

The seawall is meant to slowly, over time, become unremarkable, but at the same time will render the sea invisible, slowly blinding the community to the dangers of the sea. It is the most controversial of the countermeasure projects in scale, political pressure, local impact and in size of budget. Locals maintain that it negatively affects their coastal communities by cutting settlements off from the sea, making beaches unusable, presenting an eyesore, disturbing wildlife, and providing a false sense of security.



All pictures taken from the 2011 tsunami, and from the Tohoku area. Top left: Sendai, Right: Kesennuma. Bottom left: Otsuchi Iwate Pref. B.Right: Ofunato.



YEAR 1950

THE DECLINE IN FISHERMEN AND FISH

YEAR 2010

The current design is little influenced by its contexts and has few refinements inviting interaction on a human scale, which would, if influential, help to reconnect the people living in the shadow of the wall. The lack of possibility to interact with the shore in an easy and natural way – both for industrial and leisure purposes – is a loss of great local potential.

The effectiveness of the seawall is uncertain. Before the 2011 tsunami there were also protective seawalls along the coast of the Tohoku region. A scientific study conducted by the University of Tokyo also states;

“ (...) [it] found no support for the argument that the preexisting seawalls provided any protection against mortality”.

This is not always the case, which divides communities on the subject. The seawall prior to 2011, were completed a couple of years before a 10 meter high tsunami in 1983, and they were the perfect height to protect the coastal areas then.

The success-rate for the seawall might be uncertain in tsunami situations, but they do protect the land from seasonal flooding and heavy storms.



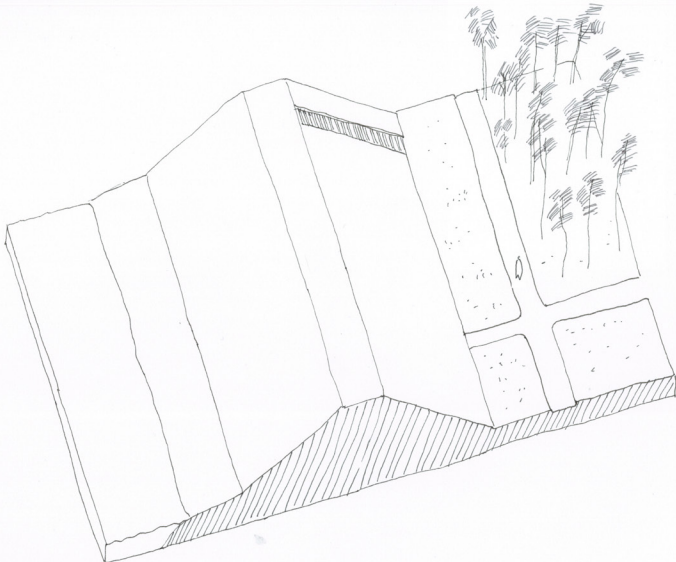
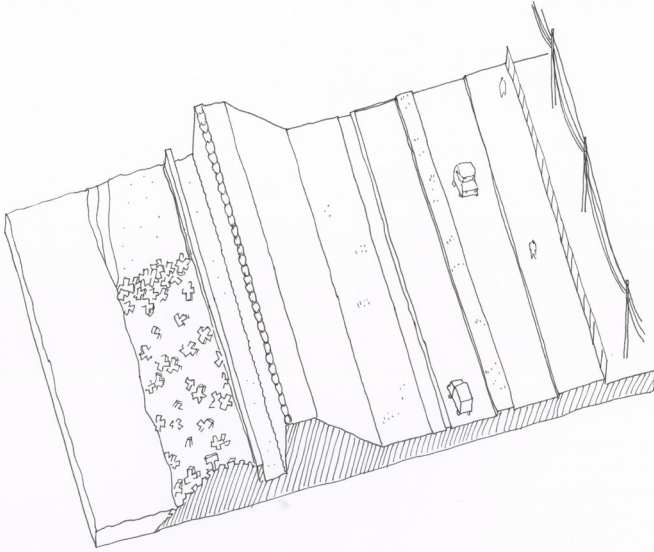
Local man getting ready with his fishing rod atop the embankment at the small fishing port. Site in the background.



Top: new seawall built in Tohoku area. Mid: Old seawall not withstanding the tsunami. Famous wood print The Great Wave of Kanagawa. Bottom: Tohoku coastline present day. Oyster production and temporary shelters on land. Right: Tsunami wave over Sendai Plain.









Seawall under construction, 8,4 meters high Ishinomaki.

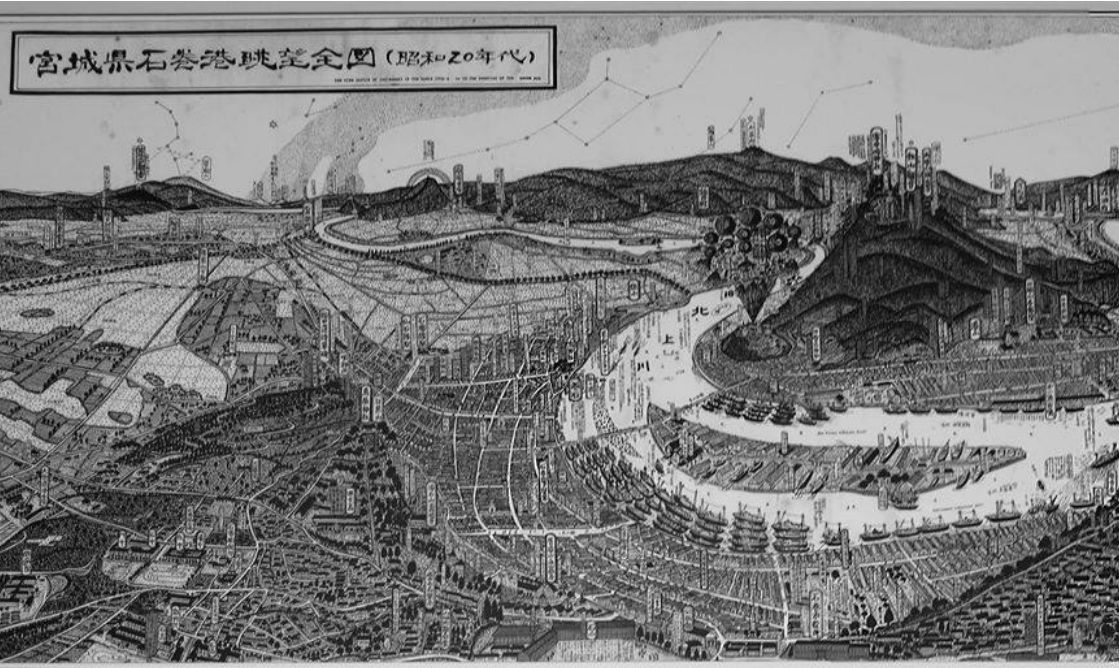


Seawall under construction, 7,4 meters high. Watanoha District.

RICE FIELDS

KITAKAMA RIVER

WATANOHA



RESIDENTIAL

CITY CENTER

FISHING FLEET

SHIP YARD

BEACH

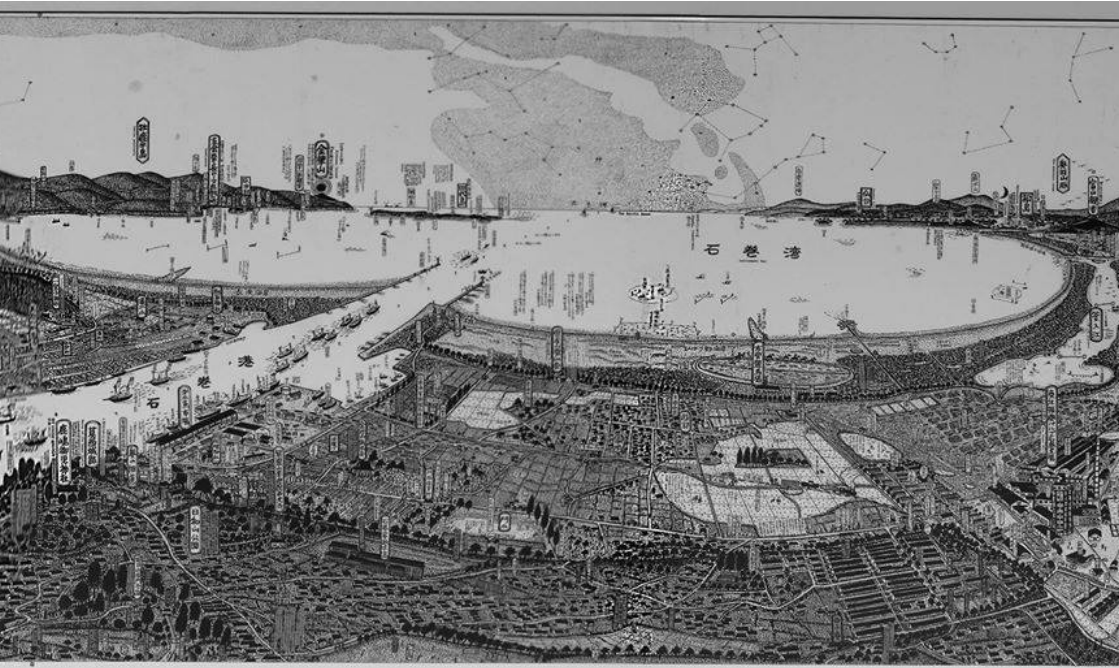
PENINSULA

RIVER MOUTH

ISHINOMAKI BAY

BEACH

MIYATO ISLAND



SHRINE

FISH MARKET

RESIDENTIAL

RICE FIELD

INDUSTRY

Ishinomaki 1945

METHOD

I will divide my process into three phases, which will ensure the result to be a complete and well worked through project.

First phase is the concept phase; site, logistics, function and form.

Second phase is the project phase; design, construction and materials.

Third phase is graphics and communication.

Overall decisions will be taken in the concept phase, thereafter they are tested in the project phase through work in different scales. The two first phases are the foundation for the graphic phase, the strong story and the red line through the project, which the graphic shall communicate.

Scale change and tempo changes are important parameters for developing the project continuously. Therefore I will not work in a straight line scale-wise, from the large-scale and down to the small, but more in circles where ideas are tested in different scales simultaneously. The scale change in different mediums will help me to work with the big picture as well as the detail, which will create a synergy between model and drawings, and be visible in the design.

TIME-LINE



DELIVERABLES (preliminary)

Situation plan	1:500/1:1000 (1:2000)
Plan, section and elevation	1:200
Detail section	1:50/1:20
Situation model	1:200
Models	1:200/1:500
Visualizations	

*“The cure for anything is salt water -
sweat, tears, or the sea.”*

- Karen Blixen



PROGRAM (preliminary)

Shipyards		Total 1500m ²
Metal working hall	500m ²	
Wood working hall	500m ²	
Workshops	200m ²	
Storage	200m ²	
Service rooms	100m ²	
Boat-house		Total 1600m ²
Multiroom	200m ²	
Maintenance hall	600m ²	
Workshops	100m ²	
Storage	200m ²	
Office	50m ²	
Gym	100m ²	
Restrooms	20m ²	
Wardrobe	60m ²	
Showers	40m ²	
Storage	200m ²	Total 3100m ²
Outdoor storage	—	
Marina	—	
Outdoor docking	—	
Public landscape	—	
Water access	—	

BIBLIOGRAPHY

- National Police Agency of Japan
 Bressan, David. "Historic tsunamis in Japan" History of Geology. 2011 17-03.
 Blue Urbanism, Timothy Beatley 2014
 Aldrich, Daniel and Sadawa, Yasuyuki. Japan Times, 2014 16-04
 Douglas Brooks, Japanese Wooden Boatbuilding, 2015
 Frederica Rengheri, Mikio Ishiwatari, Learning from Megadisasters, 2014
 W.Bird, In Post-Tsunami Japan, A Push To Rebuild Coast in Concrete, 2013
 Karen Blixen, Reader's Digest 1964

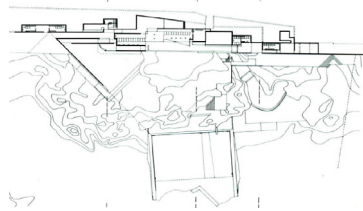
REFERENCES



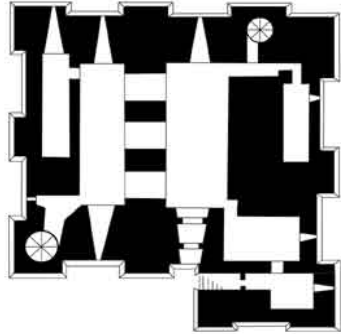
AGENT ARCHITECTURE: Olafur Eliasson's sun in Tate Modern museum in London. The installation made people react to the room differently, it was a active component that generated a change in behavior.



MATERIAL EXPRESSION: Trollstigen, Reiulf Ramstad Architects's use of material connects to the surroundings though its simplicity, yet detailed expression.



MEETING WITH THE SEA: Alvaro Siza's Piscinas de Marés meets the coast and the sea and uses the location to amplify the natural context.



PROTECTION: The old castles and forts reveal a complex room program within its thick massive walls. The protective skin proves to be beneficial not only for safety but also for habitation, the tension between the massiveness and the open is a quality in its self.



INTERIOR: Fosen Folk-high school, this work-hall represent the perception of a buzzing work place, clustered yet spacious. Where the production and the product, becomes space within the space.

