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CUSTOM MADE

Exploring architectural expression and identity by merging Critical Regionalism & sustainability

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Exploring architectural expression and identity by merging Critical Regionalism & sustainability in an archipelago context at the Öckerö Islands.

Abstract

Still riding on a modernistic wave, the architecture of today is losing its context. There is a need for changing the perspective of architecture, to take the concept of region into consideration.

This thesis is exploring architectural expression through a critical regionalist perspective, adapting to the local conditions and taking the spirit of place into consideration. Aiming to find inspiration for how to represent local architectural identity, within the framework of sustainability.

The case study is performed in Öckerö Municipality. There are many development projects ongoing on the Öckerö Islands and there is a current discussion on whether the new plans are suitable for the context. This makes the thesis relevant to feed the local discussion about the future development.

The thesis is conducted through cycles of analysis, theory research, design and the development of a manifesto. The analysis includes the project site and its planned exploitation, historical conditions, opinion from the local population, other architectural projects and the comprehensive plans of the municipality. The analysis in combination with theory is feeding the development of the manifesto, which is a set of guidelines to follow in design.

The outcome of the thesis is the manifesto and design explorations, contributing with new context to the discourse of critical regionalism and merging it with sustainability aspects. This while also making a comment in the local discussion in the island context. Contributing to a wider understanding of the problem and opening up to possibilities of rethinking exploitation strategies and architectural significance at the islands, and maybe by extension, also in other places.

STUDENT BACKGROUND

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Architectural Conservation and Transformation 7.5 hp
Reality Studio 22.5 hp
Masters Thesis Preparation 7.5 hp
Sustainable Building: Competition 15 hp

Grown up in Hönö, the interest for Bohuslän, its culture and architecture, came naturally. The commitment to sustainability came during the school years, while understanding the crisis we face concerning nature and climate. It was the main reason to chose the master program Design for Sustainable Development.

In the future we are going to need strong and resilient communities for our civilization to withstand the challenges ahead. One part of this, is to strengthen local communities by acknowledging their identities and aspirations. Such as architectural identity. Finding common ground and working together for a better and sustainable future. This thesis might open up to new ways of discussing the development of the island communities.

READING INSTRUCTIONS

The thesis is divided into the chapters Introduction, Theory, Manifesto, Context, Program, Design, Discussion and Conclusion.

INTRODUCTION	Presents the purpose and questions, background, methods, delimitations and a theoretical overview
THEORY	Describes the research that support the thesis and its aims. Divided into the categories Critical Regionalism, Regional Building Tradition and Sustainable Building
MANIFESTO	Stating the points important to consider when designing critical regionalist and sustainable architecture
CONTEXT	Tells about the Öckerö Islands, the island Björkö and the project site
PROGRAM	A list of requirements for the specific site, which has been taken into account in the design explorations
DESIGN	Presents and explains the design explorations. Presented by scale, it is divided into the themes morphology, typology and detail
DISCUSSION	Comments and highlights issues and outcomes of the thesis itself and related topics. Answering the research questions.
CONCLUSION	A summary of the discussion, discourse and outcome

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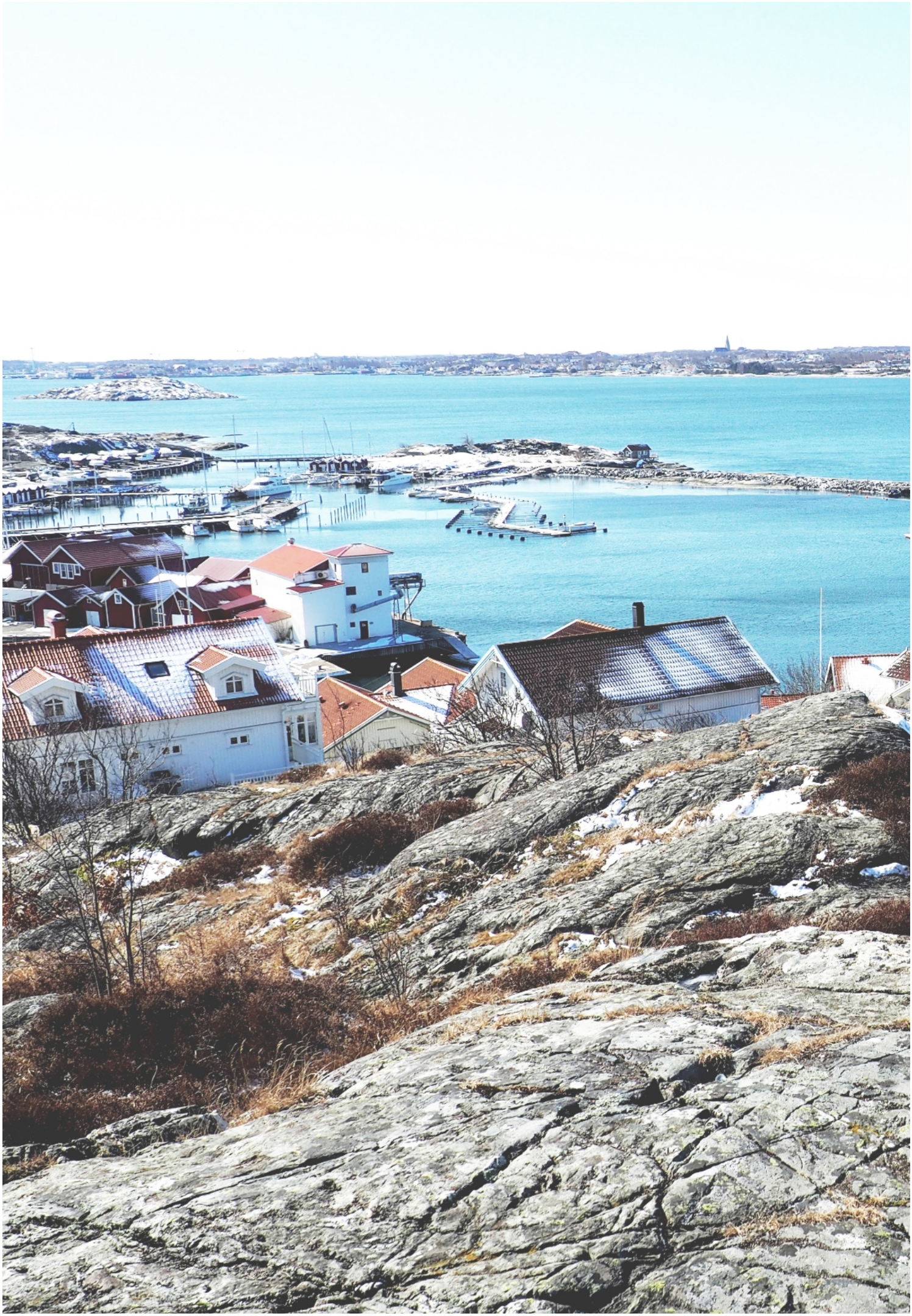


Introduction

PURPOSE

The purpose of this thesis is to contribute with ideas and interpretations of how to take local architectural character into consideration when designing new and sustainable buildings. The exploration has been focused on giving different examples of how this can be done, and stating their advantages and disadvantages. Hopefully this can be a positive fuel for the current local discussion of building character and expression.

The thesis is meant to highlight the importance of considering the local context in design, since this is a perspective lacking in many ways today. The contemporary constructions need to be adapted to the environment and architectural heritage. The aim is also to give inspiration on how to deal with contextualized architecture today, as a way to contribute to the preservation and development of local architectural identity.

The thesis is exploring architecture and development ideas, through a critical regionalist perspective, adapting it to the local conditions and taking the spirit of place into consideration. Aiming to find ways to represent local identity in architecture, while also designing sustainable buildings.

MAIN QUESTIONS & OBJECTIVES

How can we design for local relevance and critical regionalism as well as sustainability in the Öckerö islands?

What would contextualized, sustainable and contemporary island architecture look like?

This thesis aims to find ways to interpret the local architectural character in new building design, through finding guidelines in theory, analysis and reference projects. Added to the aspect of local architectural character and critical regionalism is that of modern requirements of people and nature. We need to build sustainably and accessibly, and there is a challenge of how to fulfill all aspects.

BACKGROUND

GLOBAL DISCOURSE

Much of the architecture of today lacks relation to its cultural context. The still dominating modernist approach, includes ideas of "*International Style*", which is a concept that scrapes the architecture from its situational and cultural expression. But these buildings are not free from norms and culture, they simply claim to spread a certain expression, and culture, all over. This disables local architectural expressions to live and grow.

Therefor there is a need for changing the perspective of architecture, to take the concept of place into consideration. The Critical Regionalism movement, initiated by Liane Lefaivre & Alexander Tzonis (2003), aims to counter the concept of international style, with specific and regional architecture.

Driving forces such as globalization also contribute to anonymizing architecture and the physical environment. Concerning globalization, the effect is not entirely one-sided, there are also claims that globalization increases distinction between places. Johannisson and Egeland (2003) describe the globalization paradox as a creation of larger communities, but at the same time, creation of larger distinction between smaller communities. The globalization reduces significance to geographical place but also enhances it due to the need for attention in a global competition.

I believe we can embrace the globalization and also strengthen local communities. A part of that is to preserve and develop local identities, and in this thesis that concerns specifically local architectural expression. The point is not that everything within the local context should look the same, but that it should not look the same as everything else, everywhere else. Specific, but also varying and embracing multiple cultures and expressions.

Capitalism also affects the building industry in a profound way. The driving forces and frameworks for building are mainly economical, which means that, in a time of housing shortage and high building demand, the goal becomes to build as much as possible, as fast as possible and as cheap as possible. If this is the main priority, there is not much possibility to build good and relevant architecture, challenging the current

building norm. It is time to question the effects that capitalism has on architecture and discuss the social and cultural value of architectural expression and quality.

Today we also face challenges regarding resources. The Global footprint of the average population exceeds the capacity of the planet (Global Footprint Network, 2018) and several of the planetary boundaries are being met or exceeded (Rockström et al., 2015). This is not a sustainable development, and so, it is always important to consider how architecture and design can play a part in contributing to change and sustainability.

LOCAL DISCOURSE

There are many development project ongoing on the Öckerö Islands and there is a hot current discussion on whether the new plans are suitable for the islands. One of the much debated projects, is a residential catalogue building called BoAktivt. It is according to many, not in line with the local culture and spirit, and many have trouble with the scale of the project and also the fact that it is located in one of the islands most visited beaches and natural environments. People do not identify with this clearly, and I think it is a very clear example of how the architecture do not take into consideration the spirit of place, or the local community. A standardized solution that works anywhere? I do not think so. It is clear that architecture and planning issues raise questions and emotions in this community, but today many people in the islands are not feeling prioritized or represented by the authorities.

Hopefully this thesis can give inspiration for new ways of designing for the Öckerö Islands, that is more in line with the wish of the people to preserve the character of the built environment. The design explorations can feed the discussion on what type and expression of buildings that are desirable in the local context.

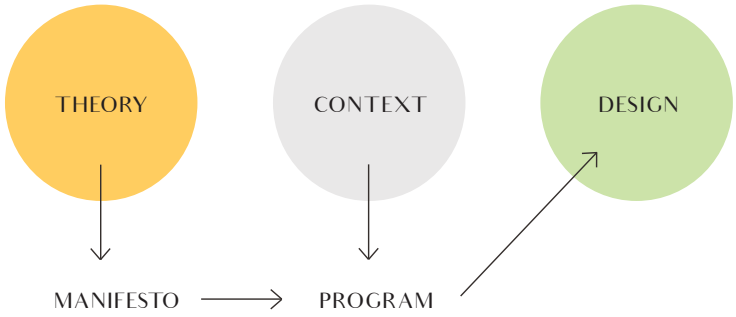
METHOD

The development of the thesis has been a process including literature research, analysis, the development of a manifesto as well as a local program, and sketching on potential designs.

The literature research has included reading on Critical Regionalism, the regional building tradition and aspects of sustainable building. The analysis has partly been about collecting information about the local situation and partly about finding examples of other projects which express similar dilemmas in their design.

The manifesto consists of different statements of how to design for local environments, and is general in its presentation. The program is a collection of specific issues to respond to within the context and at the site. The manifesto and program are a result of the research and sketching, and has been modified and developed throughout the process.

Sketching has consisted mostly of idea generation and has been focused on the expression of the area and buildings. The sketching has been informed by the analysis and research, but has also brought new questions and dilemmas, which has directed the continuation of these studies. The result of the sketching is presented as two different design examples, meant to inspire to new ways of dealing with contextualization. It is important to note that these design explorations are not proposals, they are not complete, and their purpose is to raise questions and discuss advantages and disadvantages with different design approaches, rather than to provide one single solution.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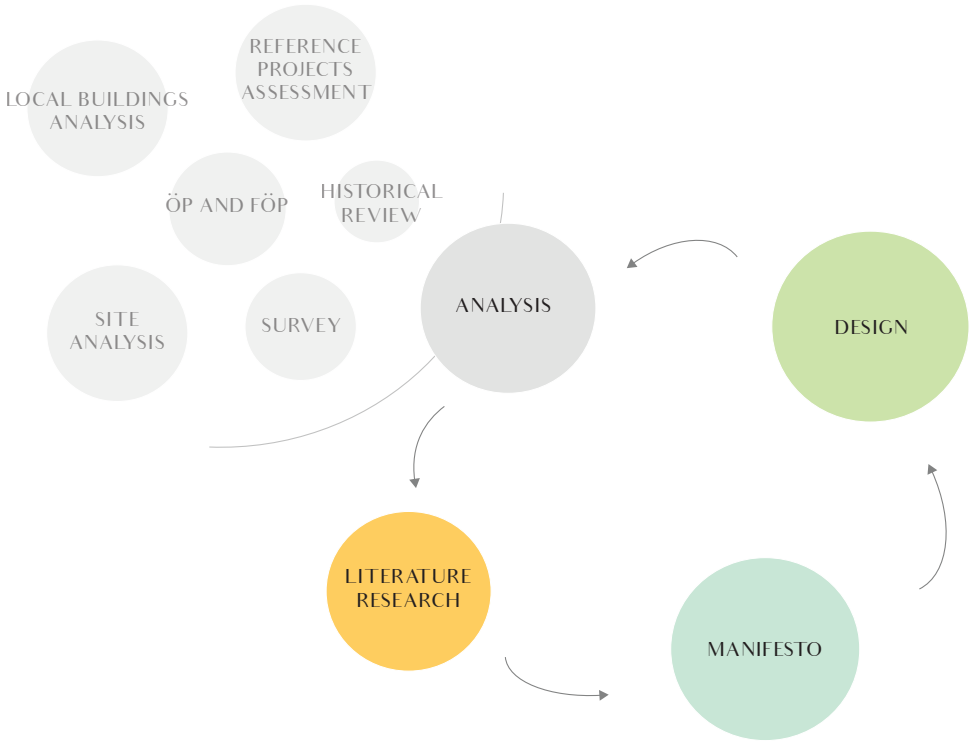
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REFERENCE PROJECTS ASSESSMENT
ÖP AND FÖP
HISTORICAL REVIEW
SITE ANALYSIS
SURVEY
ANALYSIS
DESIGN
LITERATURE RESEARCH
MANIFESTO

THEORETICAL OVERVIEW

The theory referenced in this thesis is divided into three chapters, Critical Regionalism, regional building tradition and sustainable building.

Critical regionalism is an approach, or movement within architecture, that criticize lack of contextualization in the modernist idea of *"international style"* as well as that of too individualistic and superficial post modernism. Kenneth Frampton is one of the most famous advocates of this approach, and therefor his *10 points on an Architecture of Regionalism* has been a main source to understand and widen the perspective on contextualized architecture. Other than Frampton, Lefaivre and Tzonis book *Critical Regionalism* has been an important source, also giving examples of critical regionalist projects. The framework of Critical Regionalism has put the thesis in a theoretical context, building on ideas that are already established. The thesis itself can bring a new time and place for the implementation of these ideas, as well as adding another layer, which is sustainability.

The regional building tradition chapter is focusing on understanding the traditional settlements and buildings in the Bohuslän region, aiming to find the keys to why they are most liked and appreciated. It also investigates the architectural development of the region, and its underlying causes. A key source has been the report *Kustorter i Göteborgs och Bohus län, Bebyggelsens tillväxt och framtid* by Byggforskningsrådet.

Concerning sustainable building, several different topics are lifted, such as circular economy and social sustainability aspects, but also rock preservation, sustainable materials, in this case wood, and Cradle to Cradle. Two of the main sources are the books *Byggekologi* and *Cradle to Cradle, remaking the way we make things*. The sustainable building chapter is informing and motivating design choices.

DELIMITATIONS

This thesis aims to shine a light on different possible approaches of how to correspond to local architectural heritage and identity. It is not meant to give a final answer to the question of how the municipality and contractors should deal with these questions, but rather to give inspiration and widen the perspective on possible solutions for architectural adaptation in the local context.

Meanwhile, it is meant to highlight the importance of considering the local context while designing new architecture, since this is a perspective lacking in many ways today. Contemporary constructions need to be adapted to the environment and architectural heritage found on the islands.

Since it has been important to be able to show examples of different critical regionalist design approaches, the thesis does not present a complete design proposal for either of the ideas. The aim is not to present a finished and realistic project proposal, but to explore different alternatives and possible adaptation strategies, highlighting their advantages and disadvantages in order to inform and broaden the current discussion.

The focus of the design explorations has been on the expression and spatial qualities of the buildings. Although technical systems and construction principles are considered important, it has not been studied in depth.

Theory

CRITICAL REGIONALISM

There is a need for changing the perspective of architecture, to take the concept of region into consideration (Lefaivre & Tzonis, 2003). The authors of Critical Regionalism state that there is great importance to connect to the local within architecture. This is my belief as well, and I am under the impression that most of the worlds modern architecture is also modernistic and lack relation to its context. It is an important task for us architects to manage contextualization as well as modernization.

Critical Regionalism is sprung from the desire to create an alternative to modernism and post modernism. The movement is critical to the modernist indifference and hostility towards history and culture and takes a stand in the fact that most postmodern buildings are, apart from their appearance, very similar to the modernist buildings. To shift the focus from modern or anti-modern architecture, the term regionalism was born. Regionalism was intended to give *"priority to the identity of the particular, rather than to universal dogmas"* (Lefaivre & Tzonis, 2003, p.20). Furthermore, to enlighten the importance of a critical perspective, to define constraints and origin of tools being used.

The authors of Critical Regionalism (Lefaivre & Tzonis, 2003) describe their idea of the book as to rethink regionalism using a bottom up approach, acknowledging the importance of the identity of a physical, social and cultural situation, rather than mindlessly imposing narcissistic formulas from top down.

Anthony Alofsin has written an essay on Constructive Regionalism, which is part of the Critical Regionalist movement. In this essay he gives some contradictory descriptions of what a Constructive Regionalist architecture is. These different statements are contributing to the understanding of Critical Regionalism, and are here concluded as a list. Some of Alofsins statements are, that a Constructive Regionalism should:

- *Convey universal qualities but deny universal style*
- *Reveal personal attributes of the designer or builder but deny the glorification of the individual*
- *Exalt the craft of a building but also encourage consciousness in the manufacture of machine products*
- *Embrace the native detail and color but discourage cultural hedonism*

(Alofsin, A. 1980)

Alofsins criteria is pointing in the direction in which this thesis is aiming, to build on local architectural tradition but also embrace the benefits of globalization and technical evolution. The point of letting the architecture reveal personal attributes, is interesting relating to the tradition of gingerbread work in Bohuslän. What would it look like if the contemporary architecture also had personal remarks and ornament?

To conclude he states that *"Commodious buildings with proportions appropriate to human use and facades that are faces of architectural tradition and local life will encourage not only the bonding of people, but also elevate architecture into an ennobling product of culture."* (Alofsin, A. 1980, p.373).

Cultural representation in architecture is getting increasingly relevant and important as the development of our cities, villages and islands are getting increasingly standardized and similar. A counter movement is emerging, but unfortunately has not yet reached the core of architectural qualities. In the Öckerö Islands context, this opposition to homogenization and strive for locally fitted architecture rarely consider values beyond a few traditional visual features. Despite of this, I must say, the effort is welcomed when considering the alternative as no adaptation to local conditions and architectural tradition whatsoever.

Frampton (1987) argues that the International Style, although it attempts to present itself otherwise, remain more or less unchanged through time. The alternative of critical regionalism, should lie beyond the concept of style.

In his polemic Frampton (1987) lifts Ten Points to consider in Critical Regionalism. These are:

1. Critical Regionalism and Vernacular Form
2. The Modern Movement

3. The Myth and the Reality of the Region
4. Information and Experience
5. Space/Place
6. Typology/Topography
7. Architectonic/Scenographic
8. Artificial/Natural
9. Visual/Tactile
10. Post-Modernism and Regionalism: A Summation
(Frampton, 1987)

The first two points explain the background and position in which Frampton places Critical Regionalism, not to be confused with vernacular architecture, and not to be seen as a collective disregard to all modernist architecture.

The third point is about the concept of region, where he pushes the question of limit and institutional status of the region, but also the importance of discourse and client for cultural significance (Frampton, 1987). Defining the region within this framework, becomes a first step of how to design for it.

In the fourth point, information and experience, Frampton highlight the problematics of media and the confusion of not being able to separate information and experience. He also problematizes reading buildings as, and through, pictures since it does not provide the sense of the place, the genius loci.

The fifth point concerns Space and Place. Modern urban development has increasingly been heading towards a "universal, privatized, placeless domain" (Frampton, 1987, p. 382). It is more about creating space than to relate it to its place. This development has been questioned, criticized and seen as a loss of public influence, civic domain, in society. Since not very much has changed since the writing of this text, this calls for a democratization of architecture.

Following, the sixth point describes the inevitable and consistent presence of topography, in relation to typology which is only in some cases locally rooted. About the architectonic and the scenographic he writes that a scenographic approach contributes to the reduction of architecture to simply an image, while the tectonic values are richer and can tell about how the building interacts with its surroundings.

In the contradiction of artificial and natural, he brings up light as one example.

Natural light allows us to connect to seasonal and daily changes and rhythm, while the lack of it distances us from our environment and context. Visual and tactile he discusses in the way that the visual aspects of architecture must be complemented by strong tactile experiences, they need to complement each other and co-exist. The rhythm of a staircase is an example he brings up, as it affects your flow and mood while walking in it.

The tenth point is about positioning Critical Regionalism in relation to Post-Modernism, and describing Critical Regionalism as *"...a critical basis from which to evolve a contemporary architecture of resistance"* (Frampton, 1987, p. 385).

Framptons ten points function as a base for how I understand and work with Critical Regionalism, and his points will be further integrated in the manifesto of this thesis, concerning the aspects of place and region, topography, the natural and the tactile to complement the visual. In the case of architectonics and scenography there is certainly a point in valuing tectonics. But in the context of the islands, it seems unreasonable to disregard the scenographic features, since the landscape and the buildings are to be watched from a distance, painting a picture of what they are. In consequence, the scenographic values might be treated with a higher status in this specific context.

Framptons points will be part of the framework for the analysis, literature research & design. Added to Framptons points is the aspect of morphology, which is strongly connected to the building tradition in the region of Bohuslän. There is also an internal division of which visual and tactile aspects that will be considered. The following points will be examined:

Topography	Visual aspects	Tactile aspects
	- materials and color	*- materiality*
Morphology	*- ornament*	
Typology		

REGIONAL BUILDING TRADITION

THE BOHUSLÄN HOUSE

Topography

The traditional settlements in Bohuslän are placed in close connection to the ports or farmland and according to the landscape. The location has been chosen according to the weather conditions and the terrain. The buildings were placed at the foot och the rocks, to provide shelter from wind and to avoid covering valuable farming soil.

Morphology

The two different types of settlements found historically in Bohuslän, are called "*Klungbebyggelse*", which means cluster of buildings and is found around the ports, and "*Randbebyggelse*", which means border settlement and refers to the placing in the border between rocks and plains, which was typical for the farmers settlements. The border settlements were never placed at the rock, never in the plains, but at the border. (BOSAM, 1980)

The building clusters came about as the fishing developed and rooted itself as a profession in Bohuslän. There has been simple settlements in proximity to the ports for over three hundred years, but it was at the time of the great herring periods that these communities truly evolved. The houses were built on the rocks, near the water, to enable a surveillance of boat, tools and weather. (Byggforskningsrådet, 1982)

Typology

The traditional Bohuslän house is either an *"Enkelhus"* which means single house, or a *"Dubbelhus"*, a double house. The double house has a ground floor plan with three rooms and kitchen, and a chimney stack in the heart of the building. There is usually a

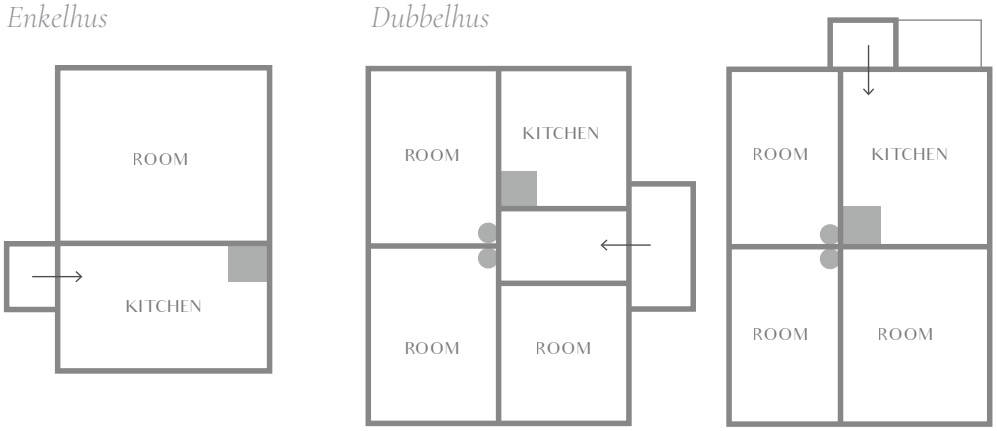
furnished attic as second floor. This typology became common in the Bohuslän region, but it is also found in other places in Sweden.

The single house was a smaller house that was affordable also for low income citizens and it consists of one room and kitchen, sometimes extended with a chamber. This type is often found extended in some way, since the size was modest when they were built.

Through time, the construction of the houses has changed. The early houses had open ceiling, up to the roof ridge. Later it became more common with an attic solution. The heating of the house went from open fire to a masoned or iron stove. By the second half of the 19th century and onwards, the houses became bigger and it was common with a furnished attic. From around 1930, the modern installations such as electricity, water and central heating, were introduced.

(Bohusläns Museum, n.d.)

The single house is found all over Sweden, and the double house has become more of a typical Bohuslän typology, since it is so common in the region. It has become the starting point of the Bohuslän building tradition. (Sotenäs Kommun, 2004)



Illustrations made by the author, from drawings found in "Kustorter i Göteborgs och Bohuslän: Bebyggelsens tillväxt och framtid" by Byggforskningsrådet (1983) and "Bygg med Känsla" by Sotenäs Kommun (2004).

Visual aspects

Materials & Color

Up until the mid 1800s, the Bohuslän houses were typically one storey high with a loft, *enkelhus*. They were constructed with timber, on a low stone crawl space foundation, or right on the rock. The buildings had a timber structure, with a standing wooden panel facade, unpainted or painted in red calcimine color, *Falu Röd färg*. The roof was covered in turf, wooden poles or brick tiles, in the early buildings of the islands. (Byggforskningsrådet, 1982)

Later, it became common to build the bigger, *dubbelhus*. The double house has a stone wall foundation that is usually quite high, which makes room for a cellar (Sotenäs Kommun, 2004).

The houses defined as *"Bohus-hus"* by BOSAM (1980) has a wooden facade, is painted in light color and has a red brick roof.

Ornament

The early Bohuslän buildings lack ornament, but during the later 1800s it became common to add ornament and a gingerbread work tradition grew. Ridge gable ornament is common, as well as ornament under, above and on windows.

During the 1850-70s there was an ambition to increase health and wellbeing of the people through clean, functional and beautiful residences. Ginger bread work was promoted, and so it became part of the previously simple and undecorated Bohuslän building tradition. The entry of the jigsaw made the work rational. (BOSAM, 1983)

Tactile aspects

Materiality

Materials used in traditional building have mainly had practical purposes. Wood was easy to handle, stone was accessible in the region. But the result has been a common material framework that is very characteristic.

Since the use of materials has been quite uniform though the history, it has a clear connection to the architectural identity. A house which does not have a wooden facade, would probably not be defined as a *Bohus-Hus* even in present days, when a range of facade materials are available.

REGIONAL DEVELOPMENT EFFECTS

The history and development of the society as well as the local communities have strongly influenced the building tradition and character.

In the early settlements along the Bohuslän coast, the main occupation was a combination of farming and fishing. Then most of the houses were found in the valleys by the farmland. Small fishing villages also emerged, as some people made a living of fishing only. (Byggforskningsrådet, 1982)

1700s

The herring periods changed the life on the Bohuslän coast. During the late 1700s, the population grew, with many temporary residents working in the herring business. This included fishing, but also treatment of the herring, in salting-houses, tryworks and cooperies. The buildings were often extended, with loft in the attic or storage spaces. The timber houses were dressed in wooden panel and the roofs now got clay tiles instead of turf, reeds or woodwork.

1800s

In the beginning of the 1800s, the herring disappeared and the temporary residents along with it. Left was the native fishing population. Those who were wealthy, mainly sea captains, built larger houses for their families, the double house was introduced.

During the 1800s, there were many technical inventions that changed the way the

houses were built. Machine production of planks and other wood products, as well as rock blasting and stone cutting techniques made larger houses and better walls possible. Now the attic floor was furnished and with full height. Ornament flourished, and often the local carpenters used similar patterns for ornament on different houses, so the expression is often local. Extensions such as glazed verandas were made. Around the 1880s the light colors became common in the facades. Then, the ornament was usually painted in a dark colors.

1900s

Another herring period came, around 1900. Here, at the turn of the century most Bohuslän communities prospered, since many different industries were profitable at once. The buildings got steeper roofs, or mansard roofs. Ornament in the shape of diamonds became popular. The new houses were built at the edge of the current villages.

After the first world war, asbestos cement slates and concrete bricks were introduced in Bohuslän.

In the 1930s there were some functionalistic houses built in Bohuslän, but they are not very common to find. In 1947 there was a new building law, that gave the municipality more power over what was to be built. The intention was that the influence of the society would increase. It was no longer possible for landowners to build without a municipal plan.

After 1930, many municipalities in Bohuslän had a depopulation caused partly by fall of the stone and shipping industries. Although Öckerö kommun was not much affected, since there was a strong and developing sea-fishing in the islands.

After the second world war there were plenty of new materials used in construction, such as concrete roof tiles and facade covers, lime bricks, corrugated sheet metal, plastic boards and plastic pipes are some examples. New insulation materials and windows made it possible to build warmer and more air proof houses. Standard, prefabricated houses started to spread around the country.

The sanitary regulations that required water and sewage treatment, usually implied

rock blasting to fit sloping pipes.

From the 1950 the traffic planning became a large part of planning and dictated the conditions for development. The car shifted the transportation from boat-based to car-based. From this also better and bigger roads, bridges and ferries etc, followed.

There was also a pressure to increase standards and centralize the communities and priority on large companies over small ones. This affected the coastal communities since the small scale and multi businesses was the foundation upon which these communities were built.

Since the living standards increased, there was a higher demand for land, both by businesses and private persons. This privatized many areas on the Bohuslän coast. In 1952 the shore-land protection law was adopted and in the 60s two different environmental protection laws were established.

The buildings that were constructed in the 50s were often similar to the turn of the century double houses. But as foundation material now the concrete bricks were used, instead of stone. The structure consisted of a wooden framework and was insulated with mineral wool. The facade typically was without ornament, painted in light colors. The material was standing wood panels, or the asbestos cement slates. The symmetrical window-setting often changed by taking out larger and wider windows, by the corners of the house.

In the 60s, many municipalities in Bohuslän received a ferry connection to the mainland, Öckerö included. Most of the Öckerö islands are accessible by car, but the built environment was deteriorated as a consequence. This was evident as the non car accessible islands in the region became increasingly popular.

The standardized house came to influence the coastal communities in the 60's, which was interrupting the local building tradition. At this point, almost any type of house, without local connection could be built in the region.

In the 70s the municipalities made comprehensive plans for their communities. In this time, the question of treating the cultural heritage and the architectural heritage became important.

In the 1900s Gothenburg and its industries were growing, and became a working

opportunity for the islanders, as the fishing was reduced. Since then, the Öckerö islands, as many others, has been a commuting municipality.

(Byggforskningsrådet, 1983)

HOW TO DESIGN FOR BOHUSLÄN

In the report from BOSAM, (1980) the authors state that adaptation to the landscape is the key to build in the Bohuslän character. They formulate three different guidelines to conclude the study:

1. Adapt the building to the landscape
2. Develop the Bohuslän architectural character
3. Build with coherency but yet variation
(BOSAM, 1980)

In the article "*Hus vid Hav*" in Gröna Fakta (Palm Lindén, K., Uddenberg, E., 2002), the importance of the coastal landscape of Halland in west Sweden is lifted. It discusses the possibilities to preserve the existing qualities while also making room for new inhabitants. There has been a development of a architecture program for the Hallands coast which contains the following points:

Your house is the neighbors view
This concerns the placement of the houses, to let others keep their view as much as possible and to break down the building into smaller volumes if it becomes large. Also to adjust the color scheme to the nature and the local tradition. Wood is traditionally the facade material that is most appropriate. Adjust the openings to the scale and size of the building and let verandas etc be a part of the house.

The plot is a part of nature
Respecting nature, the authors mean, is about avoiding rock blasting, to keep natural land and vegetation, and when planting new to use plants native to the area. It also means not taking over by creating large, hard surfaces and light pollution, the lighting should be low and discrete.

Let the landscape dominate over the houses
To let the landscape play a leading role in the skyline and to preserve the open landscapes and views towards the sea are way to allow the landscape to dominate. It is also important to make the waterfront accessible and to make sure to provide green lanes for plants and animals.

(Palm Lindén, K., Uddenberg, E., 2002)

There is much to be taken from these points also into the context of Bohuslän, they are quite general, and relevant in a broader context. Although, as the article also mentions, colliding interests are a fact. It is important to consider all the different aspects of the conflict in order to make the right, and most sustainable, choice. Long term care of the environment must be prioritized before short term economical profit.

CONCLUSION

The reason why the Bohuslän buildings are much appreciated probably lies in the organic morphology, small scale and the common threads that keep the expression of the buildings together and creates a whole which is harmonious but still contains variations. These are factors that has been identified by the theory brought forward, and the combination makes a loveable place. Although, it is debatable if all these contribute, and how much so. It might be very individual what is most appreciated about these environments, and what is considered unimportant. Since this research focuses on the buildings themselves, the natural landscapes found in Bohuslän is not lifted as a parameter, but evidently it has a major impact on the impression and spirit of this place.

To design for Bohuslän, the characteristics of the present and traditional buildings should be taken into consideration, as well as the natural environments and the landscape. An interpretation of the local building character can take shape in many different ways, a key might be to find common features and similarities between the new and the old. To design by place rather than simply by time.

SUSTAINABLE BUILDING

"We begin to make human systems and industries fitting when we recognize that all sustainability (just like all politics) is local."

(Braungart & McDonough, 2009, p.123)

Everything affects its local surroundings and it should be given that these effects are good, at least for someone or something. That is not always the case today.

The sustainability aspects of building are many. The approach taken in this thesis, is to keep a holistic perspective on sustainability and to try to touch upon many different areas of sustainability, rather than focusing on just one. This means there will be no invention or innovation created on either of the different subjects, but rather using existing sustainability concepts in the design, together with the critical regionalist perspective.

SUSTAINABILITY GOALS

The UN Sustainable Development Goals, Agenda 2030, implies changes in the way we live, and build. *Climate Action* in combination with *Sustainable Cities and Communities*, *Responsible Consumption and Production* as well as *Life below water and on land*. Although the goal nr. 11 is focused on cities, it is still a relevant background to all future construction. For example one of the targets concerns protection of natural and cultural heritage, with is a concern for all places. Goal 12 is aiming at sustainable consumption and production patterns, which can, and should, be applied in the building industry as well as in peoples every day lives. It includes management of natural resources and energy, which is a key factor in sustainable building. Life under water and on land is focused on protecting ecosystems, as well as strengthening their resilience, an important goal

that must always be considered while exploiting nature to construction. (UN, 2015)

The Swedish environmental goals are another source that reflects the aim of a sustainable future. *Hav i balans samt levande kust och skärgård*, oceans in balance and vivid coast and archipelago, is a goal that aims both at protecting ocean and coastal ecosystems, and to preserve natural and cultural values as well as recreation.
God Bebyggd miljö, good built environment, is another of the Swedish environmental goals, which includes both natural cultural values, healthy environments and environmentally adapted buildings. There is also a parameter of long term well used resources. For these goals to me met there is a need to include them in every project. (Naturvårdsverket, 2005)

CIRCULARITY & MATERIAL RESOURCES

Circular economy

"A 'circular economy' would turn goods that are at the end of their service life into resources for others, closing loops in industrial ecosystems and minimizing waste". (Stahel, 2016)

In a circular economy the flows turn from production, consumption and disposal to production, maintenance, reuse and recycling. A no-waste building industry requires the use of renewable materials and energy, as well as a well functioning reuse and recycling system for non renewable materials. When it comes to our everyday lives, one way to reduce consumption and disposal is to shift from being focused on material consumption and private ownership to satisfying material needs by sharing, a sharing economy.

In the study The Circular Economy and Benefits for Society (Wijkman & Skånberg, n.d), it is expected that a turn from todays linear economy to a circular economy would reduce carbon emissions for the subject countries with up to 70%. It will also require more manpower than the current system, which will reduce unemployment. This gives incentives to turn to a circular economy, and although the report also claims that a shift to circular economy will require an investment boost, it is reasonable to stir the future development in a circular direction and push transition from the local perspective.

Cradle to Cradle

Nature is a system which has no waste. All nutrients are cycled between species in different forms, in an endless loop where one organisms waste becomes another's food. Today human activity is partly set aside from this system, and we have constructed our own systems, which are based on a linear processes, cradle to grave. The idea of the Cradle to Cradle philosophy is to turn also all our constructed systems into fully circular flows.

The authors describe the circular flows using two different metabolisms, the biological cycle and the technical cycle. What cannot go into either, due to hazardous chemicals or other reasons, must be phased out. In the biological cycle, materials are turned back to nature and the biosphere as always, and in the technical cycle all non biological materials shall circulate. For the cycles to reproduce healthy and qualitative materials, it is most important that materials from different cycles do not mix. (Braungart & McDonough, 2009)

For a building to be circular it is important to consider the lifetime of the different materials used in construction. To design components so that they are easily maintained and replaced, and reused if the building is to be dismantled.

In this thesis, the cradle to cradle concept will be guiding material choices, as well as idea creation for potential circular concepts. Since components are not designed in detail, the modularity concept remains a statement and recommendation for further studies.

Wood

To achieve circularity of building materials, there has to be a system in which the materials can be reused or recycled. Renewable materials, such as wood and straw for example, are already part of a natural circular system as they grow infinitely by solar power. Non renewable materials are for example stone and clay materials, concrete and metals. They have to be taken from the ground and are not naturally reproduced. They demand a man-made system of reuse to be considered circular.

According to the authors of Byggekologi, wood *"is in nearly all situations one of the best materials from an environmental perspective".* (Freely translated quote, Bokalders & Block, 2009, p. 42)

Wood is a renewable material, is has a low or even negative CO2 footprint from a life-cycle perspective (Bergman, R., Puettmann, M., Taylor, A. and E. Skog, K., 2014), it is not in itself toxic, and as for this thesis it is also the most common and traditionally used material.

ENERGY

Passive solar heating

Reduced energy demand for a building can be achieved by considering the shape, type and weight of the building in design. The principle is that as much volume as possible, with as little facade area as possible, is the most energy efficient building. The weight is relevant since heavy materials are better at storing heat. Other design choices that effect the energy demand of the building is the division in different temperature zones and to use foundation methods that maximize contact with the ground. (Bokalders & Block, 2009)

Passive heating of buildings is also dependent on the floor-plan and the heating system. A more open plan solution will make the heat distribution easier. Passive solar heating can be maximized by placing large windows to the south, with adapted shading to compensate for the different needs of the different seasons. By glazing the southern facade more and the north facade less, there will be more heat gain and less heat loss. An alternative to simply using windows is to add an entire glazed room, such as a glazed veranda or greenhouse attached to the building. (Bokalders & Block, 2009)

Insulation

The authors of Byggekologi (Bokalders & Block, 2009) state that the insulation is one of the most important factors when building energy efficient housing. Over 90% of a buildings total energy demand (over 50 years) is from heating and running it. At the same time, buildings stand for about 40% of the energy consumption in the whole of Sweden (Bokalders & Block, 2009). Generally, a thicker insulation is to be preferred, but the different properties of different materials in insulations and construction

indicate different measurements. To enable well insulated buildings, there walls are therefor drawn thick, to such extent that they could fit even straw bale insulation.

These aspects have been implemented in the thesis by the thickness of walls, and trade off between a building shape minimizing heat bridges, and its expression.

Energy production

Energy and heat production using solar panels, is a given option to be considered in every building today. A local, small scale and clean energy production not only reduces emissions but also makes the local community more resilient. It has not been a focus area to find the best conditions for solar power in this thesis, partly due to municipality plans of building a wind power plant, but it is my belief that it can work well in combination with passive solar heating, and my recommendation that the use of solar energy production is elaborated further ahead.

RESILIENCE

Water

Due to expected sea level rise and increase of extreme weather (SMHI, 2017), it is important to consider ways for the water to be taken care of in days of heavy rain or storm surges pressing water in from the ocean. For the site this will imply avoiding to build on the lowest, wetland areas to preserve this buffer zone to store access water.

Weather protection

Wind protection is an issue which has been most relevant to the coastal region, where winds hit hard. The traditional way of sheltering buildings from the wind has been to place them leeward from the rocks (BOSAM, 1980), which is still a relevant method. In the site on Björkö, it is a remarkable difference in wind between the top of the rocks and the hollow in between.

Local resource production

Giving possibilities and support to local production of for example food and energy is a way to make the local community more resilient to crises in society. In the case of Öckerö municipality, the energy aspect is improved by the construction of the future wind power plant, and could be even more so with small scale solar energy installations. Food production can be suggested as a way to spread knowledge about growing food, and at the same time bring people in the community closer together by engaging in a shared activity. Adding to resilience, but also recreation.

CAUTION

Wildlife preservation

Coastal borders and wetland areas are important habitats for many different species (Naturvårdsverket, 2018). Hence, it is important to consider the possibilities to preserve these areas. *Strandskyddet*, the Swedish law of coastal protection, already gives protection for species dependent on beaches etc, which means that in this case wetlands and other natural environments are in focus. Natural forests and trees are also valuable resources, not to be taken down without consideration.

Since the site of the thesis project is much covered by greenery such as trees and small wetland areas, the exploitation of this site must be planned with the notion of, and in relation to, the values lost.

Rock Preservation

One sustainability aspect to consider in this thesis, is that of rock preservation. To preserve the characteristic Bohuslän Rocks for future generations. The blasting of the rocks can be avoided choosing the right foundation type for the buildings. In Maria Petterssons thesis (2013), she is describing three different types of foundations, that also can be combined in different ways to create other alternative solutions. Her conclusion is that a conventional slab foundation, is not suitable for building in a rocky landscape.

A masoned foundation, similar to the traditional ones, is respectful to the rock in the sense that it can be placed upon the rock, with no piecing or blasting of the rock. A plinth- course foundation is also a viable option, since the interference with the rock is minimized to two to three pierced holes per plinth.

Pettersson is also suggesting an elevated slab foundation, as an alternative when constructing on rocks. Then a frame of walls can be built up according to the terrain, not necessarily needed to be reinforced by rebars pierced into the rock. Inside the frame, filling such as stone and gravel can be put, which then the slab and insulation is placed upon. There is also possibilities to make the foundation in different levels, when the terrain allows it.

The thesis also lifts the problematics of roads and communications. Pipes and roads have even tougher to adjust to the landscape, since the conventional construction method requires a deep and flat foundation. (Pettersson, 2013)

The thesis Varsam grundläggning på berg (Karlsson, 2015), is additionally lifting the possibility of building the house on a cellar foundation. It is in a way a variety of the crawl space foundation, but where the crawl space has grown into a floor of its own. To be considered is the slightly more complicated conditions to prevent moisture issues.

When designing a larger building, the choice of having a cellar foundation is practical, but not easily adjusted to the landscape. Since the cellar, like the slab, it needs a relatively flat surface to stand on in order to be useful, it is difficult to fit in the entire building. There is potential though, in using the cellar foundation type in combination with the lower crawl space foundation. Where the ground gives more space underneath the building, a cellar can be fitted, which then can shrink to a crawl space where the rock rise.

Crawl Space Foundation

+ Traditional foundation technique

+ No filling needed for the building foundation

- Air under the foundation gives heat bridge and requires more insulation

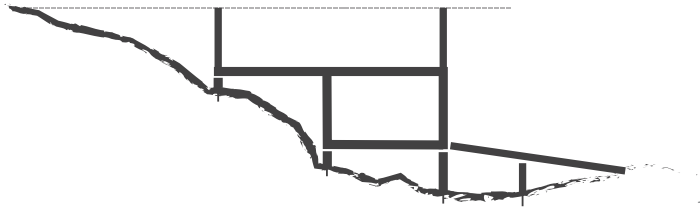
Plinth Course Foundation

+ Minimum amount of material

+ No filling needed for the building foundation

- Air under the foundation gives heat bridge and requires more insulation

- Demands piercing of the rock



Elevated Slab Foundation

+ Good insulation possibilities

- High demand of filling, gravel etc

LOVEABILITY

The concept of sustainability has many aspects, among them are social aspects such as community activity, social platforms and recreation. Another social aspect is the identity of a community. The identity of a community is in a way represented or illustrated by the physical structures that they inhabit. Therefor, buildings are carriers of local values and culture, and their expression can be part in strengthening local identities. One aspect that is interesting concerning the building expression, is the concept of loveability.

The Danish architecture firm Vandkunsten claim that "without beauty there is no sustainability". They also state that *"good architecture has the capacity to make society more liveable"*. They push that it is important that the architecture is rooted in the local community, since they are the users. (Vandkunsten, n.d.) I believe that if the people who inhabit the buildings love them and care for them, the chance is bigger that they will take care of the buildings and they can live longer also in the physical sense.

In the report Housing Communities: what people want, by The Prince's Foundation For Building, *community loveability* is also discussed. Or as they phrase it moving from NIMBY to BIMBY, which stands for beauty in my backyard. The report is promoting a more community based process where the housing being built is *"appropriate, sustainable and beautiful"* (p.1, The Prince's Foundation For Building, 2014). From my own point of view, the beauty aspect is highly subjective and therefor difficult to value. Of course, I believe in beautiful buildings, but what is beautiful according to me, might not be for someone else. Therefor I think that the expression appropriate is of higher relevance to this thesis. A building should be appropriate in its context and respectful to its surroundings. As a part of the conclusion of the report, it is stated that one of the factors that contribute to the "loveability" of an area, or the desire to live there, is a sense of local identity. To wash away local character is therefor contributing to reducing the loveability of an area.

REFERENCE PROJECTS

The following projects are the most important of the references that I have subjectively analyzed as a way to find inspiration of how to apply a critical regionalist thinking onto architecture, and of how a modern, locally fitted, Bohuslän house might look.

KLEVENS UDDE

Liljewalls

This project of apartment buildings is located in Smögen on the west coast of Sweden. The shape and character of the building blocks resemble boathouses, which gives a clear connection to the traditional building stock. Also the color is a reference to the traditional boathouses which are typically painted in red carmine color.

The buildings are between two and three storeys high, and represent a good compromise of taking in the local building tradition while also answering to new needs of apartment buildings. It is an inspiration to take a classical element and change scale or other parameters to match a new function.

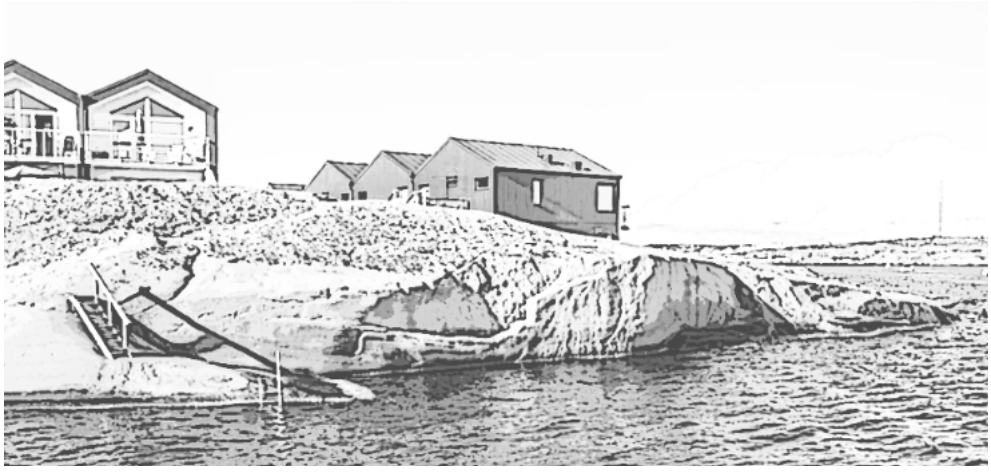


Illustration traced from picture on http://www.liljewall.se/klevens-udde

BRF LÖVEKULLE

Anders Glantz

These apartment buildings in Alingsås are located along a winding road on a hill. The volumes are broken up to achieve a smaller scale impression.

The site conditions of this project is inverted to those on Björkö, instead of a valley, in this case there is a hill.

This reference shows an example of how one might handle the impression of scale and how the placement according to the landscape can create a sense of flow, which will be considered also in this thesis.

Illustration traced from picture on http://www.brflovekulle.se/bilder.asp

LILLA FJELLSHOLMEN

Cream Arkitekter

Lilla Fjellsholmen is a thesis project which consists of plans for a small island on the Swedish west coast. The project includes 63 single family houses designed in three different typologies, for rational production but also variation. The houses are placed on the island, according to the terrain.

The architecture of the project is contemporary, but also has a character which relates to the traditional buildings of the coastal communities, hence the small volumes, the simple materials and the classic and simple shape.

Lilla Fjellsholmen is a good example of a modern interpretation of building for an island community. While using a similar scale and morphology to traditional buildings, the shape is simplified as well as the color, choosing bare wood instead of painted. This thesis will adopt a similar concept, mixing similar and contrasting factors.

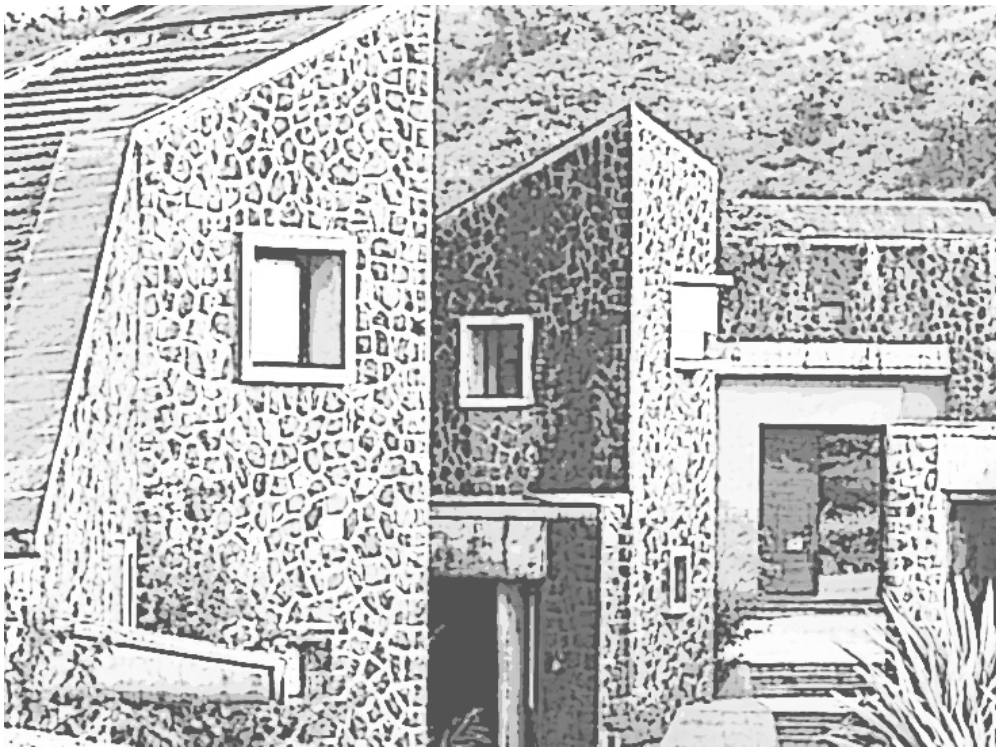
Illustration traced from picture on http://studentarbeten.chalmers.se/publication/201227-lilla-fjellsholmen-var-samt-byggande-i-en-unik-skargardsmiljo

MAHINDRA UNITED WORLD COLLEGE

Christopher Benninger

This project is from another part of the world, as it is located in Pune, India. It is an recognized critical regionalist project, appearing as example in Critical Regionalism by Lefaivre & Tzonis.

The inspiration I find in this project is the way the architect has combined the modern and the classic, and there found a relevant connection to the site and the region while still creating modern architecture. It demonstrates by the use of local and classic material with a new, modern shape. This principle is interesting to test in a context such as the Öckerö Islands.



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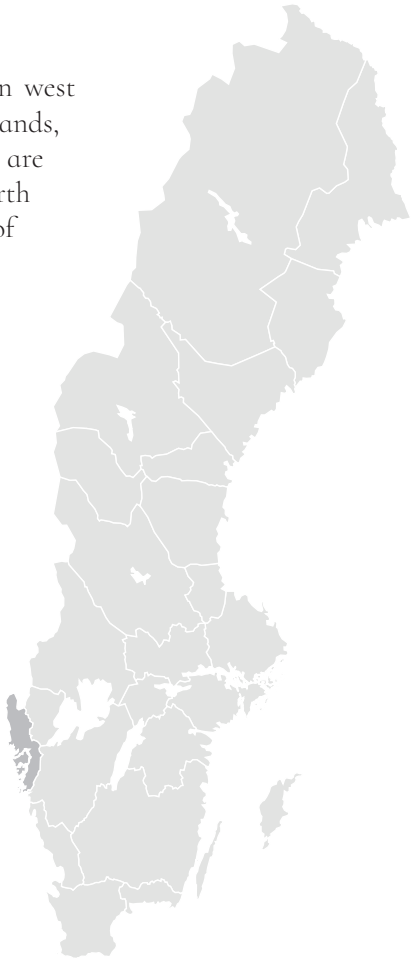
Context

BOHUSLÄN

A COASTAL LANDSCAPE

The regional context of the thesis is Bohuslän in west Sweden. The local context is the Öckerö Islands, which is its own municipality. The islands are located within the Bohuslän province, just North West of Gothenburg. The regional context of Bohuslän is chosen not only for the municipality's official belonging to it, but also for the similar conditions that unites the Öckerö Islands to other island and coastal communities along the Bohuslän coast, such as a common history of fishing and a shared building tradition.



BOHUSLÄN

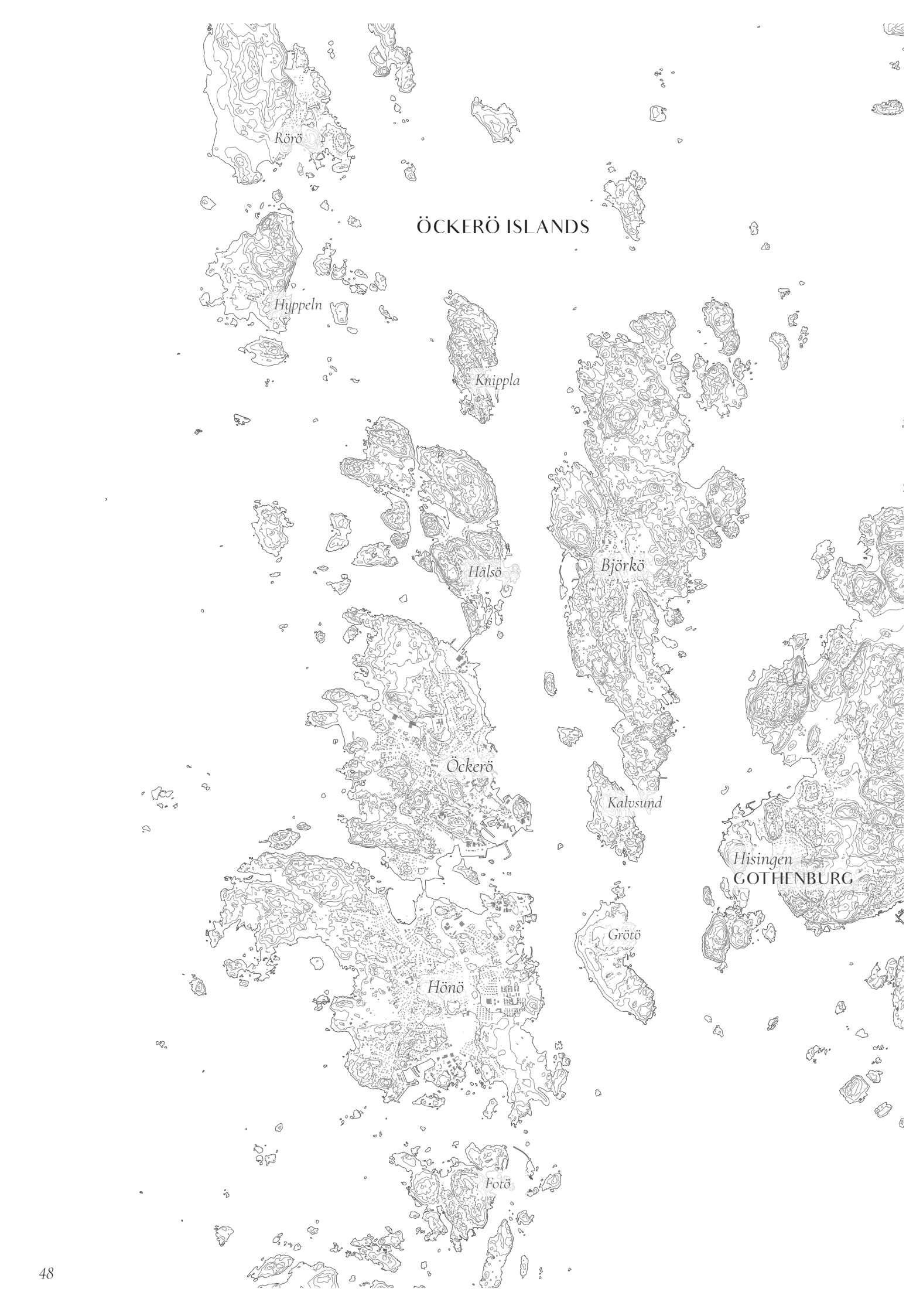
ÖCKERÖ MUNICIPALITY

ISLANDS IN THE SEA

Öckerö Municipality is referred to as the northern archipelago of Gothenburg, and it is located outside Hisingen. It consist of ten island communities, each located on a separate island. There are in total almost 13 000 inhabitants (Öckerö Kommun, 2017b). Out of them, about 9 000 are living on either Hönö or Öckerö. The third largest community is Björkö, with around 1 500 people.

The Islands can only be reached by ferry, or boat, and the ferry stop is at Lilla Varholmen. From Lilla Varholmen to central Gothenburg, there is about 20 km by road.

The landscape of the islands is rocky and vegetation is scarce. The communities are generally located around the ports, which has been the main access point until the modern days.


ÖCKERÖ ISLANDS
Rörö
Hyppeln
Knippla
Hälsö
Björkö
Öckerö
Kalvsund
Hisingen
GOTHENBURG
Grötö
Hönö
Fotö

THE HISTORY

The shape of the characteristic rocks is a result of the previous ice age, which has shaped and polished the rocks to their round shape and scratched surface. The rocks that the islands consist of, are rising from the sea with about 3-4 mm/ year (Lantmäteriet, 2016), due to pressure relief from the last ice age. This means that some of the areas that have previously been under water, are today dried out or reaching up over the surface. This reality might be reversed though, as the ongoing melting of glaciers around the world, contributes to a sea level rise (SMHI, 2017).

The municipality as a community has a history which calls back to the stone age, and has been a hotspot for trade, war and shipbuilding in the viking age. The Öckerö islands, as the rest of Bohuslän, was part of Norway and the Norwegian-Danish union between the 800s up until 1658, when it became part of Sweden in the treaty of Roskilde. (Olofsson, 2010)

In the more recent history, the main preoccupation of the Öckerö islands inhabitants has been fishing. During *sillperioderna*, the herring periods, in the 1800s, the business was flourishing, and there was a temporary large increase of population. Many were workforce immigrants, of who a majority left when the herring period was over. (Olofsson, 2010)

The morphology of the villages has adjusted to the ports and to fishing as a livelihood. Clusters of small houses that are placed according to the landscape, and surrounding a natural port is the most characteristic type of historic villages. Found on the islands are also barns that are located in the inland of the islands, where you would grow crops and farm animals. (Olofsson, 2010)

LIFE TODAY

Today the context has changed once again. Most of the residents in the municipality are working on the mainland and the work opportunities are limited within. One might think the islands are becoming sleep islands, but there is still work opportunities within care, school, service, ship maintenance, fishing etc. Additionally, present technology opens up for possibilities of working from home. Although, the present

situation is a commuting society.

Services, recreation, entertainment and restaurants etc are found open all year around on some of the islands, The ports are natural meeting-places for the residents throughout the year, since that is where most services, restaurants and stores are located. The most prominent center in the islands is probably Hönö Klova, by the port in Hönö. Here one finds restaurants open all year, shops, including second hand market, a museum & and art gallery. There are also bar and club events hosted by the restaurants and pubs.

POLITICS

From meetings with the planning and building department of the municipality there has been clarification in what issues that lay behind the current discussion and development crisis that can be said is occurring in the islands today.

The politicians are in control of the development in the sense that they give the planning department the task of developing plans, and at the end of the process, they also approve the plans before the building can start.

When the developer is external, a company, the planning department is in charge of the detail plans, but the politicians still need to approve the plans before they can be built.

There are many conflicting interest when it comes to the development, for example there is a need, or an ambition, to expand the population, while there is also a limited amount of land and most of all, suitable land.

This means that natural and cultural values must be valued in relation to the need to expand the building stock and increase the population. For example, a high rise residential building could fit many apartments while still preserving most of the natural landscape around it. But in this case the skyline and character of the islands will be dramatically changed and the high building will lack relation to the existing building stock.

What is more important? Expansion or preservation? And is preservation of the natural

environment more important than preservation of the local architectural identity, or the cultural heritage? And why?

These are issues that are right now being treated case by case, which is of course relevant since there are different natural values in different sites etc. But there is a need for a stronger and less contradictory design strategy for the whole of the municipality, where the long term goals can be included.

Are we moving towards a crowded and highly populated mini Manhattan, or is it preferable to keep exploitation low in order to keep the present character of the islands? It is not clear what the ambition is in the long term perspective, which makes the priority different in every case, and the development and character scattered.

LOCAL BUILDINGS ANALYSIS

The analysis of the local building character, or architectural identity, is made through observations. The analysis is focused in Björkö, Öckerö and Hönö, because of the amount of variation that can be found in these larger communities, and since the context is local to the case study, or similar. Information retrieved from literature is also included in the analysis.

The aim of the analysis is to identify the local architectural identity, to find themes, similarities and differences.

THE BOHUSLÄN HOUSE

The traditional houses are characterized by a facade of standing wooden panel, painted in white or light colors. The roof is pitched, either in straight modest slope, or a mansard roof, which is a later construction, to fit a full height attic floor. The roof is in both cases covered by red brick tiles.

The footprint of the traditional houses are rectangular, with the roof stretching along the long side. Many times the roof is also broken out to dormer windows, usually cutting out of the building body, all the way down to the foundation. Also seen in many of the island houses, is as shown in the first picture, to extend the house with an indoor, glazed veranda, with a balcony on top of it.

The older houses are usually one level, or two, with a furnished attic floor. Windows are typically placed symmetrically to the center of the facade, and as shown in these examples, the placing of the windows at the short side are usually closer to the center at the upper floor.

The foundation of the house is able to adjust to sloping ground, the crawl space foundation solutions is almost excludedly used in the older buildings. Many times there is a high foundation, with cellar in all or a part of the space.

Most of the houses have these features in common, but still they vary in individual character, according to the angle in which they are placed, the colors of facade and details, and the detailing or ornament itself.


29

MORPHOLOGY

The traditional settlements are placed in close connection to the ports or farmland and according to the landscape. The location has been chosen according to the weather conditions and the terrain. The buildings were placed at the foot och the rocks, to provide shelter from wind and to avoid covering valuable farming soil. (BOSAM, 1980)

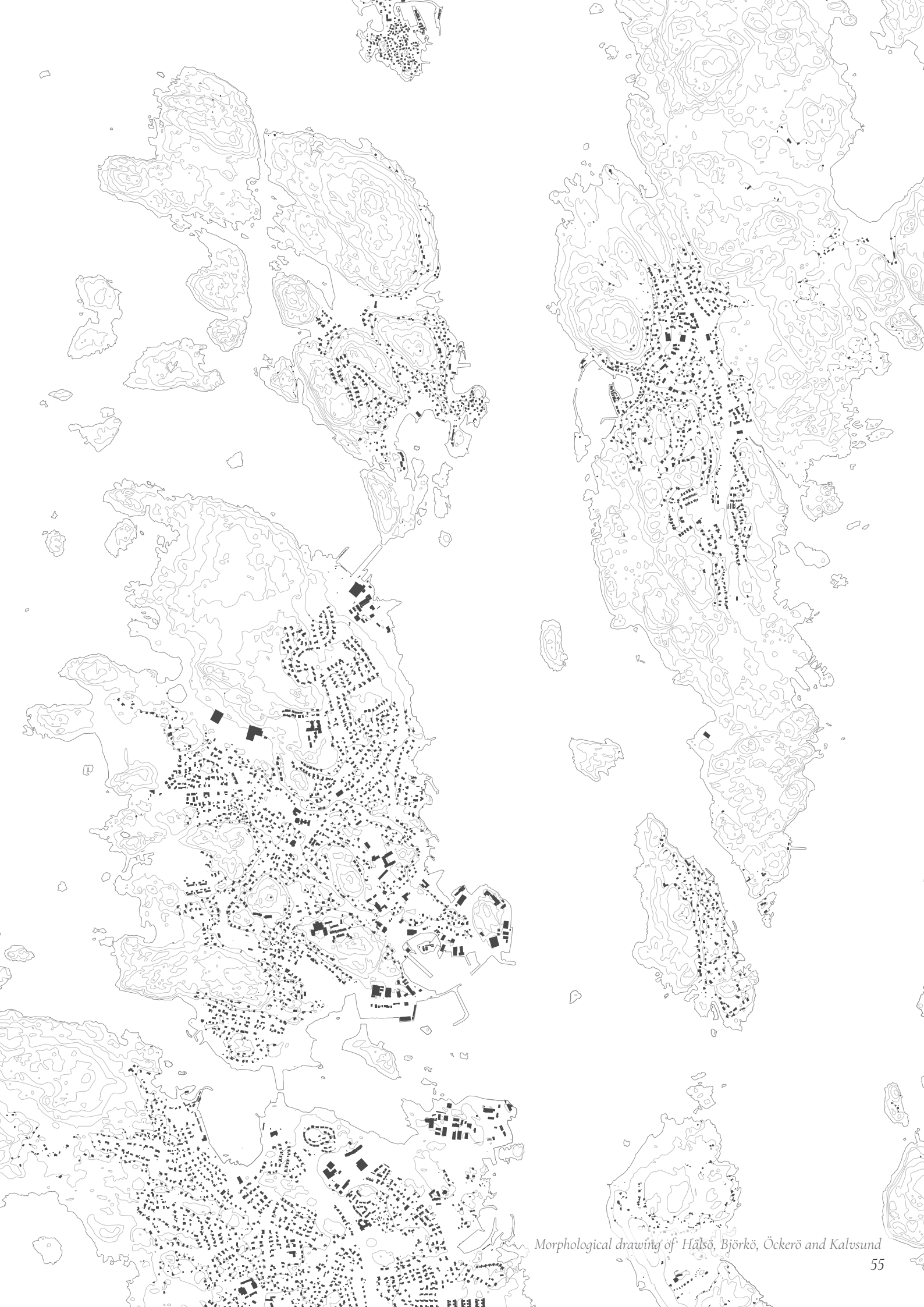
Living close to the port was convenient since most of the residents used to work with fishing or related activities and transport between islands were also made by boat. Through time, the communities have stretched out from the ports to cover large parts of the islands. In Öckerö and Hönö, most of the land is built, and what is left is nature and recreational areas.

The residential buildings are mostly small, there is a number of apartment buildings in the islands today, but most of them are no more than 2 floors high. The vast majority of buildings are single family houses. Their seemingly random placement according to each other, is one of the things that gives the island architecture its character.

Residential areas built after the 50s, have a different morphologic character, since standardization and rationalization changed the building process. Some of these areas are, as you see in Öckerö, placed in a square grid, rather than following the shape of the landscape.

The industrial areas, concentrated around the ports, are of different character. Here the scale is larger, the buildings are constructed to fit shipbuilding, propulsion or construction industries for example. Within the communities, the larger scale buildings are mostly schools or churches.

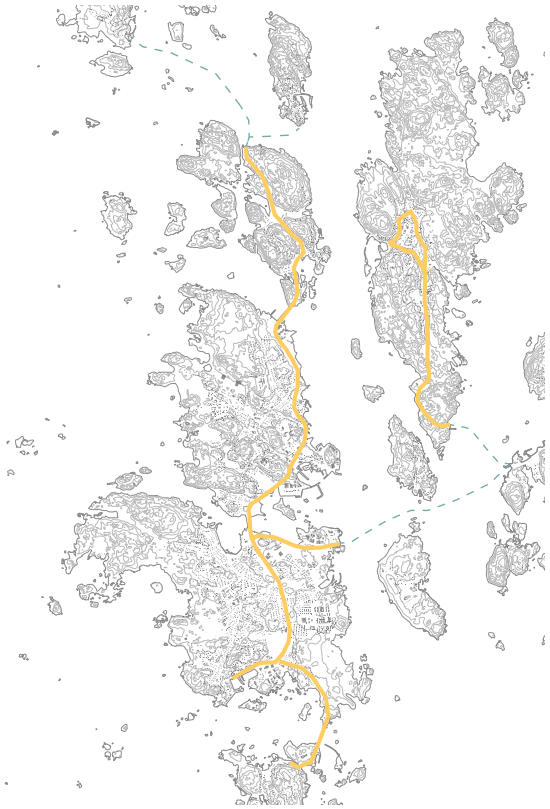
The streets are rarely well defined, in the traditional settlements the buildings are not placed according to the street, but according to the landscape. The street is instead defined by other borders such as walls, hedges or fences.



Morphological drawing of Hälsö, Björkö, Öckerö and Kalvsund

COMMUNICATIONS

The infrastructure of the islands consist mainly of roads and ports which open up to transportations over water. When fishing was the main occupation the ports were the most important nodes of communication. The ports are located in favorable locations for natural shelter.



Today the main roads represent the main communication. They are stretching between important functions such as ports, ferry stations and bridges. These roads are mostly placed in lowland areas along the terrain. Though, in some cases these roads are blasted in the rocks. These roads are a consequence of the construction of bridges and ferry lines.

The smaller roads relate slightly more freely to the terrain, and some of them practically lead straight up a steep slope. Other, longer roads, follow alongside the slopes and some wind around the houses. The winding around the houses indicate that these roads were planned or constructed after the houses. Also the very modest measurements of the smaller roads tells about a construction before the car was the main mean of transportation. The old order of addresses also indicate that the houses were built in clusters by site, terrain and location rather than along a specific road. Back in the day the houses were addressed simply by “Hus”(house), followed by a number, for example an address could be Öckerö, Hus 121.

There are also many spontaneous paths making short cuts between different roads. These unofficial pathways increase the proximity and mobility by foot. They also represent a kind of secondary public or semi public space.

The community has evolved around the main communications. In the fishing communities, this was the ports. Therefore, most of the old settlements are located nearby the ports. The island farming fields were the exception of this, and so the roads would also stretch from the ports to the farms.

In the more recent history, the main roads have expanded and in many cases stretch across the islands, which has influenced construction along these roads as well.

In the traditional settlements the buildings are not placed in line with the street, but more freely in the landscape. The street is instead defined by other borders such as walls, hedges or fences. It can be because the houses might have been built before the road, or was rather placed for optimal foundation construction in the terrain, for optimal light and weather conditions or view over the port. They many times meet the road by a corner, and sometimes the building is less than a meter from the road. This is maybe a part of what creates a sense of intimacy, but also variation in these environments. There also some examples where the houses are oriented along the roads, and in some areas constructed in the later 1900s, the houses are ordered in straight rows.

COLORS

Today, it is common to paint the houses in gray-scale colors, white, grey or almost black. The first picture shows another expression, a more transparent treatment of the wood, yet in dark tone.

The colors of the houses have been changing through time. At first they were unpainted, or painted in a red calcimine color, *Falu Röd färg*. This red was, at the beginning of the 1900s, still the most frequently used color for the houses. At that point the newer buildings were often painted in light colors. (Byggforskningsrådet, 1982) From the turn of the century and up until today, there has been an increasing amount of light colored houses, and it has become a part of the building character.

Boathouses and other service buildings are often still painted in the red calcimine color, which has led to the characteristics of small red boathouses, lying in a row to provide storage for the many fishermen who where resident at the islands.

MATERIALS

The main construction material for the houses is, and has always been, wood. Early settlements had a timber structure, but since the second half of the 1800s, the common construction has been wooden frames (Byggforskningsrådet, 1982).

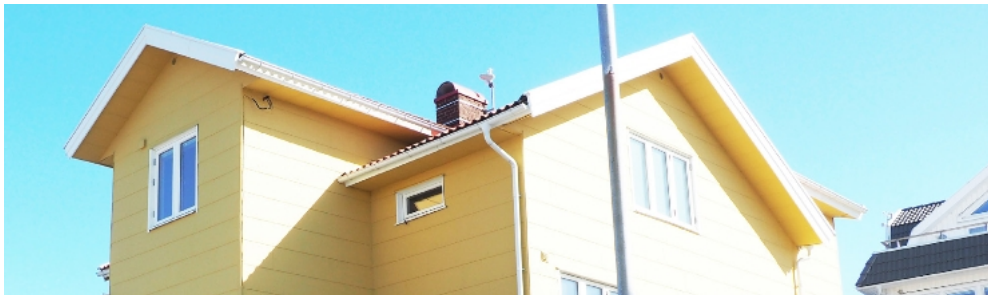
The older houses usually have a stone foundation, while today it is common to build a slab foundation out of concrete, alternatively using concrete in a crawlspace or cellar foundation.

Facade materials vary today, but a majority of the houses still have a standing wooden panel facade. Lying panels are seen more in the new buildings and there are still plenty of asbestos cement slates and some metal panels resembling the classic wooden ones. Bricks is a facade material that is quite frequently seen in the islands, used from around the middle of the 1900s, but not often seen in new buildings. There are some houses with stone facades, but they are rare.

The roof was covered in turf, wooden poles or brick tiles, in the early buildings of the islands (Byggforskningsrådet, 1982). Later, it became almost excludedly the red brick tiles being used, and this material is now typical to the Bohuslän house. Today, there is a variety of different roof materials seen, bricks in red but also black and other colors, metal roofs, roofing felt and even green roofs can be found.

Window materials have gone from small, hand blown glazing windows, to large glazed wall sections, out of tripple glazed insulation windows. These and all in between are still present, but today the small hand blown glass in almost unseen.

Concerning insulation materials for walls, there is little information on the historical use, but an assumption that can be made, is that the most common material used today, is mineral wool.



ORNAMENT

The islands are rich in ornament. Gable ornaments, glazing bars and decorative panels above windows or between floors is often seen on older buildings, and many times also on newly built houses. The fact that it is so often seen in contemporary constructions, speaks of an appreciation and strive to achieve the qualities and homefulness of the older houses. In addition to these added-on ornaments, it is very typical to see color decor around windows for example. The theme is to break the facade color of with a different color by the windows, as seen in the picture to the right. Most houses that do not follow this theme, are all white.

CONCLUSIONS

The architectural character of the islands is versatile and also distinct. The vast majority of the building stock is small houses, placed according to the terrain, in a cluster morphology. The most common materials used are wooden constructions and facades, brick tile roof and stone foundations. The color scheme is light to white and ornament is common. These are similarities, but still not all buildings present today follow this script. There are houses not in line with these similarities, possibly building new trends shaping a new identity? Also, even within the spectra of typical buildings, there is variation in shape, detail, and color.

The small variations have a positive effect on the overall impression of the islands, and there is definitely reason to argue that is it most natural and good that the architectural identity is developing though time. What is not desirable on the other hand, is to build additions that have nothing in common with the current overall impression of the typical building, or the neighboring houses. That would make the impression scattered and contradictorily, anonymous.

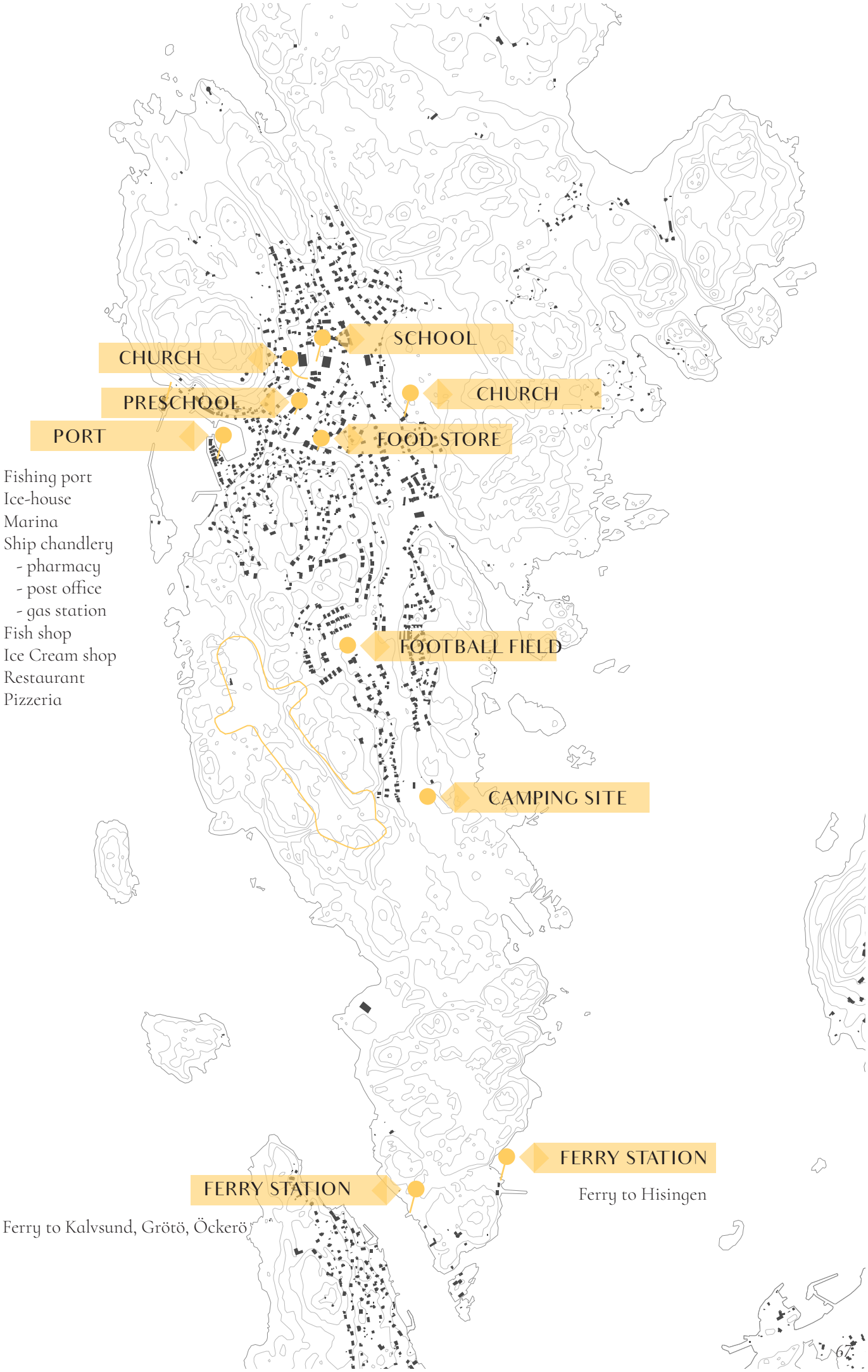
To balance similarities and differences might bring a result suitable to both its context, and its time.

BJÖRKÖ ISLAND

Björkö is located in the east of Öckerö municipality, close to the Hisingen. There are approximately 1500 people living on the island and most services are located around the port.

There is no bridge connection to the island and the ferry stations are both located in the south of the island.

In the comprehensive plans for Björkö, there are plans to extend the services of school and preschool, to meet the demand of the new inhabitants that are expected as a result of the construction of 350-400 new recedences. The new school is planned to be located in connection to the existing school and preschool.


SCHOOL
CHURCH
CHURCH
PRESCHOOL
PORT
FOOD STORE
Fishing port
Ice-house
Marina
Ship chandlery
- pharmacy
- post office
- gas station
Fish shop
Ice Cream shop
Restaurant
Pizzeria
FOOTBALL FIELD
CAMPING SITE
FERRY STATION
Ferry to Hisingen
FERRY STATION
Ferry to Kalvsund, Grötö, Öckerö

COMPREHENSIVE PLANS

The municipality are aiming to increase the inhabitants influence in planning questions, and consultations meetings have been held concerning the comprehensive plans, and also specific development areas.

The comprehensive plan for the Öckerö municipality and the extended comprehensive plan for Björkö contains some general recommendations for the development and construction on Björkö. These guidelines are presented here in a point format, drawn from the text in the comprehensive plan documents. The selection is made out of appreciated relevance. When taking part of these documents, they were under construction.

GENERAL RECOMMENDATIONS

Functions

- *Include different housing types, varying in size and accessibility*
- *Mix functions such as housing and working places within the same area*
- *All residential areas and for the society important functions must be placed at least + 3,5 m above sea level*

Public Space

- *Create spatial variations, by differentiating the angle of the buildings etc.*
- *Include green spaces in between buildings*
- *Accessibility and security is priority. In public spaces, design for good orientation possibilities and light conditions.*
- *Create possibilities for integration through meeting places and streets etc.*

Building design

- *New buildings should mainly be placed inside the current building structure, in between*

existing buildings. Aim for a small scale impression and coherency.

- *Connected buildings should be given a transparent structure, with many possibilities to pass through*
- *Consistent and harmonious design, which is in accordance with today's building techniques*
- *Clear relation to its surroundings*
- *Consciously adjust the buildings to nature and landscape. Do not built on the high points of the rocks, limit the blasting of rocks. Where the terrain is rocky, use plinth course foundation, crawl space foundation or a split level solution.*
- *Light colors, pitched roof and foundation principles, window placement, scale, morphology and building placement typical to the Bohuslän coast is suggested*
- *Consider high residential buildings, both in the densifying in between plots, and in new residential areas.*

(Öckerö Kommun, 2017a)

BJÖRKÖ

Specific for the area Björkö Södra, the site, is the following:

Built environment

- *300 residences on the site*
- *Buildings should adjust to the landscape*
- *The built environment should vary in character and structure, for a vivid environment*
- *Mix of housing types, apartments, row houses and pair houses. Maybe a small amount of single family houses.*

Landscape

- *Build in the low parts of the site*
- *Preserve the highest rocks unbuilt*
- *Arrange the buildings so that high quality green areas are created in between the built structures*

Streets and traffic

- *A main street should run through the whole area and connect to smaller roads*
- *The car traffic should be secondary to pedestrians and bicycle traffic*
- *Create streets of different character and highlight by design. A suggestion is non straight streets that contain small spatial creations.*

(Öckerö Kommun, 2016)

FINDINGS

These guidelines are valuable as a way to understand how to design for this context. As part of the process while developing the comprehensive plan, the inhabitants of the municipality have been able to give their opinion of the content, which is very important from a democracy perspective.

What is problematic is that some of the points seem to contradict each other. The 300 residences on the site could be difficult to fit if the buildings should be located in the low parts of the site only. There is an aim to build with consistent and harmonious design, but the buildings should also vary in character and structure. This leaves much room for interpretation, potentially too much.

The scale of the buildings is not clearly defined since the comprehensive plan states that the new buildings that are placed within the built structure, in between existing buildings, should be coherent and small scale. At the same time there is an ambition to consider higher residential buildings, both in the densifying in between plots, and in new residential areas.

Coherency but also variation, small scale but also high buildings, these contradictions might be possible, but the solution is not evident. It not easy to find indications of which is more important, and the interpretation is open for the developer.

In the Program and Design Proposal, the interpretation of these issues will be based on the mapped architectural identity and the design principles found in literature and critical regionalism. The content of the comprehensive plan will also be guiding, and from it the following points are forwarded into the Program:

Functions

- *Mix functions such as housing and working places within the same area*

Built environment

- *Consistent and harmonious design, which is in accordance with today's building techniques*
- *Clear relation to its surroundings*
- *Consciously adjust the buildings to nature and landscape. Do not built on the high points of the rocks, limit the blasting of rocks. Where the terrain is rocky, use plinth course foundation, crawl space foundation or a split level solution.*

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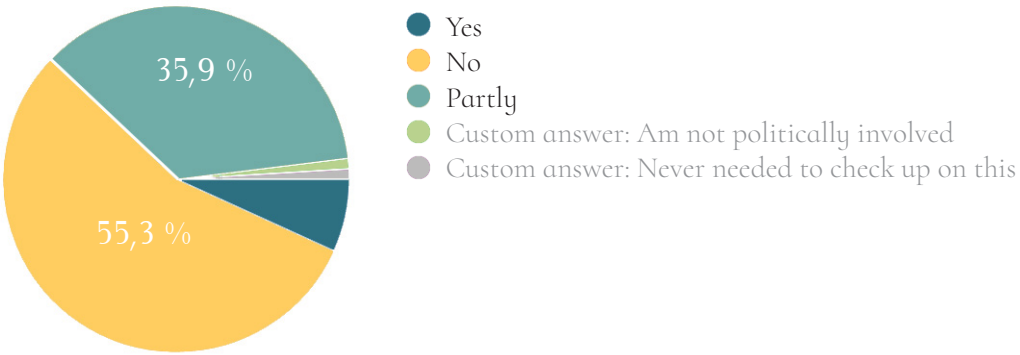
SURVEY

A survey was conducted in march 2018, regarding the architecture of the Öckerö Islands. It was a Google forms distributed by social media and Öckerö municipality's Facebook pin-board. The survey was made and answered in Swedish, which means that the presentations of the questions and answers here are freely translated to English by the author.

There were a total of 103 answers, with a mix of ages and gender, although a majority of the answering were women. The answering were mainly resident on Hönö and Öckerö, which might be a consequence of my own social network on those islands. None of the answering were resident on Hyppeln, Rörö or Kalvsund, apart from this all the islands were represented. In the survey, a few additional questions were asked, that are not presented here.

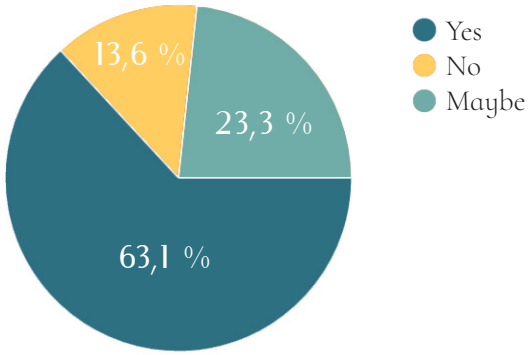
The most striking result of the survey was that a majority of those who answered do not think they have influence in the development of the Öckerö Islands. There is plenty of disappointment when it comes to how decisions are being made, and the lack of public influence. Some also lift positive aspects such as well executed public consultations, but the overall impression is that the public opinion is not enough taken into consideration.

Do you think you have influence on the development of the Öckerö islands?



A majority of the answering believe that it is important that the island architecture is different from that in other places. Some are unsure, and there are also 14 people claiming it is not important.

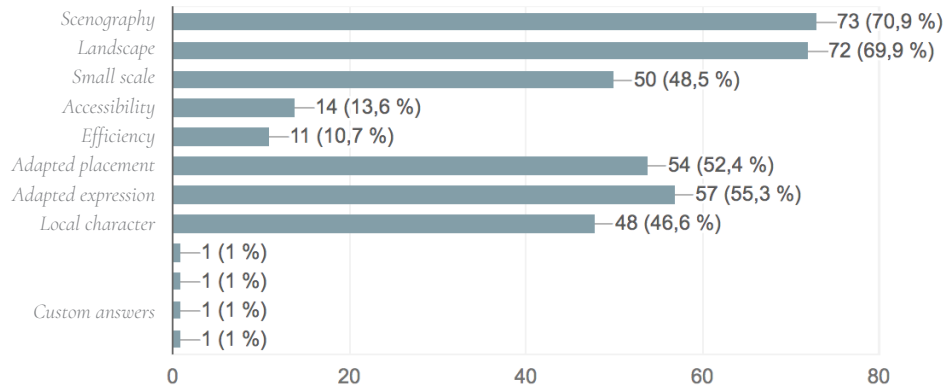
Do you believe it is important that the architecture in the islands differs from other places?



"What do you think is important to consider when building on the islands?"

On a question regarding what is important to consider when building on the islands, there were plenty of popular answers among the alternatives suggested. The most popular were concerning the landscape and skyline. 73 of the answering stated that it is important to consider the landscape, to avoid rock blasting and clearing of significantly valuable nature. 72 believe preserving the skyline, and not building high, especially on the top of the rocks, is important.

Other important factors with 48-54 answers each, were *small scale*, *adaptation to surrounding buildings* in placement, and in appearance, as well as *local character*.



Scenography: not to build high, especially not on peaks. Landscape: to avoid rock blasting and clearing of especially valuable natural environments. Small scale: to preserve the human scale. Accessibility: that all buildings are accessible to all. Efficiency: to fit as many buildings as possible in a limited area (to preserve natural environments etc), Adapted placement: that the architecture is adapted to the surrounding buildings, in placement. Adapted expression: that the architecture is adapted to the surrounding buildings, in expression. Local character: that the architecture and surroundings is of local character.

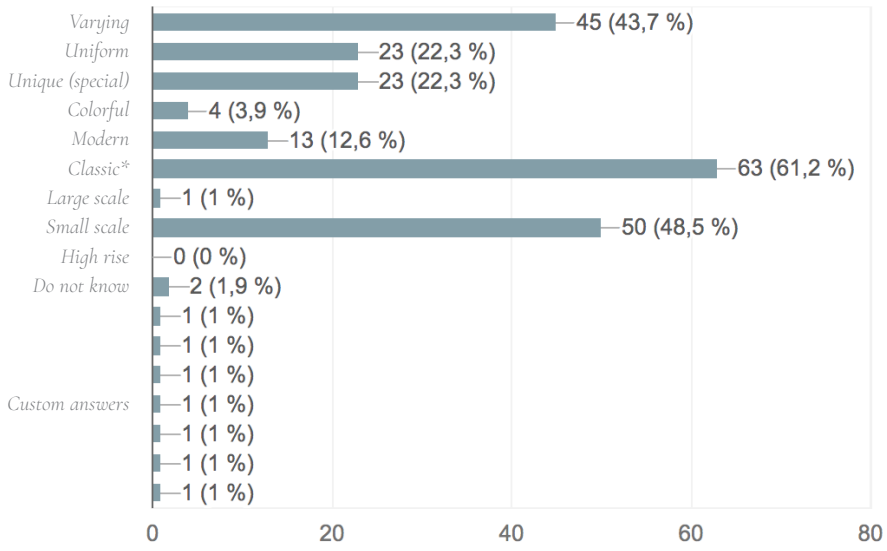
"What do you want the architecture on the islands to look like in the future?"

For the question of how the answering want the architecture to look like in the future, the answers were more scattered. The most popular response was *classical*, with historic characteristics such as for example mullions on windows. 63 people, which is significantly more than half of the answering, request this. This might mean that it is desired to preserved the existing classical buildings, or that the new architecture should have influences of this as well. Looking at the way new single family houses are built, I would say it is probably both. Important is to not reject these ambitions as simply flat pastiches, but to find and acknowledge the value that these ornaments or characteristics represent.

Other popular answers to the question of what the future architecture should look like were *small scale*, with 50 answers, and *varying*, with 45 answers. At the same time there were 23 respective answers on *uniform* and *unique*. This might not be a contradiction in

the sense that the preserved traditional building stock shows variations but within a common theme. Although the results are difficult to interpret and should probably be read in the most general sense, that small scale and variation of some sort is desirable, not specifying in what way.

To this question there was also a variety of custom answers, including for example *a combination of new and old*, *a mix* and *as it is today*. 13 people want the architecture to be modern, in one case with the added condition of it not being "insensitive and ugly", 4 want colorful architecture and one promotes large scale. None of the answering want to see high rise buildings.

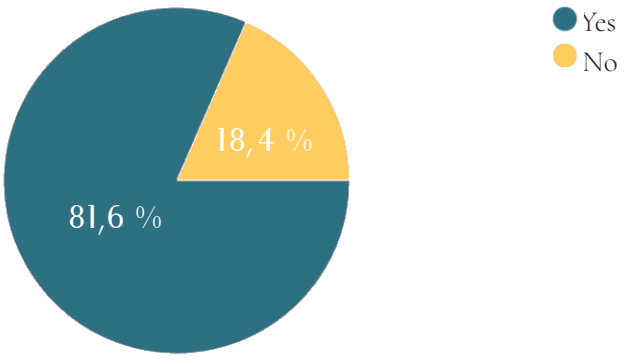


**Classic, with historical characteristics such as glazing bars on windows.*

Since there is no consensus in how the architecture of the future should look like and preservation of landscape and skyline is important, meanwhile the lowland areas accessible for exploitation are running out, should we build anything at all? According to the survey, the answer is yes.

Asking if there is a need for new housing on the islands, the answer is not unanimous, but a vast majority think there is a need.

Do you believe there is a need for new housing?



As a follow up question it was asked which type of residences and for who. Apartments for young people was the most popular answer, and other answers were for example affordable rental housing, a mix of apartments and small houses, for all, for young and elderly. Some emphasize the importance of housing for locals and local youths, who in most cases move from the islands. But although many were on the same theme, there was a wide spread of different answers and also one person stating that we should not adapt the building stock to the young and economically challenged and that apartment buildings would interfere with the character of the islands, and another pointing at the spatial limitations of the islands.

Suggestions

Some of the responses of the survey include ideas of different possible concepts for the new housing. They include:

- *Private houses containing an area or apartment that can be rented out.*
- *Design with cautiousness, for example, two storey apartment-buildings with local character, placed organically. It is possible to build also larger buildings which can fit in to the archipelago environment.*

- *A mix of tenancy and condominium apartments, smaller houses, twin houses and generation housing, to make moving up or down in size possible.*
- *Apartment-buildings for youth that can be built as small houses without taking over the environment.*
- *Tenancy apartments for youth, built as four storey houses in "classical" style for the exterior, with surrounding small gardens and narrow streets similar to the typical archipelago environment.*

CONCLUSION

Analyzing the results of the survey, a paradox emerges. A majority of the answering believe there is a need for new housing and most think that building affordable apartments is most important. At the same time, most want the skyline and the landscape preserved, and are opposed to high rise and other alien buildings.

This means that in order to fulfill these needs, we have to find a way to build affordable housing that corresponds to the local architectural character and thereby also is small scale, but at the same time does not exploit too much of natural areas, and does not require rock blasting. Is this possible and if so, how?

The fact that quite many responded to the survey, in a short time, tells about the interest and commitment to these questions. While, at the same time it is an issue that most feel like they do not have influence. I think there is a need to expand the forums and methods of speaking about development questions. And to find ways to be concrete and clear about decisions and compromises that has to be made. It is my ambition that this thesis with the manifesto and design explorations, can be one of many such tools.

THE SITE

The site is located on the west side of the island, stretching about 750 m from north to south. The municipality are planning for 300 new residences in the area.

The site is characterized by rocks sloping down towards a rift, where there is a relatively flat marsh terrain, in some areas covered with trees. There is a challenge in how the buildings will relate to the sometimes steep rocks, still making them accessible and while also preserving all the rocks.

The vegetation on the rocks mainly consist of juniper shrubs and heather, with occasional pine trees. In the marsh there is wild grass, and trees such as pine, birch and oak.

In the site there is a remarkable difference in wind between the top of the rocks and the hollow in between. The wind mostly comes from the ocean, in the west.

Program

The program is the framework that specifies the conditions for the new housing area Björkö södra. These conditions are brought partly from the comprehensive plans of the municipality, partly from the general guidelines of the theory of Critical Regionalism as well as Sustainability and the manifesto, and partly from my own analysis of the context, as well as the survey answers. Since there are some potentially conflicting points, there can be trade-offs between them.

Approximately 300 new residences

Mix of apartment sizes, include small apartments - average size 75 m2

Avoid building on top of the rocks

Direct the buildings according to the terrain

Avoid rock blasting

Accessible streets & public spaces

Varying character of streets & public spaces

Preserve as much nature & greenery as possible

Use sustainable and if possible, local materials

Include sharing facilities

Include co-working spaces for working at distance

Include a common space for events

Use references from local building tradition in building expression

Make room for outdoor social activities such as small scale farming

Adapt the building to weather conditions

Make use of passive solar heating

Design

MORPHOLOGY

The street scape and morphological composition of the built environment has a high impact on the character of the area as a whole and is often neglected in favor of more superficial components such as ornament or color. I believe the reason for this might be, that the building composition and placement is not equally simple to identify and acknowledge. Nevertheless, the morphological composition is one of the most, if not the most, remarkable and characteristic feature of the traditional island architecture. It is a rather unrecognized feature but it is very strongly affecting the impression of the public space and the image of the islands as a whole.

There are many different paths to take concerning the size and placement of buildings. The different options represent different consequences for the economic, cultural, landscape and eco-system values of the exploitation. Therefor, I believe there is a point in lifting rather contrasting alternatives, to enhance the advantages and disadvantages of the different planning approaches. Since I have not room to lift all possible alternatives, I have chosen some alternatives I find interesting and that are very different from each other.

The municipality is aiming at a mix of different typologies in the area, which is something I found most reasonable. To distinguish the different alternatives from each other, I have focused on one main typology in each of the different examples.

The typology row houses has been completely excluded in these examples, since I find row houses not corresponding to the current building stock in shape or size, but still does not offer higher exploitation value than dense small houses.

Small Houses

One possible path to take in planning of the islands, is to stay as close to the traditional and existing building pattern as possible, planning for small houses in a cluster morphology, placed according to the terrain and as much as possible in lowland areas. When building the small houses close to one another, it is possible to fit all the planned apartments without any larger units.

Since there is a need for rental apartments and apartments in general, the houses can be let out, or divided into different smaller apartments.

Concerning affordability this alternative includes potential for self building projects and for reuse of local building materials since the development can happen organically and continuously throughout time.

Since this typology is as close to the traditional morphology as it gets, the characteristics of the buildings themselves can be allowed to differ much from the traditional and typical buildings. They can have a modern shape and character, or be different from one another, and yet be a good match for the present building stock. It is important though, in this rather chaotic morphology, that there are some common features. For example there can be a common thread such as facade material, shape or color, but not necessarily all three.

Shared spaces and facilities can easily be placed in separate buildings in central locations on the site, to be accessible, but still give some distance to the residents in case of public events etc.

Seen from a distance these buildings would not stand out in relation to the existing buildings, since they are similar in size and placement. Neither will they interfere much with the island skyline, since they are low and small scale. What might be problematic though, is the placement and density when fitting all 300 residences in this way. It is relatively easy to place such small units according to the terrain, but the amount of buildings required here, do not quite fit in the most natural way. It requires taking on also higher parts of the rocks, as well as building in relatively steep slopes and on lush green and wetland areas. If this morphology is to be built, the exploitation needs to be reconsidered.

0 20 50 100 m

SECTION A 1:2000

The plan shows how the building can be placed according to the terrain, and in relation to each other. The roads consist of a main road, and smaller connected roads where walkers and bikers are prioritized.

The green wood and wetland area is preserved in this specific location, to enable biodiversity and to keep nature present between the buildings. This is compensated by allowing the houses climb higher upon the rocks. Since the terrain is quite dramatic in these locations, it is not given that it will be possible to keep all the roads and entrances fully accessible, given that the rocks are not blasted.

0 20 50 100 m

OVERVIEW 1:2000

0 50 100 200 300 m

EXPLOITATION SKETCH 1:5000

This is an exploitation sketch, where the buildings are simply plotted out in order to get a grip of the amount of houses and density this morphology would imply. It is possible to fit all these residences, but these is not much room to add other functions apart from housing and much of the slopes and woods would be built upon.

Pair houses with two apartments 75/50 m^2 = 80 = 160 residences
One family houses 125 m^2 = 65
Split houses with two apartments 75x2 m^2 = 25 = 50 residences
Mini houses 25 m^2 = 25

Apartment-buildings & small houses mix

This morphological structure is based on mixing different typologies in order to achieve both the spirit of the island communities, with dense but small scale structures, and also the demand for more affordable rental apartments.

The denser and taller structures enables more land to be left unexploited and left as nature or used for recreation. The aim is to demonstrate an alternative where we can build apartment housing in a way that might still correspond to the local spatial qualities.

In this example the apartment buildings are a twist on the linear block, where the volume is divided into different smaller units to give the impression of being several smaller buildings. To give this impression, the units are offset from each other and also vary in hight. This means a more complex construction and also an increased number of thermal bridges due to many corners. Compared to the small houses it is still thermally effective, and if the impression of the buildings size is still relatively small, I believe this is a reasonable trade off.

The apartment structures share the site with smaller houses, to give a more dynamic impression and to bring different residents closer to one another. The ownership of the small houses can be mixed between rental apartments, and private owned houses. The construction of the small houses can be private or alternative, as in the example with small houses only.

The block buildings are not as easily placed according to the landscape as the small houses, but their flexible shape makes the adaptation to the terrain easier. The fact that this alternative does not require as much land for the houses footprints, also makes it possible to avoid the most challenging plots.

Shared spaces and facilities are located in separate buildings, as in the previous example.

The plan shows how the building can be placed according to the terrain, and in relation to each other. The green wood and wetland areas are preserved, to enable biodiversity and to keep nature present between the buildings. Although this alternative does not require for the buildings to climb as high up on the rocks as when having small houses only, this option still demands much space, and they will expand slightly up on the rocks also here. This means that full accessibility can be difficult to reach also here, in the most challenging locations.

0 20 50 100 m

OVERVIEW 1:2000

0 20 50 100 m

SECTION C 1:2000

0 50 100 200 300 m

EXPLOITATION SKETCH 1:5000

This exploitation sketch shows what footprint and density the mixed alternative could give. This alternative gives somewhat more unexploited areas than the small houses only. But these is not an abundance of space left over for other functions and still some of the tree covered areas would be built upon.

Pair houses with two apartments 75/50 m^2 = 50 = 100 residences
One family houses 125 m^2 = 44
Apartment-buildings, average apartment 70 m^2 = 13 = 156 residences

TYPOLOGY

The form and function of the buildings is highly relevant for their use and expression. Symmetries and relations in the traditional classical buildings are not always noticed, but still play an important role for the overall impression.

The municipality is requesting consistent and harmonious design, in accordance with todays building techniques, as well as a clear relation to its surroundings. They are also rather specific in suggesting *"light colors, pitched roof and foundation principles, window placement, scale, morphology and building placement typical to the Bohuslän coast"*.

In these design explorations I have chosen one typology from each of the different morphological examples. I have explored the expression of the different typologies, and how they would function. Also if, and what type of ornament that can be suitable for each typology.

Small Houses

The small houses can be placed in slopes, their foundation leveling the height difference. In this example, there are crawl space foundations similar to traditional houses, although maybe in different material such as LECA blocks instead of natural stone.

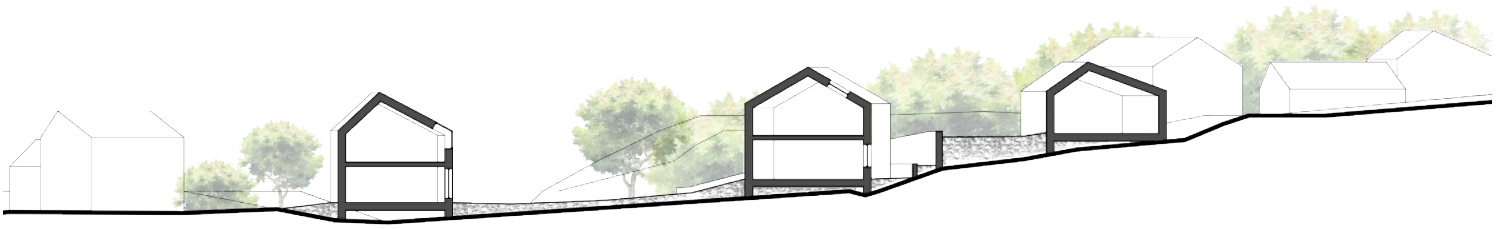
The roads in the slopes needs to be leveled, though filling or building road "bridges", lightweight poled constructions. The example here shows a filled up solution. It is probably the most rational when it comes to road building, and the road can be supported with walls, in a similar way to existing smaller roads and gardens. Since the rocks are not to be blasted, the fill needs to come from somewhere else. This in itself is problematic, although there might be a possibility to reuse crushed concrete from demolished buildings for example. Maybe it is a better alternative to look at the possibility for organic filling such as soil? There is plenty of plants in the site and by composting all that is cleared, maybe some of these fills can be produced locally in this way.

The pair houses have one part which is one storey high, and another with two storeys. The villa houses are more traditional in their construction, resembling a double house with two floors, and in some cases also a cellar floor in a part of the building.

The wall and roof construction of these houses can easily be made in the conventional way with wooden frames.

The plan shows the placement, direction and function of the houses. The pair-houses are placed with their gables facing south (SW or SE), to get maximal light input where the openings are the largest. The common building makes use of the same principle, opening up to the south.

The main building consist of shared office spaces, kitchen, bathrooms and a flexible space to be used for gatherings, events, parties, activities etc. The smaller shared building is meant to support activities such as building and crafting, and growing plants and foods. Here the tools and machines can be placed that the community owns together.



0 5 10 20 30 m

SECTION B 1:500

0 5 10 20 30 m

PLAN 1:500

The pair-houses open up to the sun by large openings facing south, to make use of passive solar heating. The walls are also made thick to fit a good insulation to help reduce the demand for heating. The walls are extended out from the gables, to shelter from the hottest sun in the summer, where the solar heating is not necessary. This also creates a space to be continued as a outdoor extended living room.

Windows placed on the long side walls are smaller and their shape can be copied to the roof, as skylights or solar panels.

The facade material i a standing wooden panel with a transparent or light treatment. It could also be interesting to imagine a more colorful paint, maybe there can be different color themes in different areas of the site? However, the natural appearance is well connecting to the nature and gives contrast to the white paint, without being too strange in the context. In this example the facade materials continues up on the roof, a modern interpretation of the wooden cottage, which is simple in its expression.

Apartment-buildings

The apartment-buildings are mainly placed in relatively flats areas. Their shape can be adjusted after the curves of the terrain. The foundation can be a slab, elevated slab or when in slope, a crawlspace or cellar foundation, giving an extra smaller floor at the foundation level.

Also here the small houses climb up on the height slightly, and the roads need to be leveled as in the previous example.

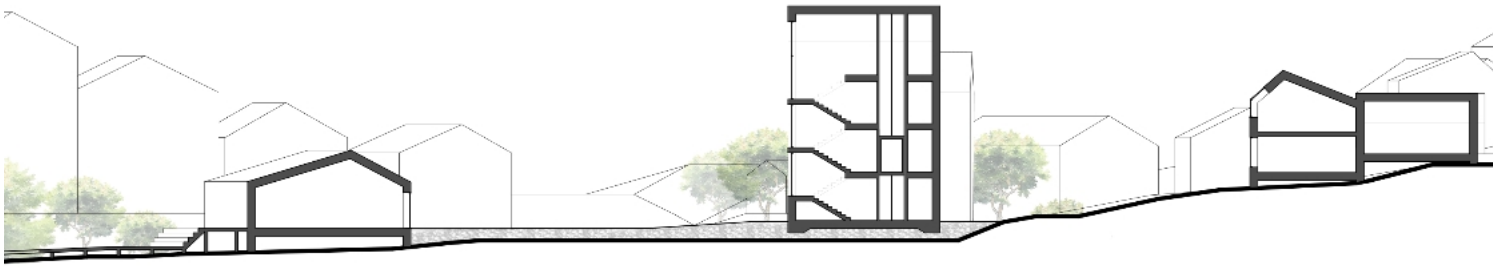
The apartment-building in this example is varying between two and four storeys, with elevator and stair shafts in the highest segments. Each segment has one apartment on each floor.

A wooden construction is suggested also for this building, and the same wall thickness is used throughout the explorations, for good insulations possibilities.

The plan shows the placement, direction and function of the houses. The shared buildings are identical to the previous example, located in separate buildings.

The apartment buildings are designed with a private side and a public side, towards the street. This to get privacy for bedrooms and make the interaction with the street and neighbors easier when in sight from kitchens and living rooms.

In this specific example, that makes the use of passive solar heating by having large windows facing south, not very appropriate. Although, when the building is facing the street on its south side, those principles can be applied.



0 5 10 20 30 m

SECTION D 1:500

0 5 10 20 30 m

PLAN 1:500

The apartment-buildings have a facade where the different units are offset from each other, to create the impression of being several different buildings. To enhance this impression even more, they also vary in height. The units which are at the edges of the building, are made lower, since this is where people will interact most closely with it. Then the impression of the building might feel smaller, a human scale.

The gables are ornamented to even more resemble the traditional houses. The roof is a conventional solution with a overhang, which makes it possible to dress it in a range of different materials. The suggestion is clay tiles, to find another similarity, but it is also reasonable to imagine integrated solar cells in suitable conditions, in combination with other materials.

This building has standard balconies, preferably in its own construction to avoid heat bridges. Here this construction is not demonstrated, but it could be a hanging solution for example.

Openings are intended to be relatively large and few, also to avoid thermal bridges, while also giving good conditions for both light and view. The facade material i a standing wooden panel with a transparent or light treatment, with white painted details. As for the small houses, colors can vary as well.

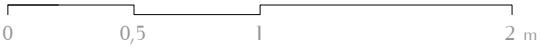
DETAIL

The detailing and expression play an important role for the buildings to be considered suitable and genuine for the context. Materiality is of course an important aspect when designing good architecture, and also ornament adds another layer of detail and personality to the building.

Today, there is a norm within architecture that placing additional ornaments which are not functional, is wrong. Still a great number of people add decorational ornaments on their new built houses. There is a reason for doing so, and in these examples I would like to challenge this norm and explore what role an ornament can play for a contemporary building.

For the detail examples, I have chosen a part of the buildings explored previously, to illustrate closer. This to highlight the importance of detailing, and to get a better idea of the tactile and visual aspects of the materials and ornament.

Small Houses



FACADE DETAIL 1:30

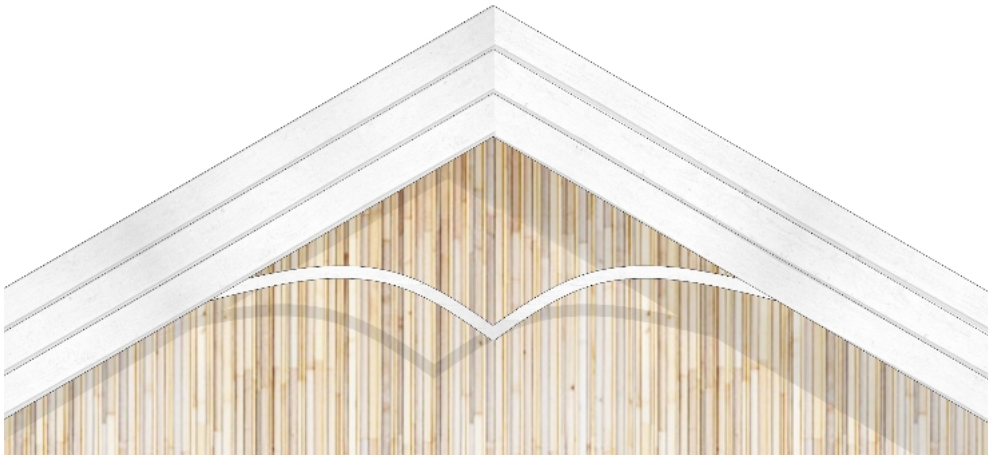
Pair-house

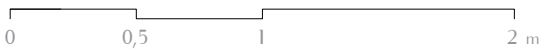
The small houses have many similarities to existing building stock in morphology and partly also in typology. Because of this, the detailing of the buildings may be contrasting or modern. In this pair-house example, there is no added ornament, the facade is unpainted and extended to the roof and the windows vary from large sections to small and vertical windows. The windows themselves can be seen as an important detail in this case.

Apartment-buildings

The detail of the apartment building is focusing on the gable showing materials and gable ornament. The apartment-building is designed to have some resemblance to the traditional buildings, although it is a foreign typology. There was an ambition to create a small scale impression and to represent small scale density and many close units. Although, it still is not matching the existing typologically or morphologically, which gives incitement to find more connection points.

Here the materials are similar, although not identical. There is a standing wooden panel, but with a variation in its rhythm and color. The gable ornament is added to contribute with a new layer of familiarity. The ornament design is inspired by classical examples and local references, as in this case a flying seagull. The shape is kept simple and uncluttered to play into stylistic ideals of our time.





FACADE DETAIL 1:30
Apartmentbuilding

Manifesto

The manifesto is my own collection of design strategies to consider when designing critical regionalist sustainable architecture. The source behind them is the theory, merged with my own point of view. These strategies make up the framework for the design explorations in this thesis, and is also part of the result. The design has in its turn also influenced the selection and understanding of these points. The points are generally formulated to be applicable also in other projects, although explained in relation to the thesis project.

Place the buildings according to the landscape

The landscape is to be seen as superior to the built environment and structures should adjust to the conditions of the terrain and of the nature at the site, rather than interfering or damaging them. Where the landscape is challenging and the terrain dramatic, as in many places of the project site, it can be questioned if buildings are to be placed there at all. If both accessibility and landscape preservation can not be achieved, the plot simply is not suitable for exploitation today.

Adjust to local light & weather conditions

The design of a building is to be formed taking the conditions of light and weather of the site into consideration. To create high quality indoor environment there needs to be a presence of sufficient daylight. The seasons and rotation of the sun can also be considered to make use of passive solar heating for example. Weather conditions are also important, especially in places such as the project site, where the exposure to strong winds is particularly high. Placing the buildings below the rocks will give them a natural shelter, and added on to that can be design features of the building to shelter outdoor environments or the building itself.

Interpret and represent local character in the expression

Local character is not easily defined, but it is up to us as architects to make an attempt to identify and interpret qualities of the local built environment. To make the building relevant, the design should be inspired by the local context. Adapting to the local nature and architectural culture is superior to designing according to architectural "fashion" or personal stylistic ideals of the architect. Although, the interpretation of how the local architectural character can be implemented in the design of contemporary buildings, can present itself in many different ways, which still gives much artistic freedom to the architect.

Design for the local population

The needs of the inhabitants are to be fulfilled and not questioned by new additions. For example, the Öckerö municipality has a high rate of commuting citizens, which indicate that there might be need for new working spaces, designed for Co-working between islanders employed by different businesses in Gothenburg. Also people have the possibility to use common spaces for different social activities, which can change through time and is not fixed to one single interest, but give the possibility to form or expand local associations and collaborations.

Acknowledge local visions & regulations

Local visions and plans are important to take into account in the design. There is a reason to why they exist. They can tell more about what direction the municipality is suggesting for the development, which is mostly well though through and anchored in the community by interactive processes. Many of the contractors active in the area today, have not really respected the comprehensive plans and vision for the municipality. The idea is that the island character should be nourished and preserved, yet some contractors suggest ready built, catalogue constructions. This is neither suitable nor respectful.

Find out about and answer to public opinion

Trying to build resilient communities, the local population needs to take part in the development process. Even though people have different views on how the development should take shape, it is important to open up to the possibility of having a say. Discussion with and between citizens is important to highlight compromises and making sure all aspects are considered and communicated.

Design for inclusion

To enable an inclusive community the planning must take aspects such as accessibility and social interaction into account. The physical environment should be accessible to all, especially in public spaces. To give the possibility for the community to be socially inclusive, it is important to create potential meeting places where people can get together.

Preserve local nature qualities & species

The natural values must be considered important when exploiting an area. The mapping of existing wildlife is essential to be able to know how to support the different species in the design. For example areas containing rich vegetation can be spared, as well as waterfronts, wetlands etc. The new additions of vegetation that are added to gardens and public spaces can also be adapted to the local ecosystem by planting native species in the first place.

Motivate the relevance and sustainability of chosen materials

Construction materials have impact on the environment in many different ways. Therefore the choice of materials should be made considering the life cycle of the material, from raw materials and production to use and recycling. Emissions, resource and energy demand, transports, toxins and recycleability for example are aspects to consider. Also the performance and durability of the material once it is in the building. In addition to the sustainability aspects, the material should also be evaluated according to its relevance for the local context. In the context of the islands the use of wood as structure and facade material comes naturally considering both aspects.

Consider ways to enable sustainable lifestyles & a circular economy

With a present unsustainable society the way of life is to be redefined. New developments should be planned for a better future and so, enable and promote the most sustainable activities and actions. For example the availability by bicycle and foot are to be prioritized before car traffic. Making space for social activities that educate for example farming or self building is a way to enable the growth of collective awareness. Including common facilities that can be used to practice a local sharing economy, can be a way to reduce resource use as well as to strengthen the relations within the community. Also smaller and more simple solutions should be promoting sustainable choices in the everyday life, such as distances to recycling stations in relation to combustible waste pickup points.

Include qualitative and productive public spaces

To enable a social community and qualitative leisure for people in the area, it is important that the communications and spaces between the residential plots are public and accessible to all. This is especially relevant in the context of the islands, where many informal paths exist between different lots, which gives good public access. The public spaces are preferably to be programmed for a range of potential activities and to have a productivity, either for nature or for people. This meaning for example that the public spaces can be green and rich in wildlife species or contain land or area for food production.

Consider possibilities for energy saving & production

In Sweden a large part of the total energy demand is due to the heating and running of buildings. Energy demand and production is therefore today one of the most important environmental factors in the building industry. Saving energy through good insulation properties as well as considering possibilities for energy production by passive solar heating or integrated solar panels are ways to lower external energy demand.

Discussion

What would contextualized, sustainable and contemporary island architecture look like?

The theoretical studies has indicated that contextualization is necessary, that there are certain features that characterize Bohuslän buildings and that there are many ways to make development more sustainable than the conventional building of today. What would these contextualized sustainable buildings look like?

The answer is that they could look in many different ways. The design explorations demonstrates some of my thoughts on how to connect to local building tradition, by leveling similar features and differences. The different examples show what this can mean for different typologies. Still the design explorations themselves comes out of my own ideas of interpretations, and is not by far the only answer. But the fact that they demonstrate different strategies for the development of the site, and how these can look, can bring the sometimes confused discussion about what the inhabitants want to see built, some clarity.

How can we design for local relevance and critical regionalism as well as sustainability in the Öckerö islands?

The findings of this thesis shows that in order to build sustainably, accessibly and in local character at the islands today, one cannot build very much. It is my belief that we can achieve this only by keeping exploitation low and building small scale units only in the very most suitable locations.

However, there is a need for new housing. When meeting the demands or aspirations of development from the municipality, which has been the starting point for this thesis, the answer is probably that we cannot build truly respectfully and sustainably. Meaning that really achieving a good note for adaptation to local identity, accessibility for all everywhere and sustainability in the broad and holistic sense, is difficult to combine with the local landscape and planned exploitation rate of the site.

Landscape preservation, resource and material use, nature preservation, local building character, accessibility, economy, energy demand and exploitation rate all need to be considered and scaled to one another.

I believe that even though it might not be possible to check all the boxes of this task, there is still potential to build good and sustainable additions to the island communities. The important thing is to be clear about what we compromising with and why. To make this a question for the public to engage and have a say in, which qualities we all value the most and the reasons to why they are important. To make the development strategies clear and conscious.

DESIGN QUANTITY

Apart from the two presented design explorations, a third alternative has been elaborated. This was a high rise alternative, which was interesting due to its possible efficiency and the investigation of how it could be adapted to the context. It was later excluded since the result was questionable and is not to be promoted. The fact that this thesis has been exploring three different design approaches for the site, means that the designs are not fully elaborated but simply drafts of the different ideas. If the thesis would only present one single proposal, the design could be more developed. On the other hand, that would not demonstrate the different values lost and found in the different approaches. The ambition is that the thesis in this form can inspire and open up to discussion about the main questions and frictions regarding the local development.

HIGH RISE?

The purpose of the explorations of high rise buildings was to explore how a foreign

morphology and typology could be integrated though material and detail. However, the result did not present itself relevant in this context. It was difficult to find connection points in the expression and there is also a risk that the benefit of land preservation is eliminated by further exploitation. The architectural character of the islands is much built on the morphology and small scale, which would make high rise structures challenge the local identity rather than adapting to it. It is a possible way forward, but not to be recommended in this context and at this time.

ORNAMENT IN CONTEMPORARY DAYS

Todays architectural norms are not very accepting when it comes to ornament. Applying ornament to architectural designs is in many way considered as traditionalistic pastiche-making. I, on the other hand, see it differently. I think ornament has a role to play in architecture. It speaks of a concern and ambition for the building to radiate homefullness. The style and design of these ornament may be taken into a new age, which has been the ambition in the design explorations of this thesis, in order not to be copies of the traditional ornament examples. My ambition has been to let the ornament bring the expression of the buildings closer to the cultural appreciation of the local context, but to never allow them to interfere with function.

CRITICAL REGIONALISM AND SUSTAINABILITY

In general the discourse of Critical Regionalism goes well in hand with sustainability. In a way the Critical Regionalism can be interpreted to address social sustainability in promoting cultural significance and preservation and development of local identities.

Critical Regionalism suggest to make use of global resources or universal qualities, without letting it dictate the style or expression of the buildings. Today, what must be added to this, is the global limitations and planetary boundaries. Sustainability. The concept of sustainability is sometimes in itself contradictory, when different aspects such as social, environmental and economical sustainability interfere with each other. And taking a stand for critical regionalism can expand these conflicts further.

Merging the philosophy of Critical Regionalism with the framework of sustainability gives new conditions for the design. The present time requires the notion and production of sustainable buildings, and this must be framework for all further development.

Thankfully, many times the existing building tradition has benefits also in this aspect. For example the typical rational wooden structures are valid also from a sustainability perspective. The oldest houses are often small, which can be something to connect back to in the present time. Questioning and reducing the size of each apartment or house benefit both the environment, in terms of footprint and reduced heating, and the connection to the local identity. The suggestion to share a house between two households is another example of how this can be achieved.

Placement in shelter of wind is another typical feature which comes appropriate from both perspectives. Also the reuse of local materials for the new buildings is an example of a way to connect to the building tradition and spirit of place, while also making environmental profits.

Conflicts

Despite several connection points, many conflicts have appeared in the design process, dealing with a relatively high exploitation of a challenging terrain. These conflicts are between different sustainability aspects, in relation to the planned exploitation, or between different sustainability aspects and the philosophy of Critical Regionalism.

Critical Regionalism, exploitation and nature preservation

Building small scale units according to the architectural identity of the islands, will have the consequence of a larger footprint compared to higher buildings, which gives less unexploited and preserved natural areas. To achieve both small scale structures and preservation of nature, the exploitation can be reduced. Another parameter which can be altered, is the average size of the housing units. Reducing the footprint by sharing houses between two households for example.

Rock preservation and resource use

Preserving the rocks in this location, means that there is need for filling or making controversial constructions for all the roads. In case of filling the fill material needs

to come from somewhere. It is possible to use crushed concrete for example from demolition sites, although then you might risk negative effects on the environment if there are toxins let out. As suggested in the design chapter, there might be possibilities in using soil for these fillings, since the production of soil is natural it does not have any negative effects on nature, and can be made locally. The negative aspect of this is that since there is such massive volumes of fill material needed, the process will be very time consuming and it is not given that the plants and soil present today will be enough. Today, the demand is also high for biofuel of different kinds, which might make plant waste a scarce commodity.

Rock preservation, accessibility and exploitation

Not blasting the rocks also has effects on the possibilities to make roads and buildings accessible. Giving full accessibility while also preserving all rocks, limits the possible locations for exploitation due to the terrain. Therefore in the design examples, with the current exploitation, not all buildings will be fully accessible.

Accessibility and Critical Regionalism

The traditional settlements are not fully accessible, sometimes buildings placed up on the rocks can only be reached by rather steep roads or paths. This means that building according to the typical or traditional morphology in a sloping terrain, is difficult to achieve with full accessibility. Small paths and unofficial shortcuts also make up a part of the character of the islands. Sometimes they are too sloping, contain stairs or simply rough terrain. If enabling these shortcuts in design, the accessibility will at times become problematic.

Accessibility and nature preservation

Making sure all buildings and roads are accessible, will result in longer and more roads than the alternative. This requires space, which might reduce the amount of potentially preserved nature.

Car accessibility, environmental sustainability and Critical Regionalism

The island communities have occasionally narrow roads and small distances between buildings, especially in the older areas. This has impact on the intimacy and experience of these environments. When designing for accessibility by car, this intimacy will not be possible to achieve. Also creating spaces for parking cars will have effect on the placement of the buildings. Good accessibility by car can also be assumed to promote car transportations, which maintain or increase emissions.

Energy saving and Critical Regionalism
An optimal building from an energy point of view would have a very simple or square shape. Many corners are not to be preferred, but in these design explorations the shape is more complex. There is a trade off between Critical Regionalism and Loveability and environmental sustainability. It is paid for by providing shelter from wind and giving the building more attachment, which could make it stand longer.

These conflicts and others should be lifted in discussing the development. What are the reasons behind the different standpoints? And how can we agree on what is the most important values to prioritize?

SUSTAINABILITY AS COMPASS

The integration of sustainability as a framework for design, in addition to Critical Regionalism, has directed certain choices in the design process. Sustainability is an important framework of design and architecture today, and can be seen as a contemporary complement to Critical Regionalism.

In this thesis the sustainability aspects have been scratched on their surface and there has not been much innovation regarding sustainable building, rather an application of existing strategies, such as taking a standpoint in the use of wood as construction and facade material, making use of passive solar heating principles. There is also a suggestion for further development to use local, second hand materials, modular building, passive house strategies or straw insulation. Also solar energy production can be applied on roofs. These sustainability aspects have not been leading in the design explorations, but considered and the aim has been to enable such implementations. The design choices that are most influenced by the sustainability perspective are stated below.

The preservation of lush green areas on the site
The reasons to try to preserve as much of this vegetation as possible, is to enable a continuation of existing wildlife and to keep large trees as carbon absorbers.

Including common spaces
Common spaces provide a meeting place for the residents which enables a stronger

community where ideas can be shared among the residents and people can learn from one another. It also gives possibility for activities, events or parties in the area, which can make the area more attractive and independent. These functions has the purpose of strengthening the social resilience of the local community.

Including Co-working spaces

Co-working spaces integrated in the community enables a flexible working situation for people who commute daily. The possibility to have an office in the neighborhood, with good possibilities for digital communication and with local co-workers with varying expertise and knowledge, can expand the possibility of working from distance. This can, by extension, reduce transports and also contribute to creating local networks.

Including Sharing facilities

Tool library, workshop and plant nursery have the purpose of promoting a sharing economy in the area, which is part of a transition to a more circular economy, as well as a more efficient resource use.

Integrating farming plots

The integration of farmable land between the residential buildings is intended to promote both social sustainability through meetings and leisure activity, but also the resource resilience of the community, providing knowledge and access to internal food production.

Traffic hierarchy

The smaller roads are intended to be constructed for low speed and the privilege of bicycles and pedestrians. This is partly to enable slightly more narrow roads but mainly to enable easy access for sustainable means of transportation.

Building Design

Wood is the main material for both structure and facade. The small pair house is shaped after principles of passive solar heating, and all the buildings are equipped with a generous wall thickness, to enable good insulation.

Housing unit size

The smaller average apartment size is in a way in conflict with the typical forms of residences existing today. Since most households consist of one family living in a rather large house, the choice to reduce planned living space per person is something which

has been influenced by sustainability. From the social aspect of affordability, as well as for reduced heating demand and exploitation area.
The design could be elaborated further in relation to other sustainability aspects, such as integration of solar panels, possibilities for full accessibility, the reuse of materials for the construction for example. This is to be recommended for further development.

As for the broader conclusion of the result of the merge between Critical Regionalism and sustainability, I would say that the most valuable perspective added by the sustainability framework, is that of limitations. The boundaries of for example exploitation of nature and resources, or of emissions causing climate change, are equally real as economic boundaries. Social and environmental sustainability is the necessary framework which all practices must follow in order to achieve a sustainable future. Within the framework of environmental and social sustainability, is the framework of economic sustainability and within that framework, the application of Critical Regionalism can be made.

SUGGESTIONS FOR FURTHER DEVELOPMENT

As the topics of this thesis are very broad and comprehensive, delimitations had to be made. Listed here are suggestions of related questions to investigate further in connection to the results of this thesis.

- *Look into the possibilities for self-building as a way to create affordable homes and share knowledge*

- *Look into the possibilities to create a platform for material exchange and re-use in the municipality or region and between stakeholders such as construction companies and private persons.*

- *Re-evaluate the possibilities to build in the slopes of the site, considering accessibility*

- *Explore the possibilities of creating different character of different areas within the site, to reduce the sense of homogeneity and to break up the large site in smaller sections.*

- *Create new forums or methods to include the inhabitants of the islands in vision creation and decision making.*

Conclusion

EXPLOITATION

The findings of this thesis shows that in order to build sustainably, accessibly and in local character at the islands today, one cannot build very much. It is my belief that we can achieve this only by keeping exploitation low and building small scale units only in the very most suitable locations.

However, there is a need for new housing. When meeting the demands or aspirations of development from the municipality, which has been the starting point for this thesis, the answer is probably that we cannot build truly respectfully and sustainably. Meaning that really achieving a good note for adaptation to local identity, accessiblity for all everywhere and sustainability in the broad and holistic sense, is difficult to combine with the local landscape and planned exploitation rate.

TRANSPARENCY

There are many ways to interpret the local architectural identity of the Öckerö islands. This thesis presents three different approaches on how to achieve a local architecture while also considering sustainability aspects. The different design explorations showcase that an alternative which benefits a certain point of interest, might disfavor another.

When we create plans for the future, it is important to consider all relevant values of the site and development, and to scale them to each other. Today much of the planning documents are ambitious, but the reality of what is being built does not correspond to this. In order to find a way forward that we can agree upon, all cards must be on the table. There has to be transparency in compromises that need to be made, and the inhabitants has to take part in deciding which values that are most important.

CUSTOM MADE ARCHITECTURE

Throughout the process the idea of finding strategies and inspiration for how to adapt architecture to its context and environment, has stayed ever as relevant. In the present global development important values are being lost. Therefore, there is a great need to explore, and implement, these strategies. Critical Regionalism and sustainability play an important role in developing communities and architecture, to acheieve cultural and environmental balance.

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