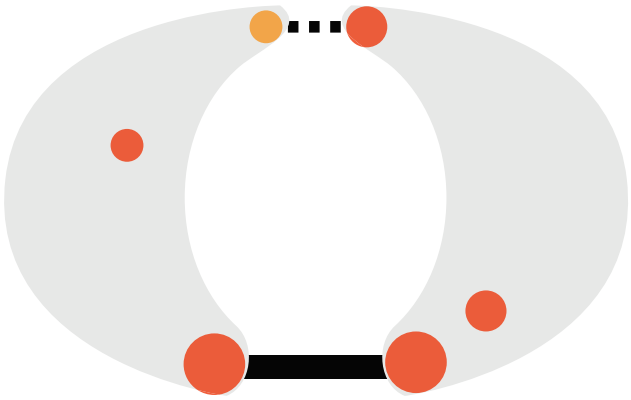
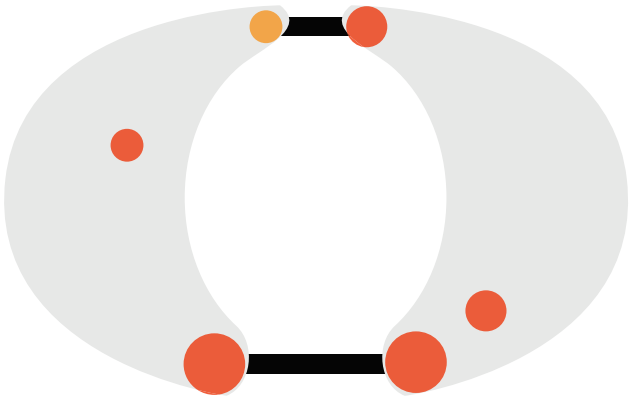
TU DELFT | URBANISM | JUNE 2012
STUDIO: COMPLEX CITIES

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*

THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR





THESIS of E.C. Kauffmann

COLOFON

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MSC THESIS

JUNE 2012

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DELFT UNIVERSITY OF TECHNOLOGY,
FACULTY OF ARCHITECTURE,
DEPARTMENT OF URBANISM,
COMPLEX CITIES STUDIO

IN SUPPORT OF:
MSC 3 URBANISM
RESEARCH & DESIGN METHODS (AR3U011)
GRADUATION LAB (AR3U030)

2ND CONNECTION

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Preface

Before I ever visited Scandinavia, the area did not appeal to me that much. After all, how often do you hear anything about these wealthy, safe and neat countries? I was aware of the beautiful nature, but it's also cold and isolated, not the first place you visit in the holidays if you want to escape the rainy Dutch summers.

This all changed when I visited Denmark for the first time in the spring of 2010 to visit a friend who studied there. Copenhagen was actually really interesting, with beautiful parks and convivial neighborhoods. It has the majestic wide streets of Berlin, the allure of Paris and the liberal lifestyle and cozy waterfront of Amsterdam combined, it's a lively and sustainable (especially environment friendly) city, people are friendly, the architecture is impressing and everything works perfectly.
That weekend I met a guy, who is now still my boyfriend, so from there on, Copenhagen, Denmark and Scandinavia were suddenly my center of attention. Suddenly I became a regular visitor of Denmark, therefore in the spring of 2011 I studied one

Fig. 1 Bird's eye view from Helsingborg to Helsingør (source: Helsingborg Kommune)

semester at the Royal Academy of Architecture in Copenhagen. Although this academy mainly focuses on architecture, I could attend an interesting department that partly focused on urban design too.

The subject for the main project of the semester was free to choose. Together with a fellow colleague from the TU Delft I, among other things, made a big scale project about the Øresund region. A transational region that consists of the Danish Islands in the east, Sjælland, Loland-Falster Møn, Bornholm and the Swedish Skåne province in the southwest. Around 3.7 million people live throughout the region and Copenhagen is the most important center. Later in the project we focused on smaller scales and never really understood the regional complexity of the Øresund. I regretted this, and I took the chance to choose this region again as the main context for my graduation project.

The Øresund is a region in development, with economic growth and future potential in many ways. It's one of the most innovative regions, with advanced technology, dealing with environmental, economic and social sustainability. But it's also dealing with several problems in its development process, some of these problems, related to urbanization and infrastructure, I will appoint in this project, and for a small part I will try to come up with possible solutions.

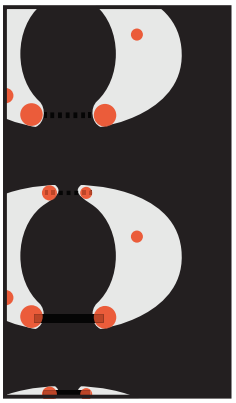
This thesis has been written in the framework of Urbanism. It forms the final proposel for the graduation project at the faculty of Architecture of the Technical University Delft. The paper contains the design and research of the graduation project and includes a reflection.

This document is a result of the graduation track of Urbanism. The thesis comes along with a presentation of the graduation, presented at the p5 final assesment review.

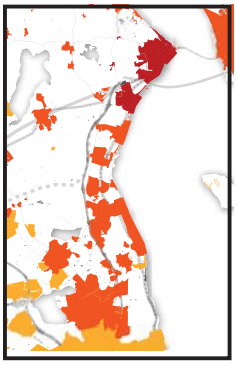
At this point I would like to thank my mentor Francisco Colombo for all his support and advice, the planning director of the municipality of Helsingør, Ronald Jamborg Hansen and ir. Kasper Dichmann, for the information about the the developments of the link they offered, my second mentor Luisa Calabrese for her advice, Christian Borum for all his support and several teachers, Roberto Rocco in particular who made a great offer in organizing the studio, from the studio of Complex Cities for all their advice.

Erika Kauffmann | 21-06-2012

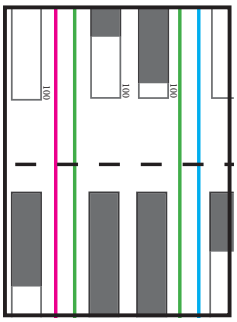
CONTENT



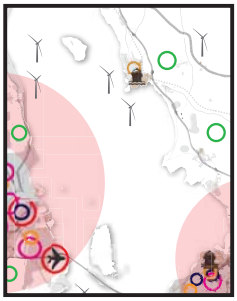
I Introduction



II Analysis



III Theoretical framework

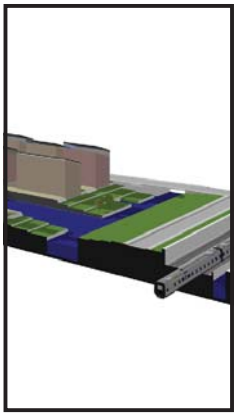


IV Vision & strategy

V Conditions

VI Design proposal

VII Conclusions & evaluation



Appendix

1 Introduction

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*
THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Introduction

This project is about the introduction of a new infrastructural link between two cities in a cross-border situation to benefit the development of the region and the possible impact on the local conditions of the urban areas. My intention is to find out what the spatial and programmatic impact is of a second connection in the Øresund region on the city of Helsingør and to come up with a design and strategy.

In this section I will introduce the content of the different chapters of this Thesis.

Chapter 1 Introduction
In the first chapter the project is being introduced. This includes, background and contextual information, the problem field of the research, the objective of the whole project, the used methodology for executing the research, the cardinal question and sub questions and the relevance of the subject.

Chapter 2 Analysis
This chapter contains a detailed description and analysis of the different scales of the project. The scales are all to a certain extend approached in perspective of the city Helsingør (fig. 6). The programmatic and spatial division of the Oresund are described and existing plans are mentioned.

Chapter 3 Theoretical framework
The third chapter expounds the theoretical framework. To backbone this project, different literature and case studies have been consulted which includes theoretical background to tackle the complexity of regional cross-border integration on a programmatic level.

Chapter 4 Vision & Strategy
In this chapter conclusions from analysis and the theoretical framework are brought together to form a clear vision for the region and the new programmatic and spatial positioning of Helsingør

Chapter 5 Conditions & characteristics
The fifth chapter describes the spatial conditions and characteristics of the plan area, to understand the build-up to the design proposal.

Chapter 6 Design proposals
The sixth chapter proposes a plan for the identified area that clarifies the effects of the regional development on the local scale.

Chapter 7 Conclusions & Evaluation
In the final chapter I will evaluate the project, my design proposals and my design process.

Locations:

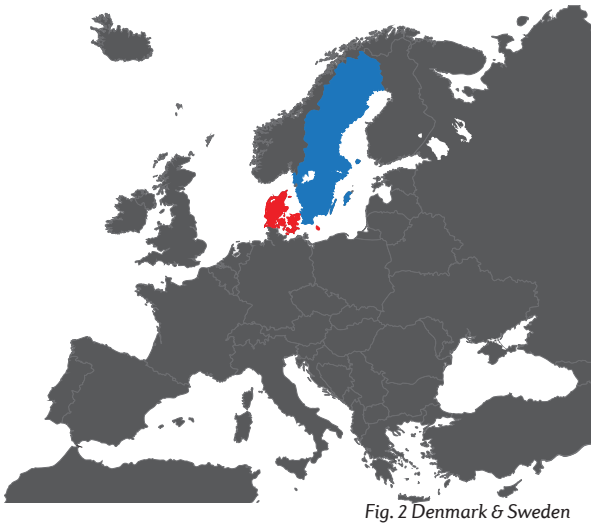


Fig. 2 Denmark & Sweden

Fig. 3 Scandinavian flags

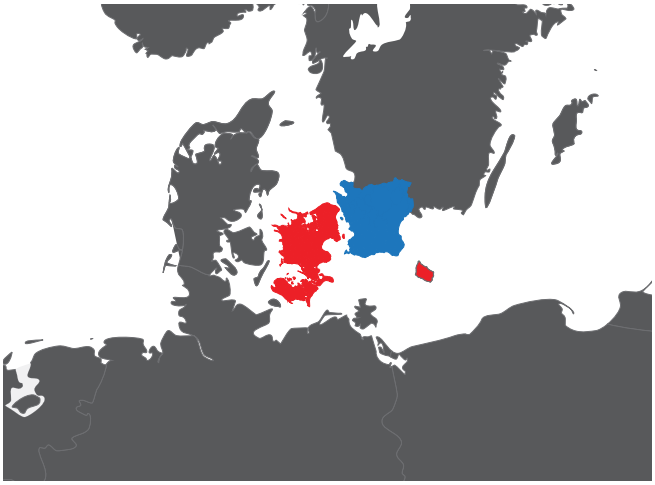


Fig. 4 Øresund region

Fig. 5 The Øresund bridge

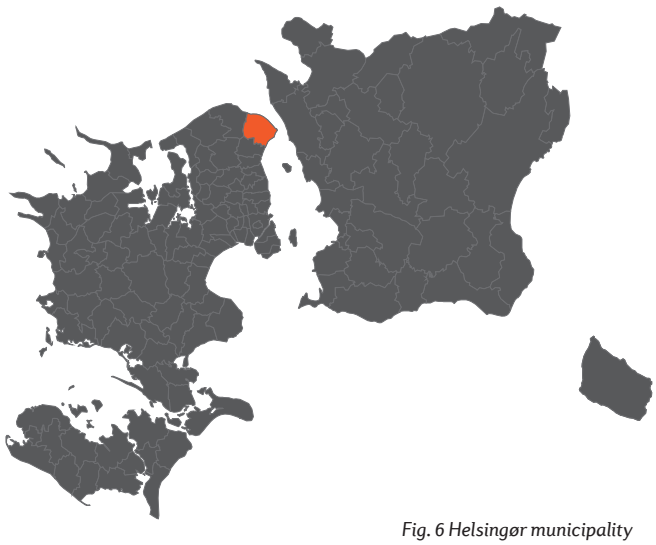


Fig. 6 Helsingør municipality

Fig. 7 Helsingør´s historical city centre

Context

GEOGRAPHY & DEMOGRAPHY

The Øresund (In Swedish: Øresund) region is named after the water in the middle of the area; it means 'gravel beach - narrow seaway.' The region consists of the Danish Islands Sjælland, Loland-Falster Møn, Bornholm and the Swedish Skåne province.
A fixed link across the Strait of Øresund connects Copenhagen on Sealand with the Swedish city of Malmo in Scania, while a ferry connection in the north connects the two cities of Helsingør (Sealand) and Helsingborg (Scania). Crossing the maritime border can therefore be achieved at two pairs of interconnected cities in the Øresund Region.

Around 3.7 million people live throughout the region. The Øresund is connecting the Baltic Sea with the Atlantic Ocean via the bay of Kattegat, it is one of the busiest waterways in the world.

HISTORY OF THE ØRESUND REGION

The Øresund as a region is not particular a new phenomenon. The Øresund water was always the beating heart of the region. Until 1658, the entire Øresund Region, including Scania (The Swedish part), was part of Denmark. After that, Scania came in Swedish hands.

Political control of Øresund has been an important issue in Danish and Swedish history. Danish maintained military control with the coastal fortress of Kronborg at Helsingør (Swedish: Elsinore) in Denmark and Kärnan at Helsingborg in Sweden at the "bottleneck" of Øresund. There the strait is just 4,5 km wide. In 1429 Denmark introduced the Øresund Toll. All ships passing at Helsingør had to pay duty to the Danish Crown. For centuries, the Øresund Toll was the most important source of revenue for the Crown. In 1658 it became a border region after the Swedes conquered Scania from the Danes. This lead to a marked change in the relative importance of Øresund, as Scania became a peripheral region in Sweden. The first plans to build a link across the Strait of Øresund occurred in 1872 and is therefore a long standing infrastructural issue of the Øresund Region.
In recent times, the Øresund Council was founded in 1964, but different trends of the administrative structures with centralization in Sweden and decentralization in Denmark circumvented a wider impact of this initiative, see OECD (2003). The process leading to the present strong position of the Øresund Region took off in the 1980's, where several supranational bodies were lobbying for a fixed link and the idea of the Øresund Region as a major metropolis on the European map. The fixed link was agreed upon by the Danish and Swedish government in 1991 and was supplemented by a common vision for the region in 1999.

> *"Goal: In 2020, the Oresund region being Europe's most attractive and smart climate region for citizens, businesses and visitors, thanks to an efficient use of integration and cross-border regional dynamics." source: ØRUS 2010*

On July 1, 2000 the first bridge across the Øresund was established, reuniting the two countries by linking them with a, partly tunnel and bridge. It is Europe's second major international fixed link to cross a sea channel, provides Sweden and Norway with a continuous road and rail link with mainland Europe, and was part funded by the EU as one of its TENs (Trans European Network) projects. For the first time since the Ice Age, 7,000 years ago, the sides where connected again.

Fig. 8 Time Proximity from Kastrup Airport.
Source: Danish Ministry of Foreign Affairs

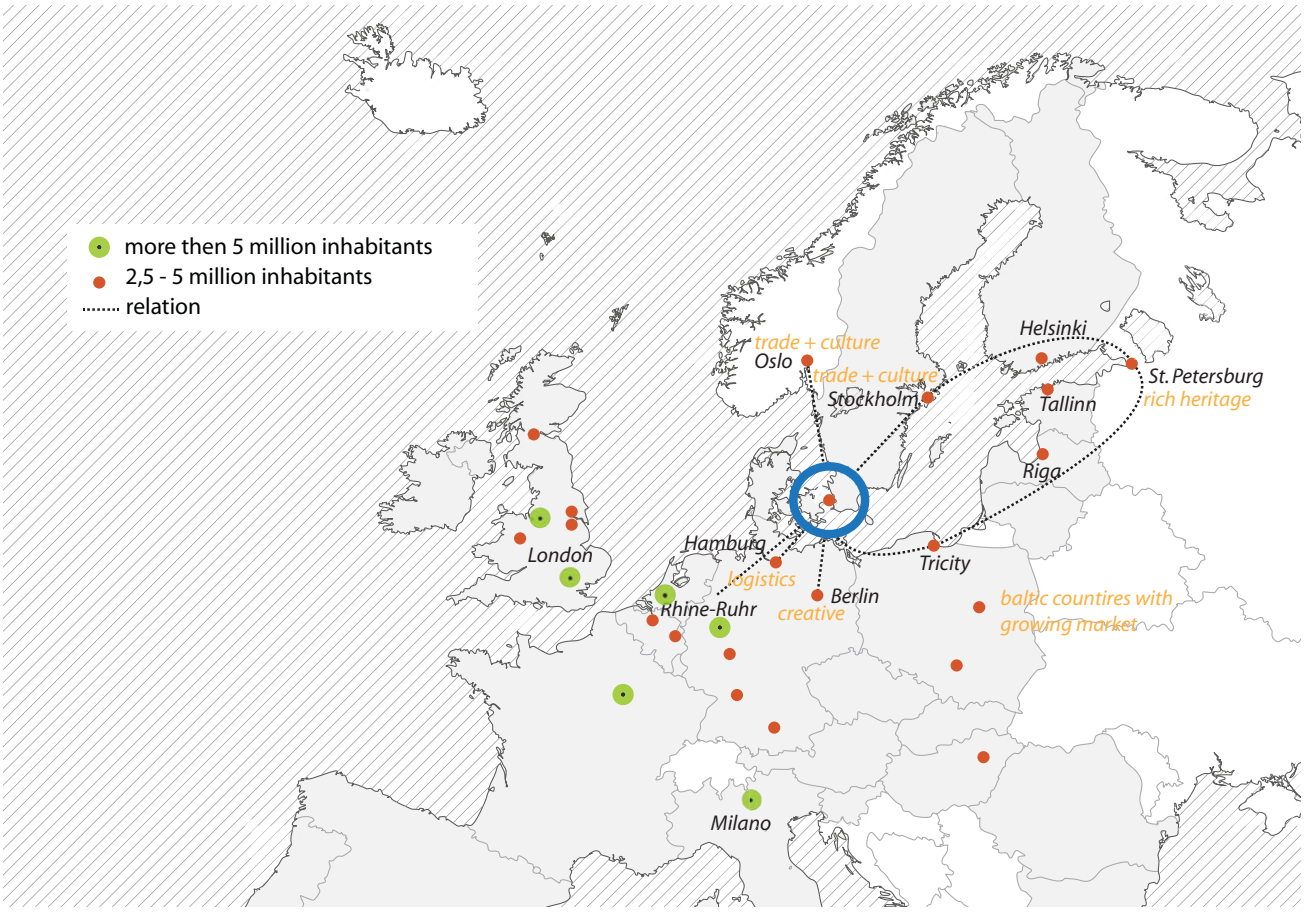


Fig. 9 The Øresund in Europe and its prime connections with other regions. Source: author

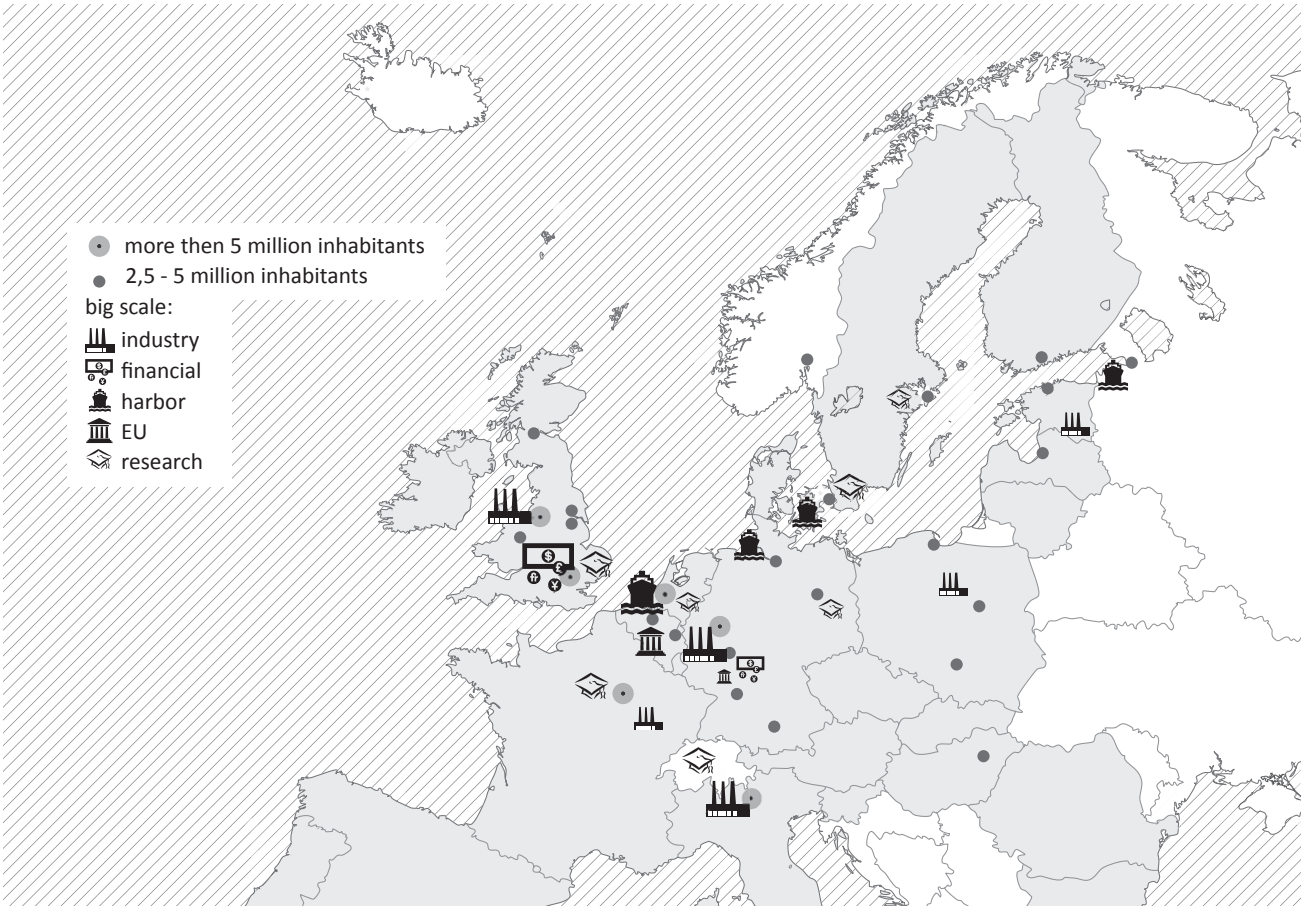


Fig. 10 Some of the main functions of European regions that are in relation with the Øresund. Source: author

THE ØRESUND IN ITS INTERNATIONAL CONTEXT

Both Denmark and Sweden have a well-established competitive position. According to the World Economic Forum (Schwab, 2011) Denmark is 8th and Sweden 3rd in the global competitive ranking for 2011-2012. Both Sweden and Denmark score very high on the functioning of institutions, both public and private. Sweden's health facility is top rated, so its technological readiness (technological adoption) and innovation on a.o.t. research, educational and marketing level. Denmark scores high on security, judicial and property right, infrastructure, electricity supply, education, labor market efficiency (flexibility), technological readiness and innovation. The countries score low on market size because of a small export percentage of GDP. Both countries have very high tax rates, this has an extent effect on the taxation rate.

The main trade partners for import and export are Germany, UK, Norway and Finland. (Economist, 2009) (fig. 9)
A more recent change is the repositioning of the Øresund region from peripheral to more central in Europe as a result of the EU's enlargement into Eastern Europe in 2004.(Knowles and Matthiessen, 2009, 155-165) Especially Sweden tries to enlarge their relations with the Baltic States to enlarge Sweden's distribution area.

Because of its positioning, the Øresund functions as a gateway for the Scandinavian countries and the northern Baltic countries. It is also a gate from the Baltic see to the Atlantic Ocean. For the adjacent countries it is therefore an important water route for cargo shipping that provides a lot of activity for the harbors (Copenhagen, Malmo and Helsingborg) along the Øresund waters.
The only international airport, Kastrup, is on the Danish side and is closely connected with Copenhagen, but also Malmo by the Bridge. It is the biggest airport in Scandinavia and the main hub for the biggest airplane company, SAS.

THE ØRESUND IN ITS (BI)NATIONAL CONTEXT

The impressive recent growth of cross-border exchanges such as the number of Øresund crossings, migration and commuting, but it has retained very low levels of interaction, in fact the Øresund region still consists of two separate parts.

The Danish part is dominated by the island of Zealand (Sjælland) with Greater Copenhagen and has 45% of the Danish population. The Swedish part includes the province of Scania (Skåne), which has 13% of the population in the country.

There are many similarities between these two parts of the region, most significantly in terms of nature and landscape and agricultural conditions, but there are also some parallel historical and industrial developments. A fundamental difference is, however, that while Scania is a peripheral region in Sweden, Copenhagen is the national capital and for most areas the most important city in Scandinavia. The economy in the Danish metropolitan area has always been more diversified, and recent developments in finance, industrial services, research, and tourism, which characterize the region, are much stronger in Denmark. The growth in Greater Copenhagen, which in 2008 even had the highest salary level in the world (Economist, 2009) has fuelled Øresund integration by providing jobs for thousands of Swedes.

The difference between the two sides of Øresund was perhaps at a maximum on the verge of the century of the industrial revolution. Denmark was a wealthier, and more economically diversified and urbanized country. More than a fifth of the Danish population lived in the towns and cities in 1800, and more than half of the urban residents lived in Copenhagen, which already had more than 100,000 inhabitants. The city was the capital of an empire that still consisted of Norway, Iceland and Greenland, and some small overseas territories in the West Indies and Africa. Denmark does not have important mineral or energy resources, but has through most of its history been a rich agricultural country producing a surplus for export.

Traffic
The Øresund Region in relation to growth in traffic is not significantly different from other European metropolitan regions where the volume of freight and passenger traffic has been steadily growing for many years. (Hansen, 2009)

The Øresund region, has a east-west axis orientation, which has had a huge development after the Øresund Bridge opened and integration was triggered. Down in the south of Denmark a new tunnel is under development that will link Denmark (southern island, Lolland- Falster) with the mainland of Europe (Fehmarn, north west Germany). This will reduce the travel time from Sweden, Norway and

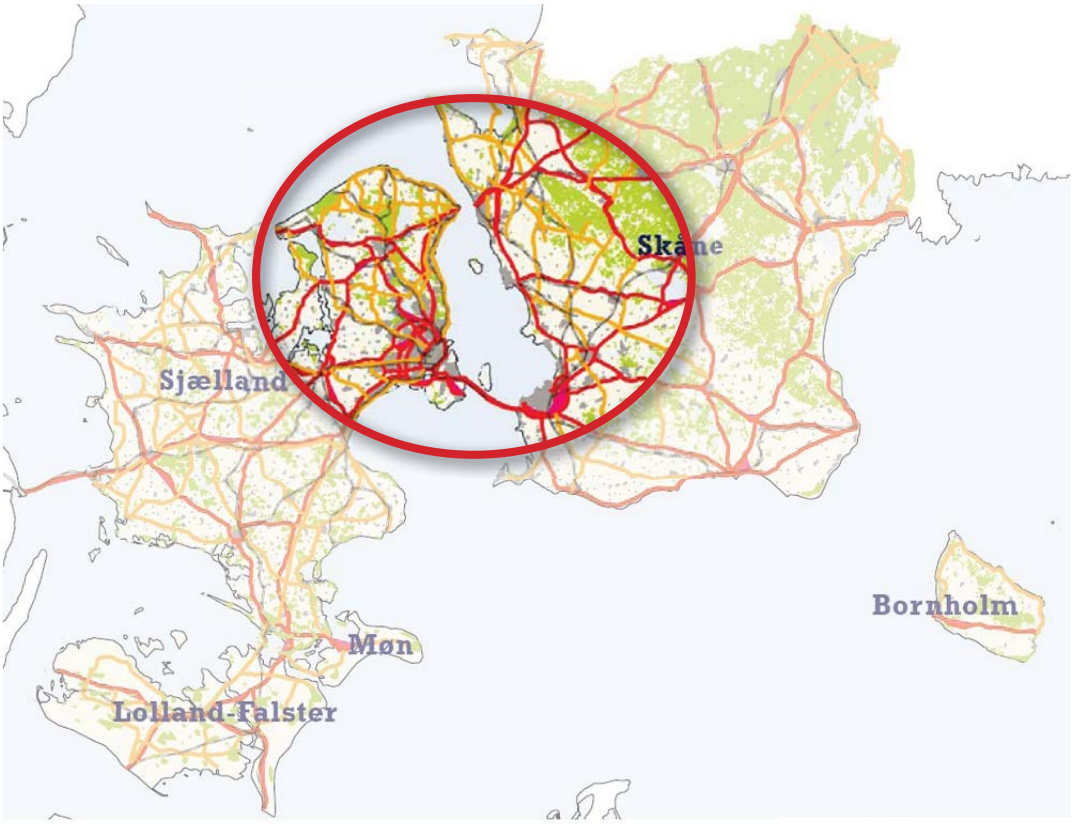


Fig. 11 The Øresund region. source: TendensOresund

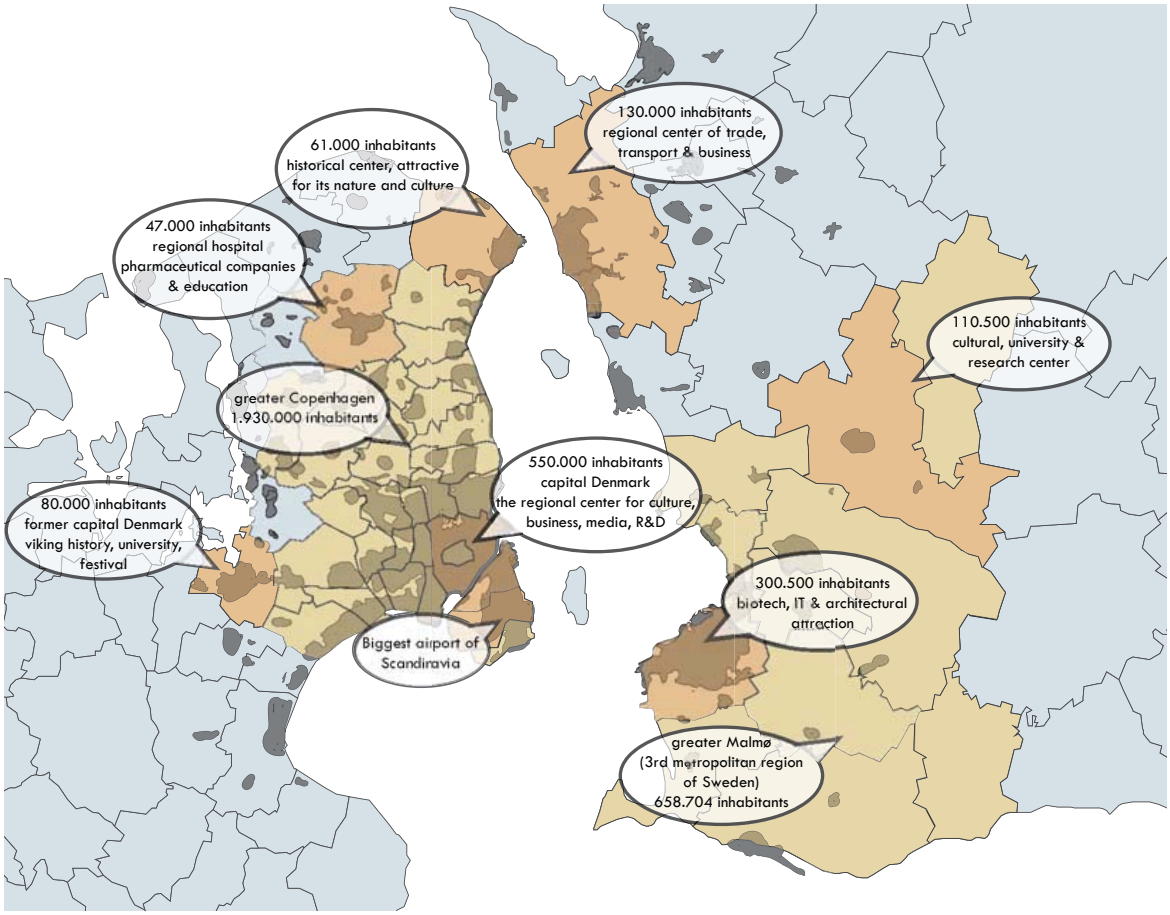


Fig. 12 Municipalities in the Øresund region with a few of their main characteristics. Source: author

the Danish Sealand enormously. If traffic growths according to analysis reports ((LaP, 2010) many challenges concerning load capacity will occur. The question now is how the fixed Fehmarn link will be included in the division of labour in transportation network and what conditions must be established before the connection can act as a trigger for a potential Fehmarn Region and the Øresund Region.

Spatial structure

The cities in the Øresund region are developed trough out a monocentric structure. Urban sprawl, defined as a tendency towards lower city density as city footprints expand, is a common propensity.
Historic centres form the core for the cities and their sprawl is path depended along the rail track or main roads. Especially in Copenhagen this structure is clear originated from the Fingerplan from 1947 (Fig. 13). Plans are being developed to transform these systems to avoid extensive congestion.

Fig. 13 'Fingerplan' Copenhagen 1947 source: ministry of Evironment

Population trends

Population trends in Denmark and Sweden have been fairly similar since the mid-1970s, but in different levels. For many years, the Swedish side of Øresund has had a stronger population development than Sweden in general. On the Danish side of the Øresund, the population development in relation to the rest of Denmark has varied from year to year. In 2010 the Danish side of the Øresund Region increased by 18,300 inhabitants and the Swedish side by 12,300 inhabitants.

Migration is the prime factor for the population increase of the Øresund region. The general migration pattern used to be similar to other European cities; young people commute from home to study or work, and live often in the bigger cities. Young families move from the cities to settle in the suburbs. However, a tendency occurs where families stay with their children in the cities. This may be due to relatively higher prices in the suburbs for houses and a desire to stay in the city. (Oresundstid, 2008).

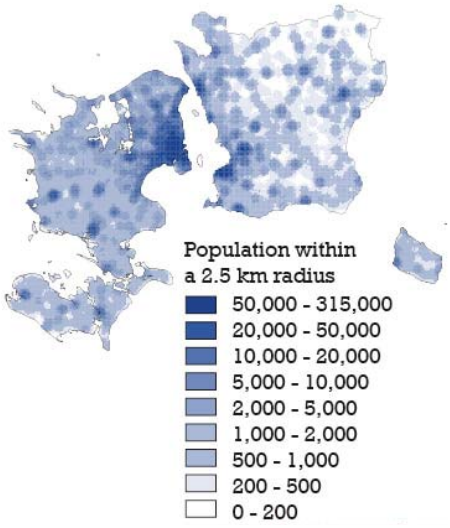


Fig. 14 Current density of population in the Øresund Region's. Source: www.tendensoresund.org

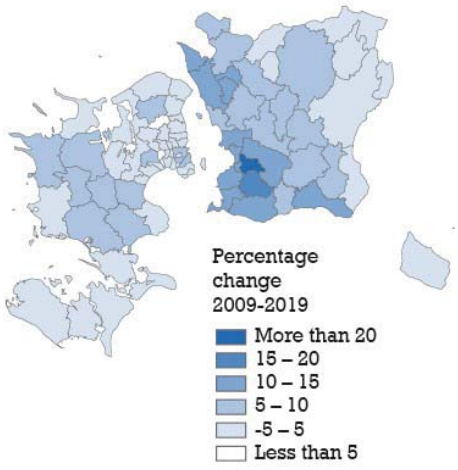


Fig. 15 Percentage distribution of population growth in the Øresund Region's municipalities by 2019 according to current forecasts. Source: www.tendensoresund.org

Fig. 16 The Oresund bridge, seen from Malmo (source: world travel attractions.com

Problem field

PROBLEM STATEMENT

This project introduces a new infrastructural link between two cities in a cross-border situation that possibly benefits the development of the region, the Øresund. The research evolves around the possible impact on the regional development of the Øresund region and the local conditions of the urban areas that are involved. My intention is to find out what the spatial and programmatic impact is on the city of Helsingør and build up a regional strategy for the Øresund.

The Øresund Region, with its 3.7 million inhabitants, gradually evolves between Denmark and Sweden is in its initial phase. Politically there has been increasingly focus on the integration in this lightly developed region in order to enhance cross border mobility and labor market integration, solve housing problems, create synergies in business development and the potential to mutually benefit the educational capacity that both sides of the channel holds.

Since the Øresund Bridge stood finish in 2000 it has enhanced the cross-border activity within these fields and can be considered as a relative big leap for the integration of the area. Commuting across the Øresund is now a natural part of many people's everyday life.

Besides the southern Øresund bridge connection, the northern part of the region should, according to analysis of IBU-Øresund[1] , be connected too. A fixed link between Helsingborg and Helsingør (Elsinore) would be an essential part of such a network. In addition, a new ring (road and rail) around greater Copenhagen will be essential to connect the northern link to the regional and international network to Europe's mainland.

1 IBU-Øresund is about integration on cross-border cooperation and to create a consensus in the Øresund region in terms of infrastructure and sustainable community development. The project is a collaboration between different regional actors on both sides of the Øresund. Its purpose is to provide a new strategic framework for enhancing development of the Øresund Region for becoming a competitive and attractive region. Their priorities for 2030 include: a fixed link between Helsingborg and Helsingör; a fifth ring road west of Copenhagen, maximizing the full potential of the Fehmarn Belt; strengthening the position of Copenhagen Airport and making is a multimodal hub; establishing a fast, cross-border train service for the entire region that is linked to a comprehensive regional network.

Although realistic strategies and plans for these new links already exist (more information in the analysis section), the decision to implement them hasn't been made yet, but the intentions of both the Swedish and Danish Government are present in establishing the link. It's likely only a matter of time and money. (Nilsson, 2010, Hansen, 2009)

Assuming the connection one day will be established, many new challenges and opportunities will arise for the northern part of the region, including the cities of Helsingborg and Helsingør.

Despite from potential integration gains arising from a new solid connection, it is also a big external shock to a region and its constituting parts.
The complex systems that historically have evolved and that are now rooted in the region, will be subject for change when a new connection will suddenly open a new pathway in and out of the region. This intervention in the life of a region creates opportunities, but also problems that need to be addressed.

This project will inquiry further into these dimension, study the regional scale and put a specific focus on the local effects on the Danish municipality of Helsingør.

- Firstly because it is one of the cities that is directly connected to the future solid connection with Helsingborg;
- Secondly, the city lays strategically in line with the new 'ring' project, connecting the outer areas of Copenhagen;
- Thirdly, Helsingør is a small scale, low dense city with ambitions that seem to be opposite of the potential a new link can offer.

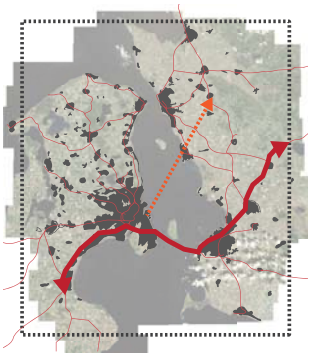


Fig. 17 current cross-border gateway. (by author)

Fig. 18 planned new cross-border gateway. (by author)

Therefore I will ***investigate the programmatic and spatial impact on Helsingør when a new solid connection is made and then propose an additional program that will benefit the city and the regional development of the Øresund.*** The relation with its neighbouring city Helsingborg and the regional development of the Øresund play an important part, so therefore the scope of this project will be focusing on these scales as well. The plans and strategies to enhance the position of the municipality of Helsingør must be developed in tandem with the region as a whole, therefore creating coherence and complimentary – all levels should mutual support each other.

PROBLEMS ON THE CITY SCALE

- **Unavoidable change of position**

Helsingør municipality aims preliminary on authenticity, "quiet" living and moderate tourism (HelsingørKommune, 2008). With the new link the city becomes the literal foundation for the second important gateway to Sweden, and therefore it function and characteristic will unavoidable change. This will clash with Helsingør's vision and demands a subtle strategy.

- **Competition with other centers**

A faster transport network can inflict a wider range for commuters and business. With Helsingør mainly focusing on living and moderate tourism, existing functions are not suitable and enough to deal with the change. Other centers that are part of the fast ring network like Helsingborg/ Hillerød/ Copenhagen have higher potentials (regional facilities) for being a well-functioning center and therefore great competitors, in terms of labour and housing, for Helsingør.

- **No expanding potential**

Determined boundaries of protected nature prevent the urbanized areas that have reached their limits, to expand.

- **Urban sprawl**

Helsingør has a very low density, because most neighbourhoods exist of detached houses. This forms an almost impossible foundation for a sustainable self-functioning center that relies on public transport.

PROBLEMS ON THE REGIONAL SCALE

- **Hierarchical road networks**

The neighbourhoods have typical characteristics of suburban sprawl road networks: hierarchical road structure and cul-de-sacs. Most of the city is automobile oriented and does not encourage the use of public transport.

- **Different regional planning systems**

The Cross-border situation causes challenges in decision making because of different planning systems and (in some fields) dissimilar interests in Denmark and Sweden.

- **Dealing with protected areas**

Both sides, but especially the Danish one, are dealing with a highly (national) determined boundary, aroused from the Danish Finger plan , that separates nature from urbanized areas. Possibilities for e.g. establishing a new ring road are therefore limited.

- **Increasing amount of traffic and commuting**

If a fixed link between Helsingborg and Helsingør is built, the number of trips across the Øresund will increase by approximately 70% in 2030 to the MOCCA prognosis report. (LaP, 2010). The current infrastructural network will be unable to deal with such intensification.

- **Changing urban patterns**

The urbanized areas are very much oriented towards the city centers of Malmo and especially Copenhagen. New important network connections can change the historically evolved structure drastically. This can change the character and functions of existing centers radically.

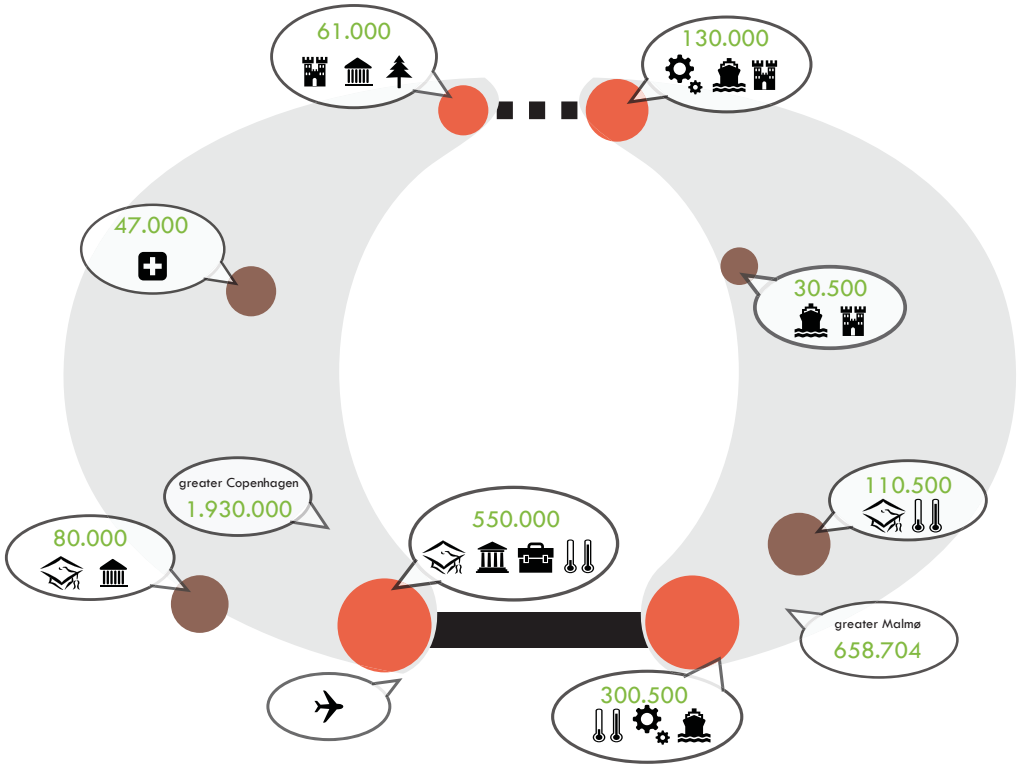


Fig. 19 Centres around the Oresund water with their most important functions and characteristics. Source: author

So what are the consequences for the region and its centers? Will it all be that beneficial for the development of the region, or could it also affect the existing centers and the collaboration in a negative way?

A more extensive strategy is needed in all directions to reach spatial complementarity and functional collaboration of cities in the area, in order to cope with the, in some respects, rigorous adjustment required by the new solid connection located in the north. Every project that is related to, direct or indirect with the development of the region should take these consequences into account.

Based on this it becomes highly relevant to consider the further development and the strategically planning in terms of programmatic and spatial rearrangement of this northern part of the region that is necessary in the wake of the establishment of a new solid connection.

Research Questions

The introduction of a new infrastructural link between two cities in a cross-border situation to benefit the development of the region possibly has an enormous impact on the local conditions of the urban areas. My intention is to find out what the spatial and programmatic impact is on the city of Helsingør. Therefore the cardinal question for this project is:

MAIN RESEARCH QUESTION:

What is the potential spatial and programmatic impact of a new infrastructural connection between Helsingør and Helsingborg on the city of Helsingør? And what are challenges and opportunities to be tackled in an adjusted regional cross-border spatial plan?

SUB- RESEARCH QUESTIONS:

I. Descriptive

1. What is the programmatic and spatial position of Helsingør in the structure of the developing Øresund region? (Method: spatial analyses and mapping)
2. What are the existing plans and developments for the regional scale of the Øresund and the role for the city of Helsingør within this region? (Method: review exisiting information and analysis of current situation and trends)

II. Method and theory: experiences from case-studies + theory

3. What are the push and pull factors of integration in a cross-border situation for enhancing the social and spatial development of western European regions? (Method: literature review)
4. What are the push and pull factors in other examples of (sudden)cross-border spatial integration? And which factors are relevant for the situation of Helsingør and its relationship to Helsingborg when a fixed link is established? (Method: comparative case study)
5. Which push and pull factors are relevant for the situation of Helsingør and its relationship to Helsingborg when a fixed link is established? (Method: design by research)

III. Implementation

6. How to integrate a regional solid connection in the existing urban structure of Helsingør? (Method: research by design)

a. What characteristics are typical of the urban structure and the functional program of the plan area and its surrounding areas? (Method: spatial analysis)

b. What kind of design guidelines and principles can be used to maintain and improve the urban coherence of Helsingør after the implementation of the new link? (theory)

7. How to implement the potential spatial and programmatic functions in/or connect with the project area? (Method: research by design)

Fig. 20 The Øresund bridge to tunnel (source: holidolic.nl)

Relevance

SCIENTIFIC RELEVANCE

Aphysical infrastructural link connecting Helsingør and Helsingborg will cause a big alteration for the whole region. Adjusting an existing structure to such a change can generate new insights for urban planners into how to foster a fertile ground for development in a new altered environment. Furthermore the challenge of merging a new local structure into a regional one does reveal valuable information about how to handle the complexity that arises, dealing with complementarity and coherence. It could be used when developing design guidelines and principles in a similar context. This could contribute to the empirical and theoretical field of urban planning. For this project more specifically, the focus on the merging of the existing transport system and its gradual development into a new local context could serve as an case when studying transport infrastructural development in general and also more specifically in a cross border region. In addition, this project will deal with transnational policy making and planning as these are unavoidable issues when indicating the preconditions for the development of the plan.

SOCIETAL RELEVENCE

After initiating the construction of a connection that will alter the life of the region, it is important to partially develop the areas of Helsingør in a new direction so that the municipality and its citizen gain from it economically, socially and from a mobility perspective. When overcoming potential downsides of a new connection for the local area the possibilities that it carries with it must be harvested. If Helsingør should gain from the new connection, it should adapt to every aspect it brings. The city, a relatively small municipality, with mostly residential neighborhoods, has in its current situation not that much to offer to surrounding centers. If the municipality and its inhabitants want to profit from its economic gains, then it should implement advantageous functions and change the cities program, so that it doesn't lose the regions interest and a fast train connection would not drive the city by. The task for this project lays in implementing all this in a sustainable and coherent manner.

The new link will support integration of the region and possibly inflicts more cooperation between different centers. This can impose many possibilities that benefit society. Improved infrastructural connections would lead to more commuting and fosters an easy access to a flexible labor market. This also counts for education, recreation and tourism when travel times are cut off. Denmark and Sweden's innovative potentials will be better accessible for more people, this helps to accomplish a sustainable environment, economy and society for everyone.

It's imperative that urban planners and designers make relevant plans, so the aftermath of a new link is not let alone to randomness and a neoliberal approach. The wider cross-border region will also gain from successful constituting parts as these areas potentially attract investment, jobs and opportunities that the rest of the regions citizen easily can access, due to easy accessibility.

Methodology

'It is better to be roughly right, then precisely wrong' (Davidson, 1984, 561-575)

The project exists of a regional strategy and a local master plan that are interrelated. Therefore the analysis and research has to be done on these scales and, as much as possible for the scales in between.
To keep track on this complex relation, different scales are approached from its relation with the local scale and the region.
The cross-border situation will be deeper examined by getting into the theory about this subject and use case studies to translate the results to a concrete level, that can be used for defining programmatic and spatial guidelines. This section forms therefore the theoretical framework.

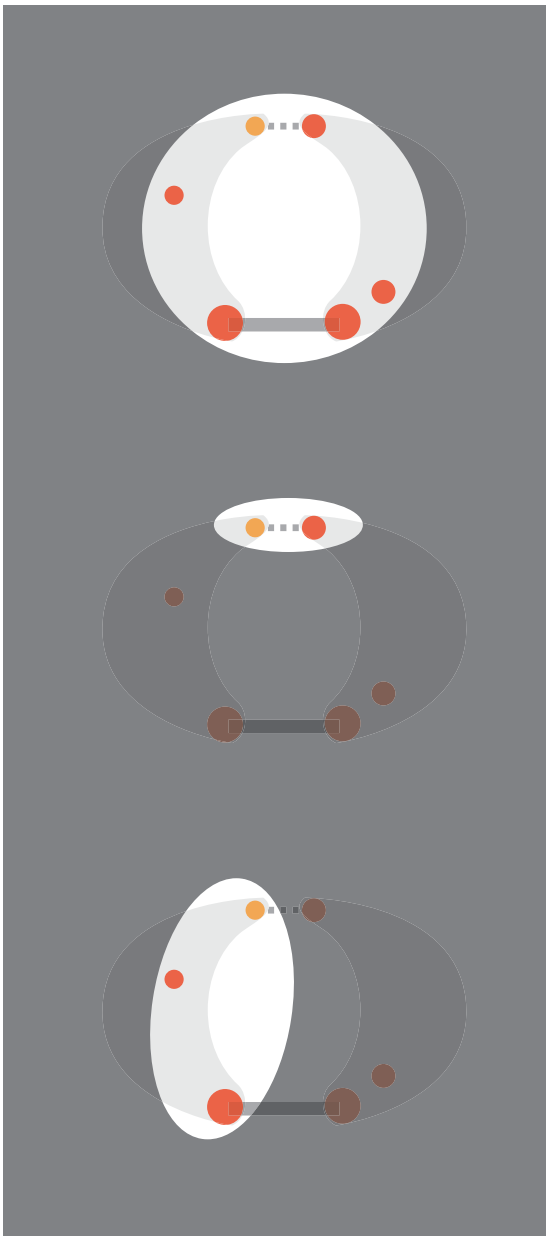


Fig. 21 Helsingørs position in relation to other centres. (source: author)

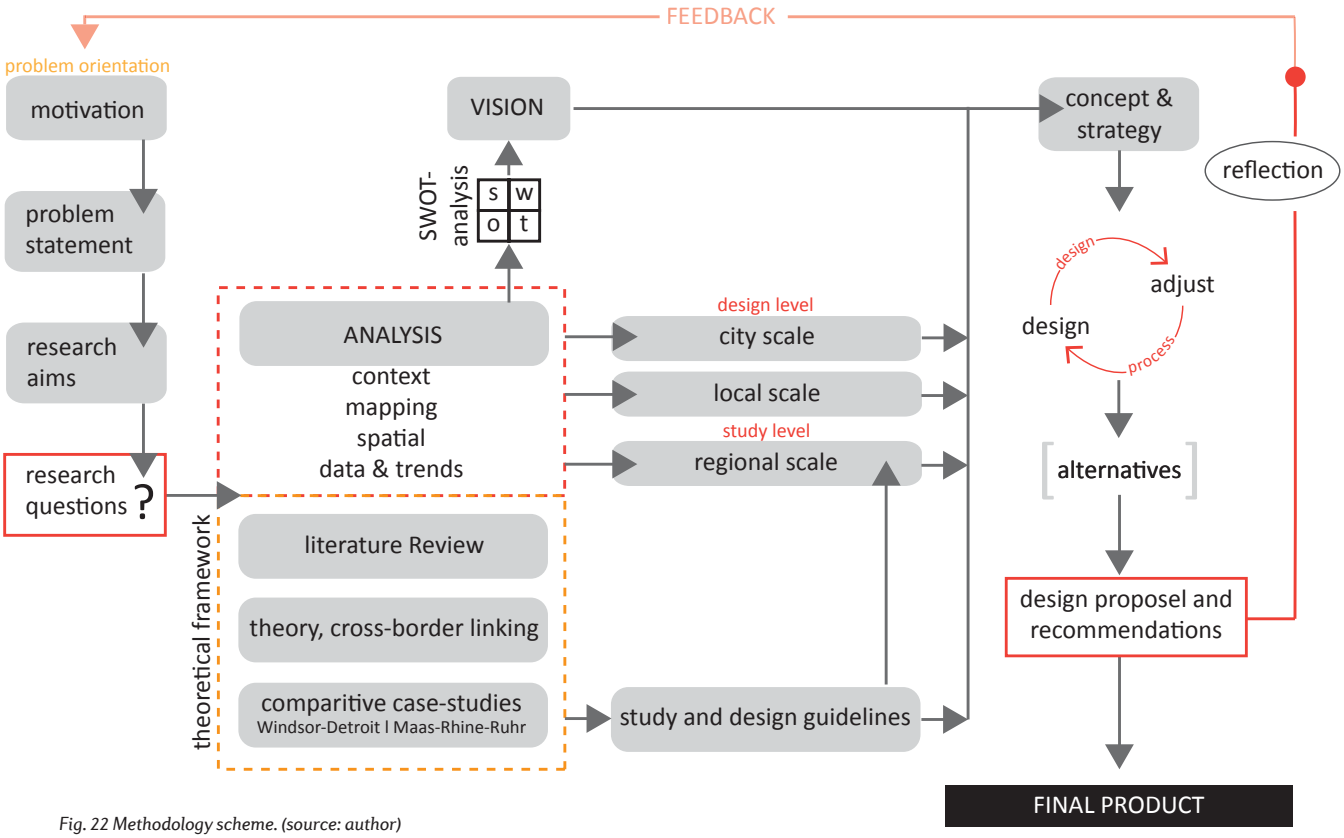


Fig. 22 Methodology scheme. (source: author)

The course of the process as is shown in figure 22 and will be as follows:

Defining the Problem Field:
- The first phase is the orientation. Orientating around a subject of interest, discovering the context and contemplate about a specific problem field.
- After determining the subject for the project the problem statement needs to be cleared. The process of defining the statement will continue until the end, but the outlines need to be manifested in an early stage to be able to define the project.
- Simultaneously, while defining the outlines, the research questions and cardinal question are created. Yet again, these questions will alter during the process of defining.
- Tools and methods for obtaining the theoretical framework that forms the backbone of the project:
  - literature review;
  - case studies;
  - theories study;
- Tools and methods for the research on the context, study and project area:
  - context analysis;
  - facts, statistics and trends of current and future developments;
  - spatial analysis of the plan area;
  - mapping of the different scales;

Developing the vision and strategy for the study area:
- The theoretical framework determines the study guidelines that underpin the project.
- The result of the practical analysis for the study scale will be converted into a SWOT-analysis.
- Subsequently these last two steps will be combined to form a vision for a strategically planned structure of were the project area is an extension of.

Developing the concept and strategy for the design of the project area:
- The theoretical framework determines the design guidelines that underpin the design of the project.
- Together with the analysis the result have converted into a programmatic and spatial vision.
- Eventually this leads to a concept and strategy for a design of the project area.

Every step will continuous carefully be reflected on to make necessary adjustment anywhere in the project. This, until the Final Product, at the end of the process, is finished to be delivered.

1. WHAT IS THE PROGRAMMATIC AND SPATIAL POSITION OF HELSINGØR IN THE STRUCTURE OF THE DEVELOPING ØRESUND REGION?

METHOD: SPATIAL ANALYSES AND MAPPING

2. WHAT ARE THE EXISTING PLANS AND DEVELOPMENTS FOR THE REGIONAL SCALE OF THE ØRESUND AND THE ROLE FOR THE CITY OF HELSINGØR WITHIN THIS REGION?

(METHOD: REVIEW EXISITING INFORMATION AND ANALYSIS OF CURRENT SITUATION AND TRENDS)

II Analysis

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*
THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Helsingør

INTRODUCTION OF HELSINGØR

Since the 16th century Helsingør is a thriving commercial centre for trade and shipyards with a long tradition of attracting merchants from other parts of Europe and the Middle East, because it was (with only 4 km of water in between) the easiest place to cross the Oresund to Sweden. The municipality has a historic market town and is surrounded by scenic nature. Most famous is the Kronborg castle (fig. 23), part of UNESCO´s world heritage list, on the east side of the city looking out over the Øresund water. Shakespeare's famous tragedy Hamlet took place in this castle.

Shakespeare's Helsingør and Kronborg Castle stands as a strong brand in foreign tourists' minds. A more international focus, both on commerce and tourism are therefore in good continuation of Helsingør-long international tradition.

Helsingør has, compared to other cities in the region, a competitive advantage in its proximity to the sea, nature, history, Sweden and Copenhagen. This makes it relatively easy to attract new citizens, businesses and tourists.

Fig. 23 Kronborg castle. Source: H.C. Steensen. Skypix.dk

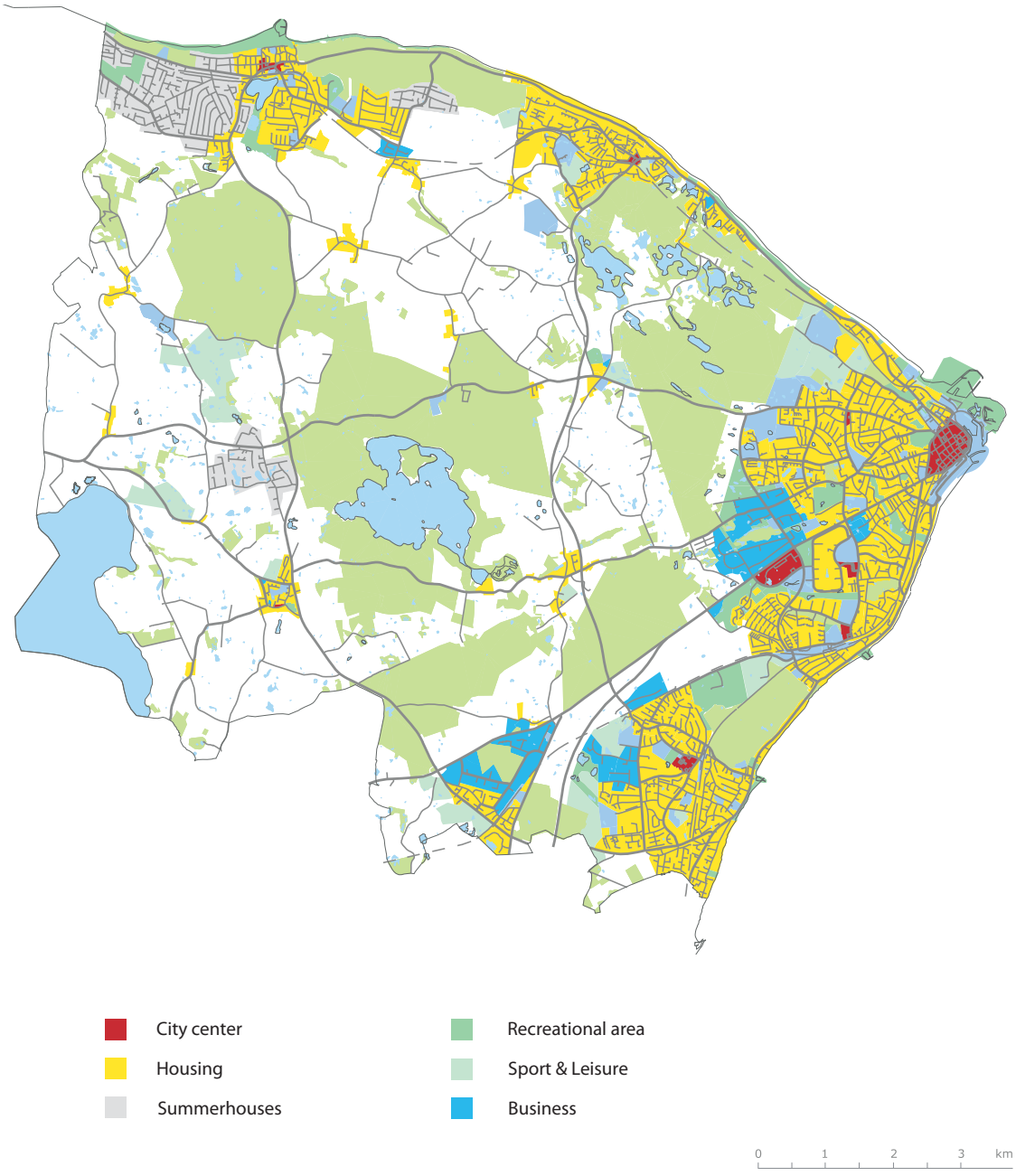


Fig. 24 Municipality of Helsingør. Source: Kommuneplan 2009

GEOGRAPHY & DEMOGRAPHY

The municipality consists of Helsingør city and a large number of small and medium size urban areas (fig. 24). It is stretched along the coast line of the outer North edge of the Sjaelland region. The municipality is surrounded by coastline on the southeast, the east to the north.
Helsingør municipality covers an area of 121.61 km2 and has around 61000 inhabitants, 96% of them live in urbanized areas. The city of Helsingborg is the closest bigger city around and lays on the other side of the Øresund water.

Fig. 25 & 26 How big is Helsingør city? The picture on the right shows Helsingør city, the one on the left is Delft. The size is comparable, but Delft is much more dense.

STRUCTURE AND TYPOLOGY

Helsingør city structure is characterized by a historical city centre on the outer east point of the municipality.
Helsingør city was in the early 20th century marked by some overcrowding. All vacant land within the old city boundary was developed and back buildings, ceilings, etc. utilized for housing.

Helsingør first major suburban settlements emerged in the 1930s. The settlement consisted of multi-family and actual multi-storey buildings. The 1st World War meant stagnation, lack of new construction and an even greater need for new housing. After the war "garden city" type areas were developed with small detached houses, this was one of the first initiatives to alleviate housing shortages.

In 1909 a new law made it possible for the municipality to control land development.
The first municipal land development for residential reasons occurred in 1917 on land from a former glass factory. In 1925 a new town law provided the city a framework for the road course, building types and their distribution and building lines.
Parks were developed, green areas around the newly developed areas and sport and swim facilities.
In 1938 the first social housing projects where developed.

Increasing traffic made it necessary to develop a new road to the ferry port. A road was placed along the beach in 1938 - 39 with beautiful views over the Øresund and the city.

The city of Helsingør has been primarily developed in the 20th century with residential areas in a radial spread out from the relatively small city centre, with large uniform rise buildings and large residential areas.
Also the smaller towns and villages within the municipality like Espergærde, Tikøb and Hornbæk have over the past 50 years expanded, with greater concentration of low-dense buildings and detached houses.

Overall, the cities/villages have been expanding since the 1960s after a grand expansion of social housing, with the objective to bring public and private services together in close self-sufficient units around the residential areas. In the 90s this changes with more private ownership - and cooperative housing in sub-urban areas.

The municipality's main city, Helsingør, houses the functions of the entire municipalities needs, such as the city hall, major cultural institutions, the main library, sports facilities, cinema and a multitude of retail facilities. The other bigger centres have also the necessary services closer to people such as schools, libraries, grocery stores.

In fig. 28 & 29 different housing typologies are showed. The low density and the amount of detached houses is striking, but typical for Danish sub urban structures. Around the city centre of Helsingør many new development are being established

Fig. 27 & 28 Different housing typologies around Helsingør. Source: Bing maps

Fig. 29 The historical center of Helsingør. Source: Bing maps

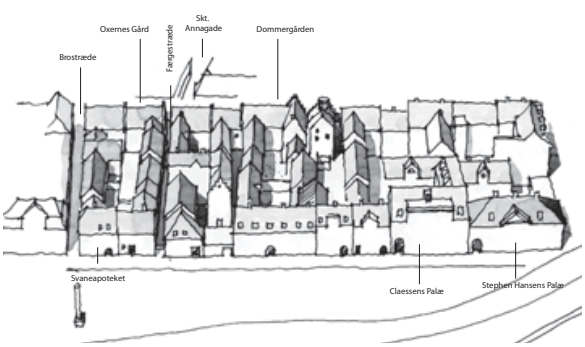


Fig. 30 Housing of the historical center. Source: Kommune Atlas

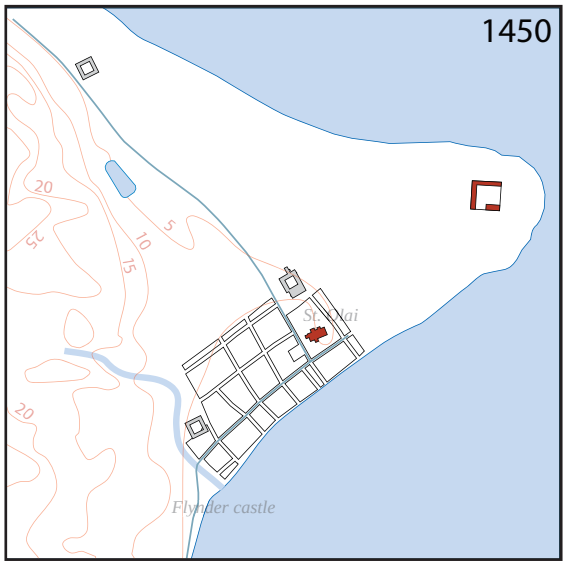


Fig. 31 The two main streets were laid out and partially developed. The grave was found around the city in several sections, following the structure of streams from the higher-lying countryside behind the town. Three monasteries were under construction and the fortress Krogen lies in its outer ring wall (approx. 80 x 80 m) - Source: Helsingør's kommune atlas

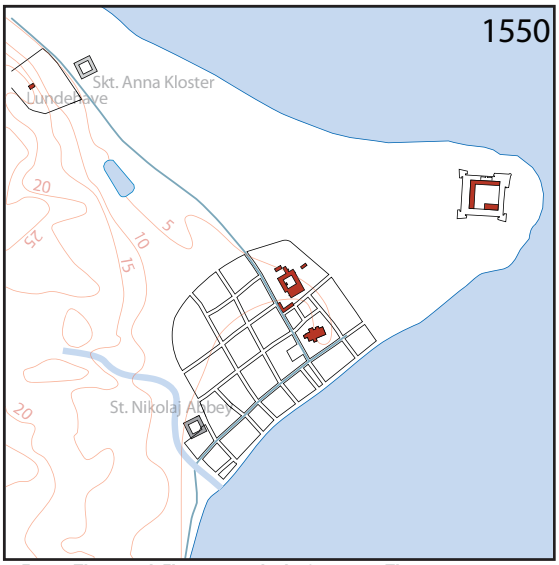


Fig. 32 The 1550th Elsinore was hit by fire twice. The monasteries were closed after the Reformation.
St. Nicholas was partially standing and the Carmelite monastery was transformed into a hospital. From 1577 the fortress of Krogen became Kronborg. Source: Helsingør's kommune atlas

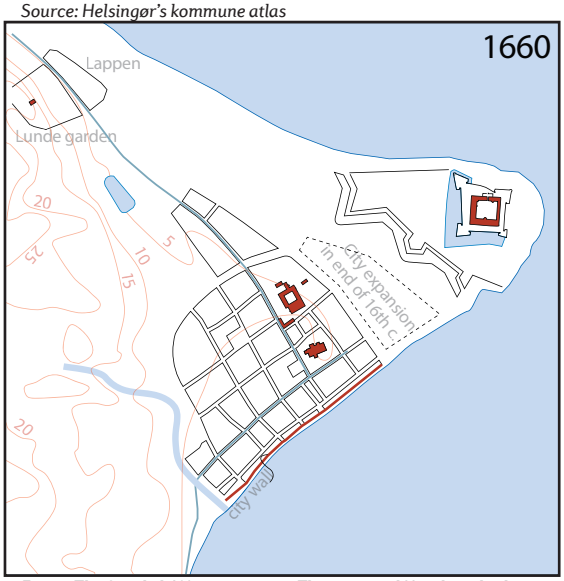


Fig. 33 The Swedish Wars were over. The town and Kronborg had to surrender, even though the defenses were reinforced. The city had spread out until Kronborg Fortress, but this expansion disappeared abruptly during military operations. Instead a star shaped castle wall appeared. Source: Helsingør's kommune atlas

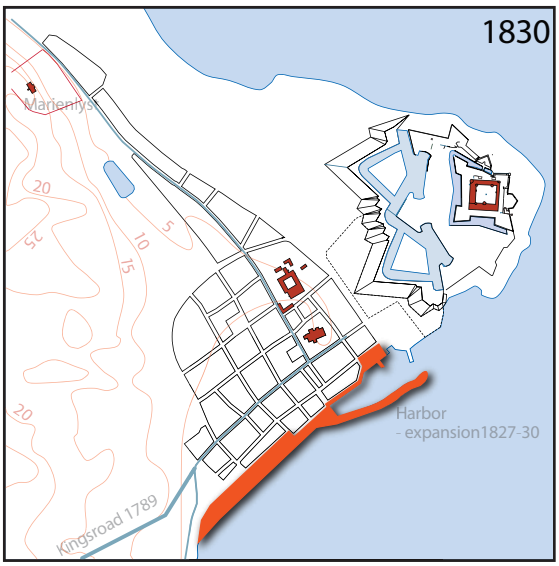


Fig. 34 The city reinforced itself again after the state bankruptcy in 1813 and the end of the war in 1814. Kronborg was rebuilt for the last time in 1819-20, but shortly after it was over, the fort was closed in 1835. Still there was close contact between the city and the water. Source: Helsingør's kommune atlas

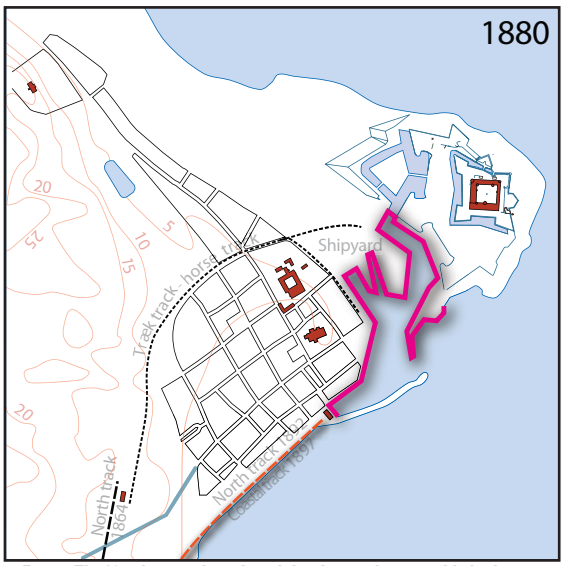


Fig. 35 The Northern rail track and the shipyard are established. Around the town a road was laid to connect the port and the shipyard. Helsingør had been an industrial city. In 1892 the railroad was constructed to the ferries and a large landfill later changed the coastal profile. Source: Helsingør's kommune atlas

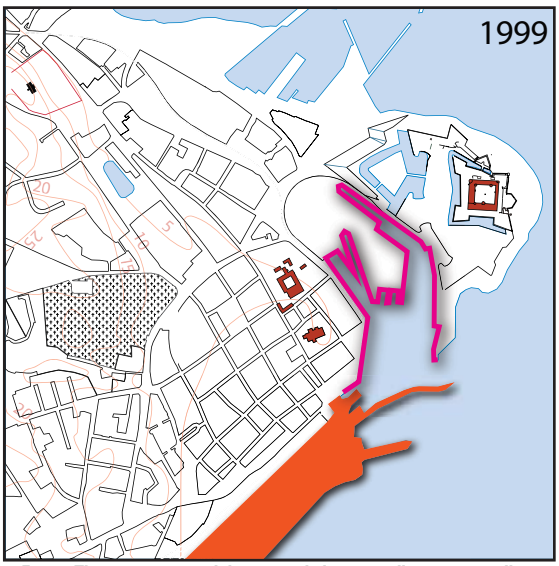


Fig. 36 The city center and the original plan are still intact regardless of the urban growth and additional landfill for the new ferry terminal. The rail track has become a circular line. The city's industries have moved out and the marketplace has been changed into a new shopping center.Source: Helsingør's kommune atlas

Current plans for Helsingør

DIMENSIONS

The intention of the existing city plan is to maintain the urban structure in Helsingør Municipality as it is. The Municipal Plan of 2004-2016 proposed some new residential areas in sub-urban areas (Hornbæk, Ålsgårde and Espergærde), but in principle, the municipal cities reached the limit of further expansion. In the most recent plan, Helsingør is mainly looking for densification of the existing urbanized areas.

HELSINGØR'S VISIONS AND VALUES:

Under mentioned are the key elements for how Helsingør municipality would want to establish itself. It is preliminary based on surveys of inhabitants. (source: Helsingør municipality)

It is important for Helsingør to expand its population, in particular, the attraction of a younger population to ensure a continuation of a dynamic development.
Helsingør Municipality's objectives for urban development are
• To balance the municipality's population composition, including attracting newcomers aged 25-40 years,
• to transform and condense existing urban and residential areas, to create more housing, to ensure replacement of the housing stock,
• to preserve the urban qualities of the larger and smaller urban communities in respect for their diversity and identity,
• that the new construction are qualitative in contemporary architecture without reproduction of the original buildings,
• the expansion of infrastructure supports the access to public transport
• the expansion of housing stock to ensure diversity of owners, with special emphasis on attracting young families. Therefore a variety of housing types (multi-storey buildings, dense-low buildings, etc.)
• to make it more attractive for young peope to stay in the city by expanded educational opportunities,
• that new construction and existing buildings are environmental sustainable

IMPORTANT KEY WORDS FOR HELSINGOR'S IDENTITY:

1 Authenticity
Helsingør's strength lies in the local anchoring, the roots, local stories - which can be experienced in a tangible way. The Experience of Helsingør will be permeated by quality, honesty and authenticity.
It's authentic when:
- There is no doubt about the origin
- it is unique
- it has sentimental value

3 Quietness
Helsingør offers it (sedate) reflection and creativity that makes it possible to relax, recharge and get space to live out their dreams.
It is quiet, when:
- you can immerse yourself in the moment without needing to go anywhere else
- you have time to notice details
- it makes you forget time

3 Proximity
Helsingør has a direct heat, a network and community that meets our basic desire for comfort and togetherness.
Helsingør invites people to come closer together, in their story and in detail.
It is near, when:
- everyone feels welcome
- you can relate personally to it and imagine yourself in it
- it is informal and without specific restrictions

4 Misterious
Helsingør is to be discovered. There is something titillating in the hidden layer that calls for curiosity: the myths, the secret stories, ancient alleyways, courtyards invisible, magical scenery.
It is mysterious, if:
- you are curious, and people talk about it in the corners
- it is surprising and tells something you did not know
- you want to know the end, but do not want it to end

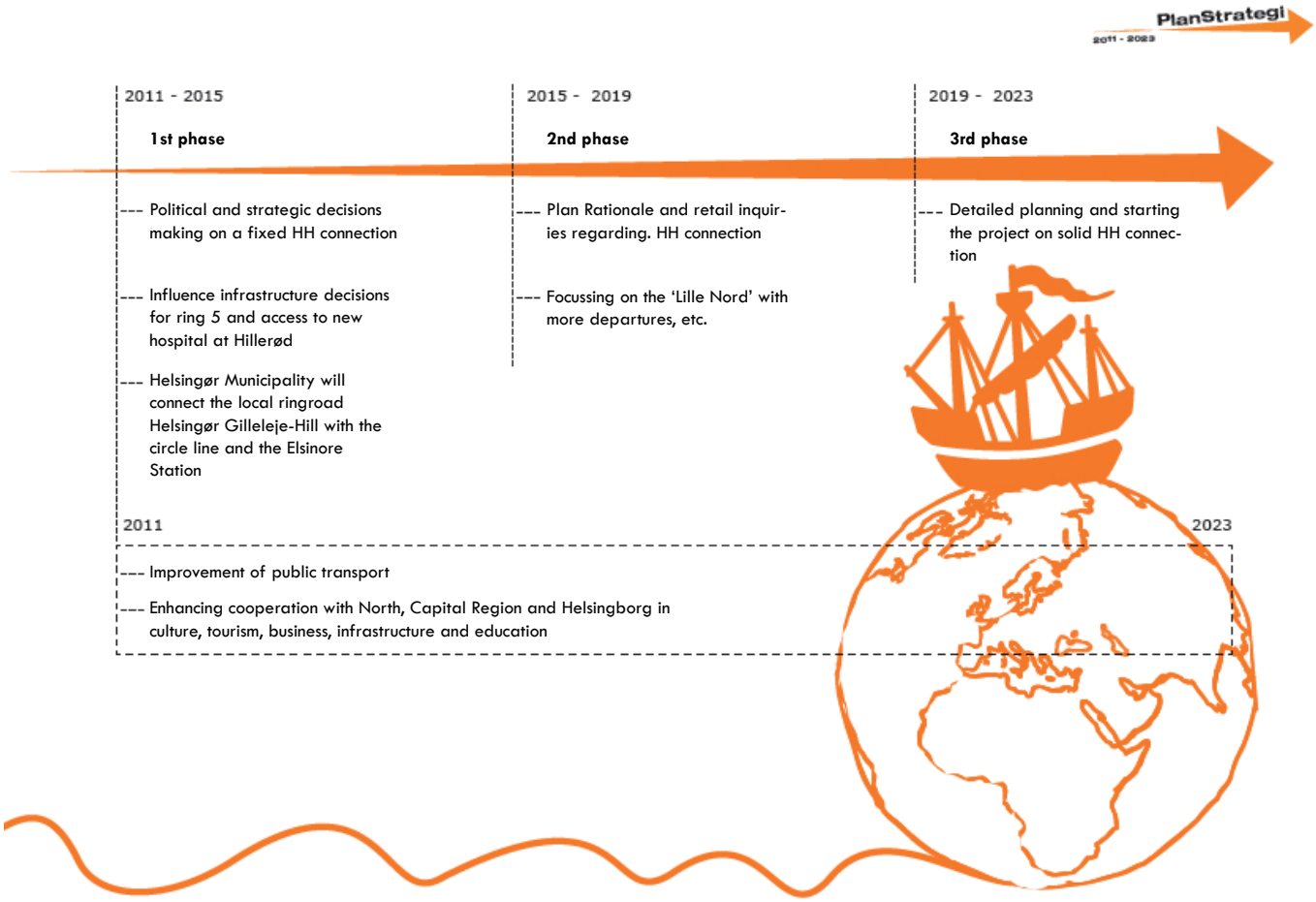
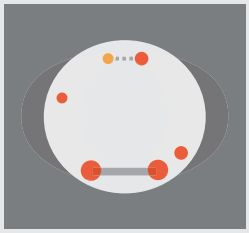


Fig. 37 Latest strategy plan for Helsingor (2011) as a response to the developing plans for the new link
Source: Helsingør Municipality (translated by author)

Fig. 38 New library extension and to be developed square by Aart Architects
Source: Helsingør Municipality

Fig. 39 Plan area by landscapearchitect Jeppe Aagaard Andersen
Source: Helsingør Municipality

Helsingør in the Øresund



HELSINGØR IN THE ØRESUND REGION

Helsingør Municipality is located in the northeast edge of the Danish part of the Øresund region with a close geographical link across the water to Helsingborg. Cooperation with Helsingborg city was formalized in 1995, and the focus has especially been aimed at cultural, commercial and infrastructure development (e.g. a fixed HH connection). In 2009 an agreement for developing a new program that would support collaboration between Helsingør and Helsingborg. The program deals with: Infrastructure, culture, recreation and sports, business, education, water and environment.

Fig. 40 "Turning Torso", by Calatrava in Malmo.

CENTRES AND FACILITIES

The Oresund region can be mainly described as a monocentric structure that revolves around the biggest centre, the Danish capital, Copenhagen. Malmo is the only other regional centre in the Oresund, as it represents the Swedish peripheral region, Skåne. This city is slowly transforming into a sub-regional centre since the establishment of the southern bridge.

Malmo has been developing massively in the recent years. The municipality invests a lot in making the city an attractive place. New innovative urban plans and a new land mark (fig 40) have been very favourable for the cities identity, in terms of tourism and attractiveness for new residents.

This transformation is also visible when mapping out some imperative functions like public and private institutions, food and retail consumption, recreation and cultural functions. Most of these functions, that are essential for forming urban structures, are positioned in the southern part of the region. An extensive exchange of the use of these functions, take place on the south side. The exchange with other centres is much more unilateral. The other centres have their local facilities that provide in the everyday needs of citizens, for more wide-ranging needs, people often have to move to Copenhagen or Malmo. But more important, these cities also provide a relatively great amount of people of work.

This puts an enormous pressure on the infrastructure towards these main centres. As mentioned in the introduction, Copenhagen's radial (infrastructural) structure will have severe problems, in terms of congestion. Furthermore greater Copenhagen is marked by the out-dated far stretched urban sprawl, that put even more pressure on the main centres.

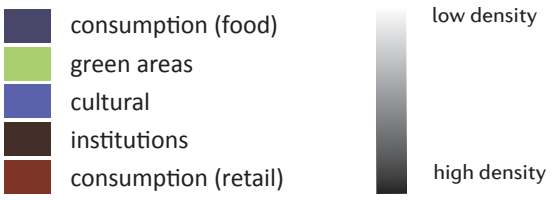


Fig. 41 Legend for maps on next page

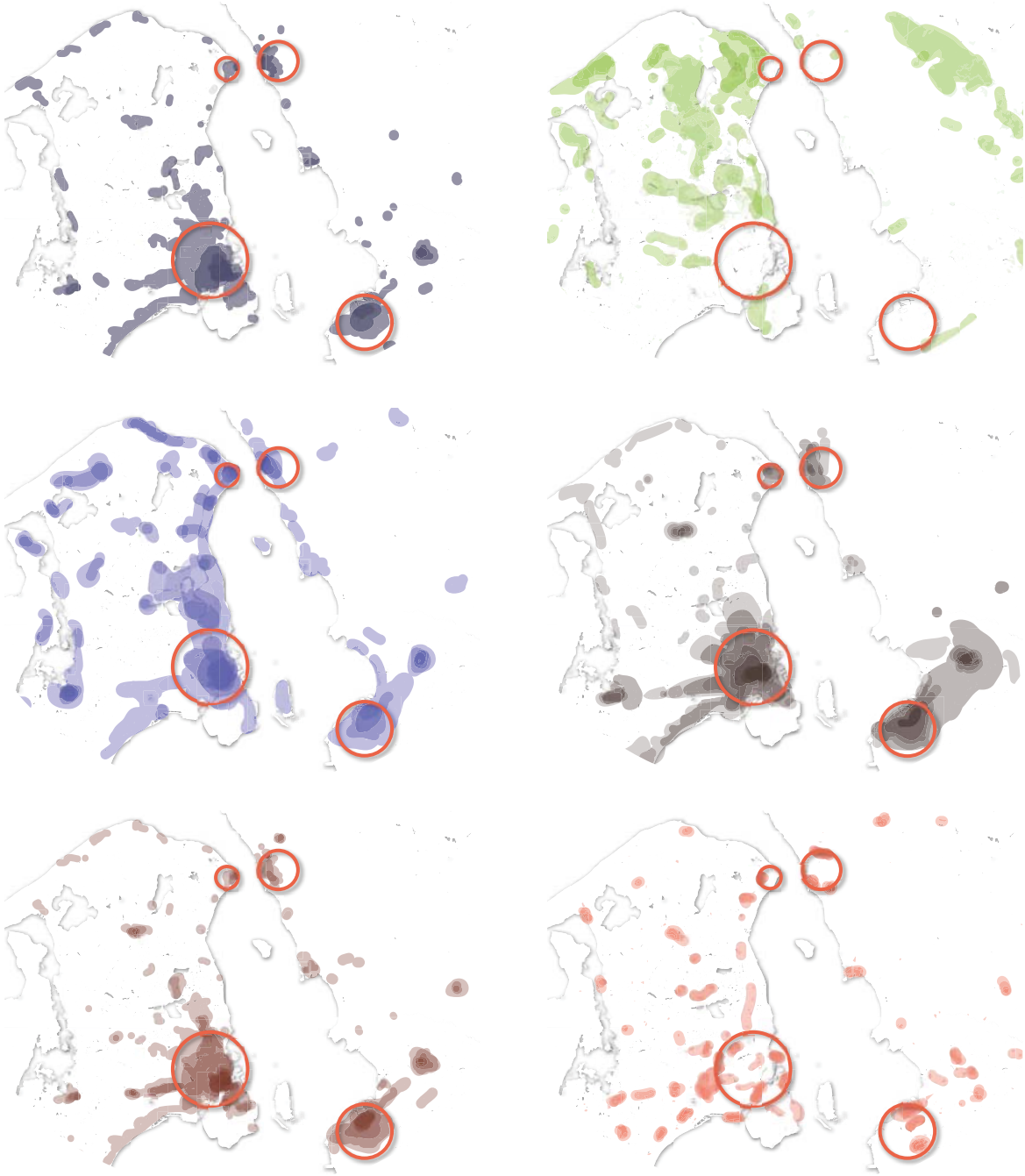


Fig. 42 From left to right: Density of food consumption, green areas, cultural places, public & private institutions, retail consumption and industry. Maps: by author

SERVICES IN THE REGION:

Institutions
•32 hospitals
•12 universities + departments
•5 science parks
300 bio/medtech companies with R&D and/or production

Retail (goods)
± 50 shopping centres
over 10.000 retail locations

Consumption
± 18.000 restaurants
± 1.200 café/eateries

Recreation
± 200 museums
± 170 theatres/ concert halls
± 200 castles
More then 50.000 different recreational sights

Infrastructure
1 international airport
3 regional airports

TRAFFIC

Historical routes

The oldest cities of the Oresund: Ringsted, Roskilde, Lund and Helsingborg, were part of a network that linked the churches and the king, while the younger cities, like Helsingør, were set up to establish trade routes.
In the 18th century a system of king's roads (fig. 29), laid on existing watershed, were gradually built. They cut through North Sealand and took the king and the court to the different possessed estates and back to Copenhagen, which developed into a residence city in the course of the 17th century.
Helsingør was (and is), with its Kronborg castle and several other castles in its surroundings (now part of Helsingør municipality), part of this network of royal estates throughout the region. The still existing King's road (Kongevejen) in the city is the most central road in town and connects the historical centre and the Ferry harbour with the ring highway to Copenhagen.
Other bigger and regional oriented roads lead along the coast towards Copenhagen and further north.

Railways

The Danish industrial revolution started The Danish industrial revolution started simultaneously with other western European countries; the first railways where established in the middle of the 19th century. Sweden at the other hand had a more extensive dependency on agri-culture and a slow economic development, therefore developments kicked in later in the 19th century.
Nonetheless, in the period 1865-85 Helsingborg's municipality established railway lines in every direction. Thus the city was connected with the big railways and had railway lines to Stockholm, Gothenburg and Malmo. At the same time both Helsingborg's and Helsingør's harbour were enlarged and made deeper with more new basins and Oresund's first train ferry connection to abroad was opened on the H-H- fairway in 1892. This connection persisted until late in the 20th century.

The picture on the next page shows the current situation of rail ways and the division of train types. This image marks the crucial limitation of the area on the Danish side. Many small centres are connected to a local train, but they are rarely connected with each other. Also the intercity line is confined between Malmo and Roskilde towards the rest of Denmark. Other areas deal therefore with longer travel times and limited connections.
Undetermined current plans try to deal with these problems.

Fig. 43 'Kings roads' also connecting Helsingør. Source: Orestid

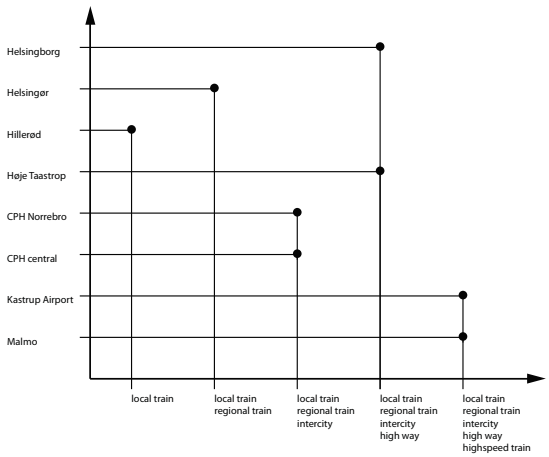


Fig. 44 Modalities within the region connecting important centres (by author)

Ferries

After July 1952 passports were no longer needed between Denmark, Sweden and Norway. That led to a much more intensive traffic between Denmark and Sweden. Another reason for the increasing travel desire was the tax-exempted restaurants on board and a large part of the traffic developed into pure pleasure travel. In this time all over the Oresund water were ferry crossings. But gradually the ferry traffic was more and more concentrated to the north where the distance across the water was the shortest. As the great Europe roads from Gothenburg and Stockholm met in Helsingborg, it became natural to take the closest way to Denmark. In 1972 more than 11 million passengers sailed between Helsingborg and Helsingør and in 1998 more than 13 million passengers sailed the H-H-line. After the opening of the southern Oresund Bridge there are only crossings there and between Helsingør and Helsingborg. (Oresundstid, 2008)

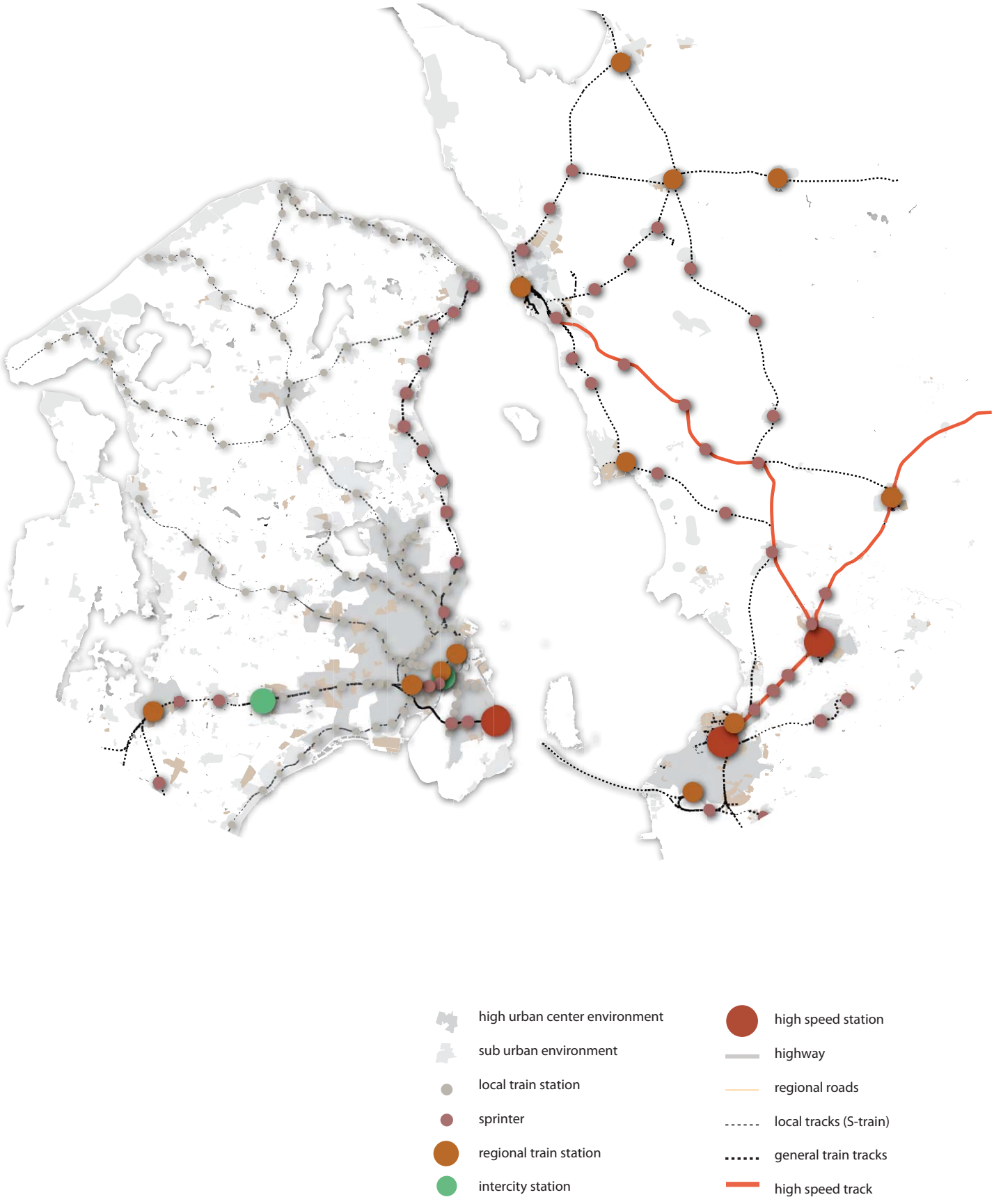
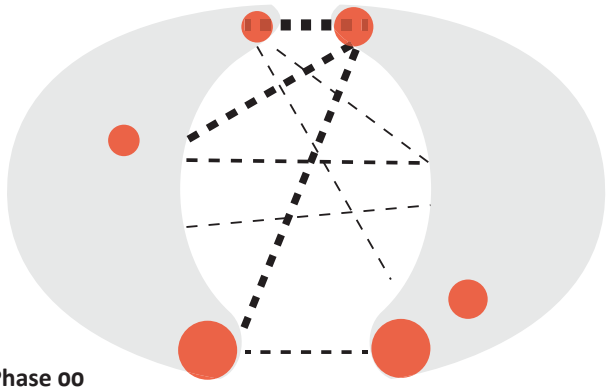
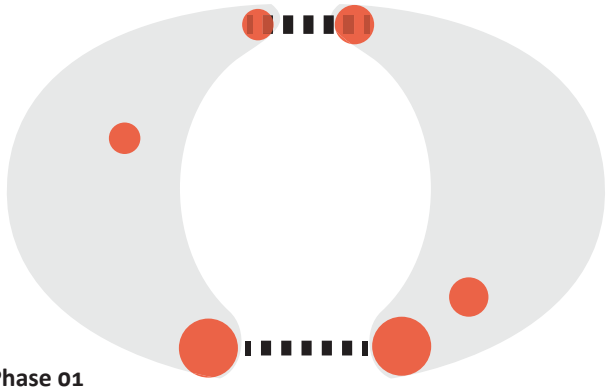


Fig. 45 Current train network with indication of stations. (by author)



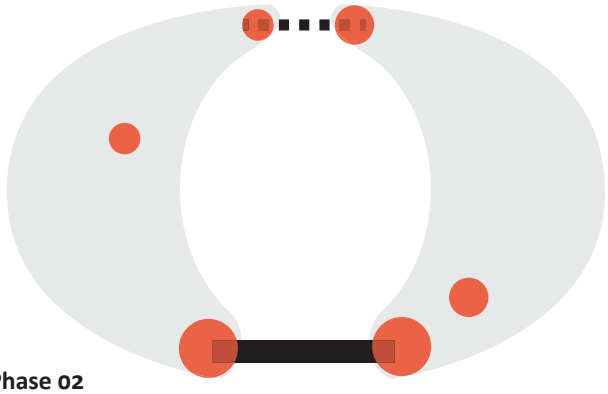
Phase 00

Before ± 1950, the harbours of Helsingør and Helsingborg were used mostly for crossings by ferries. Especially because of a train-ferry connection between Helsingør to Helsingborg, this was the fastest way to travel from Northern Scandinavia to Europe's mainland



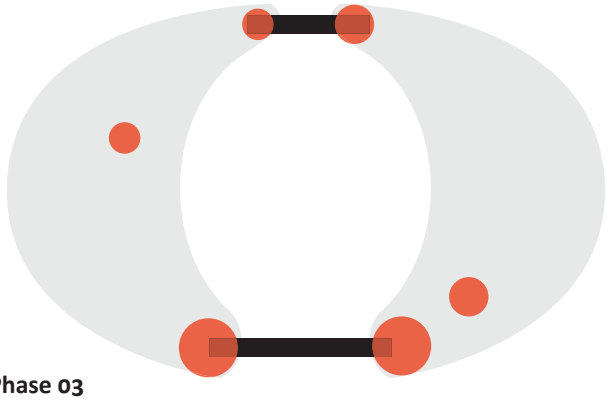
Phase 01

The process continued, until the crossings concentrated slowly only on the Copenhagen- Malmo crossing and particular on the Helsingborg-Helsingør link, because of the short geographical distance.



Phase 02

In 2000 the Øresund Bridge between Malmo and Copenhagen was established. A fast increasing number of commuters, business travellers and tourist started using the bridge that cuts their travel time drastically compared to using the ferry.



Phase 03

What would it mean if there is a fixed link between Helsingør and Helsingborg too? What will this means for the regional development? What about the existing regional structure on both sides? Will this structure integrate into one new fully connected region?

Fig. 46 Changing cross posibilities over the Øresund. Source: author

Traffic congestion

According to IBU- Oresund analysis (2009) will comprehensive long term strategy for improvement and expansion of railway network help to improve links with neighbouring regions and bind the Øresund region closer together. Their strategy will ensure faster connections to neighbouring regions and faster regional trains within the region.

The challenge to achieve this is not only solved by faster trains and railways, but also increased the capacity of the rail network. In some areas the capacity of railways has almost reached its maximum and several hubs - railway stations, - are congesting bottlenecks.
A focus on the assessment of capacity issues is to ensure better accessibility of passenger trains as a doubling of capacity for freight trains through the Øresund Region. This will ensure the possibility of shifting freight from trucks to rail and it will give opportunities provided by the Fehmarn link
and Copenhagen-Ringsted when rail passenger traffic continues to grow.

The main benefits are time saving for passengers and freight, they are indirectly profitable for business, regional, economic and environmental development - including lower CO_2 emissions and energy consumption - by using freight transport from aircraft, trucks, cars and ferries to trains. It will also release pressure from roads for truck traffic. The time benefit for passengers seems to be so great that several of the projects are economically viable.

RECOMMENDATIONS FROM IBU - ØRESUND :

2030 is approaching fast, and if the desired developments are to be realised it requires serious effort and joint action now. IBU-Öresund analyses have highlighted solutions and proposed measures that will promote growth in the Region, make it more competitive in international markets and tie it closer together. The time to act is now.

Planning and implementation of the proposed measures will take time. It will require large investments in the infrastructure if the Øresund Region is to have good international and inter-regional accessibility in 2030.

The priorities include:

– a fixed link between Helsingborg and Helsingör,
– a fifth ring road west of Copenhagen, maximizing the full potential of the Fehmarn Belt,
– strengthening the position of Copenhagen Airport and making is a multimodal hub,
– establishing a fast, cross-border train service for the entire region that is linked to a comprehensive regional network.
(Lindström, 2010: 16)

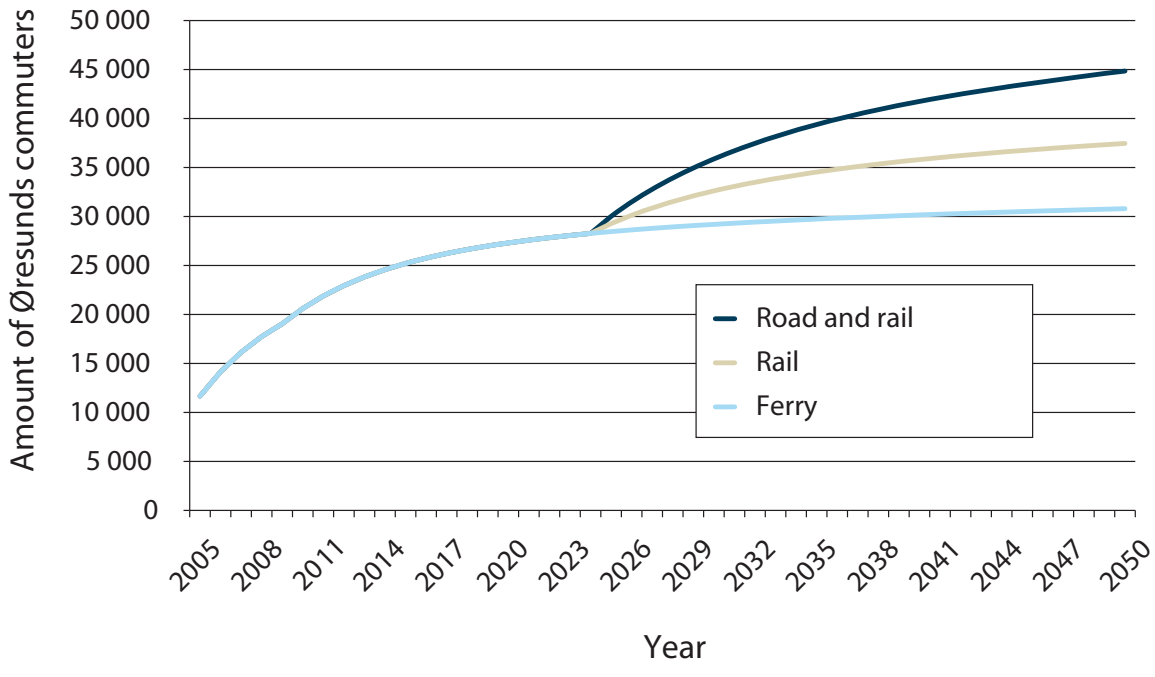


Fig. 47 Expected commuting increase with fixed H-H connection

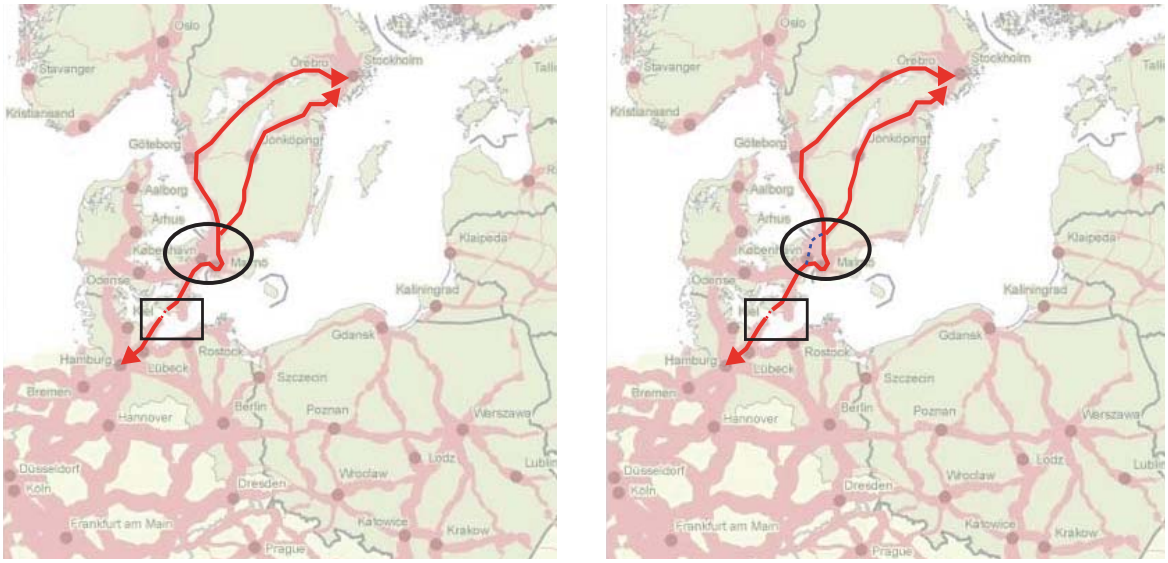


Fig. 48 & 49 New high speed train in European network in red,both after impementing of Femern Bælt connection (square). Right picture shows the 2nd connection along the H-H route (Elipse) For trips between the rest of Sweden beyond Skåne and mainland Europe, using Øresundsbron is 50 km longer than via the Elsinore–Helsingborg ferry route which adds 300/350 DKK to the cost of a lorry trip. Source: IBU

Fast HH connection

The transport pressure on roads and rail all over the the Øresund is expected to increase, especially on the Øresund bridge. The demand for cutting travel times rises, these and other earlier mentioned reasons demand a second fixed link across the Øresund. A solid Helsingør-Helsingborg (H-H) connection (fig. 33) will increase accessibility across the region and provide a foundation for a collaborating network that connects the major centres all around the Øresund coast.

Currently Helsingør's city council strongly recommends a fixed rail link between Helsingborg and Helsingborg, but a final resolution as to whether it should only be a rail link or a combined car and train, has not been made yet. Helsingborg City, Region Skåne, Region Sealand and the greater Copenhagen area are all promoting a fixed H-H connection. But the Danish government is still investigating cost and consequences, before making

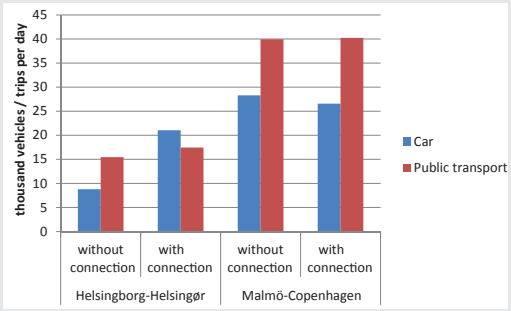


Fig .50 Cars and public transport journeys prognosis across the Oresund in 2030, with and without the new H-H connection (x1000 per day, annual average).

If the H-H link will ever be established, the connected extensions should also be capable of carrying the increase of traffic that it will bring. See fig. 50 for the expected use and increase. The existing highways would not be sufficient and therefore there is a demand for a new ring road that could relief pressure from traffic congestion in hagen.

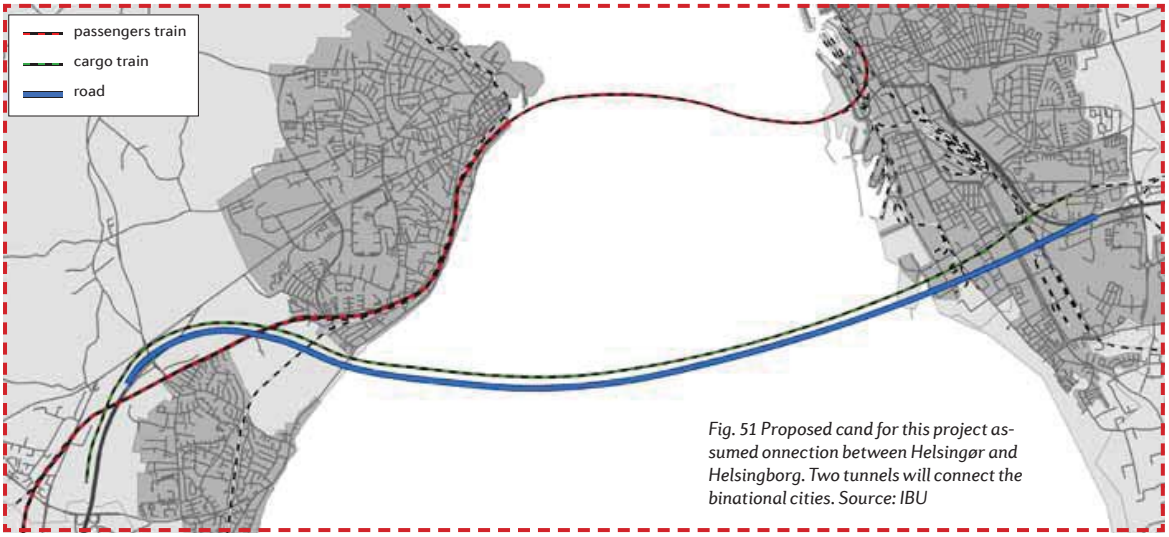


Fig. 51 Proposed cand for this project assumed onnection between Helsingør and Helsingborg. Two tunnels will connect the binational cities. Source: IBU

MOST PROBABLE PLAN FOR THE FIXED LINK:

The planned new connection between Helsingør and Helsingborg has been analyzed two consultancy firms, COWI and Rambøll. They were commissioned to analyze both bridge and tunnel alternatives. The results of the analysis show that a tunnel construction because of environmental and local interests emerges as the most appropriate form.

There has been investigated several solutions for passenger, freight and road links, and the consultants suggest a screening of 30 different variants following routes.

The result is:

• A southern line, which includes a motorway tunnel of ca. 15 km length of the total and with a tube for freight trains. The tunnel connects the main network in Denmark and Sweden.

• A central passenger train line from center to center that supports public transport. Passengers from Helsingborg hub will be connected to a new underground station in Helsingør. The length of the tunnel is just 9 km.

The southern tunnel line is connected to Helsingør Motorway (and possibly future ring 5) and with the E4 on the Swedish side. The rail runs over the highway in a Cut & Cover-structure beneath the protected landscape area between Snekkersten and Espergærde then dives into a tunnel the rest of the way towards Ramlösa on the Swedish side.

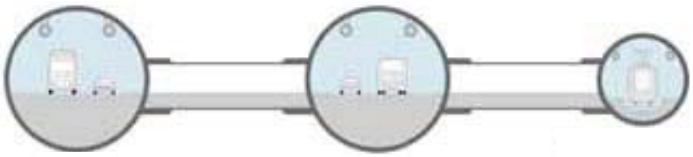


Fig. 52 Southern H-H tunnel with two road tubes and one freight train tube. Source: IBU

Fig. 53 Northern H-H tunnel with two train tube. Source: IBU

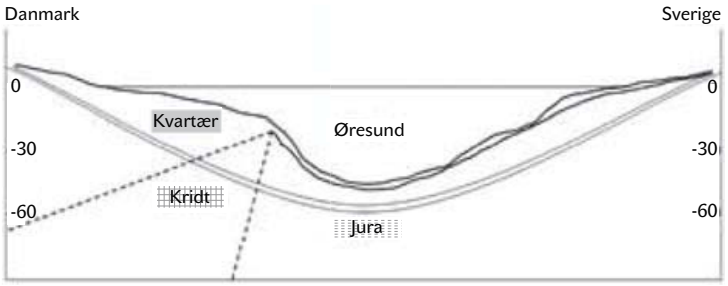
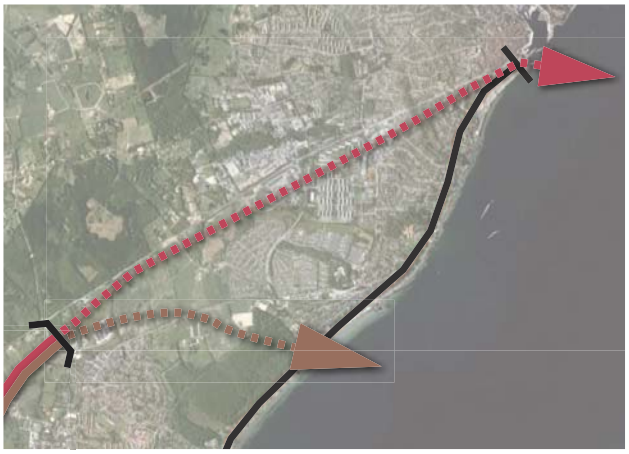


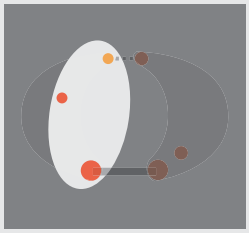
Fig. 54 Section of the fairway. Source: IBU



location of new HH passenger train tunnel
location of new cargo and car tunnel
location of existing regional train track

Fig. 55 Position of tunnel starting points near Helsingor (by author)

Helsingør in the Capital region

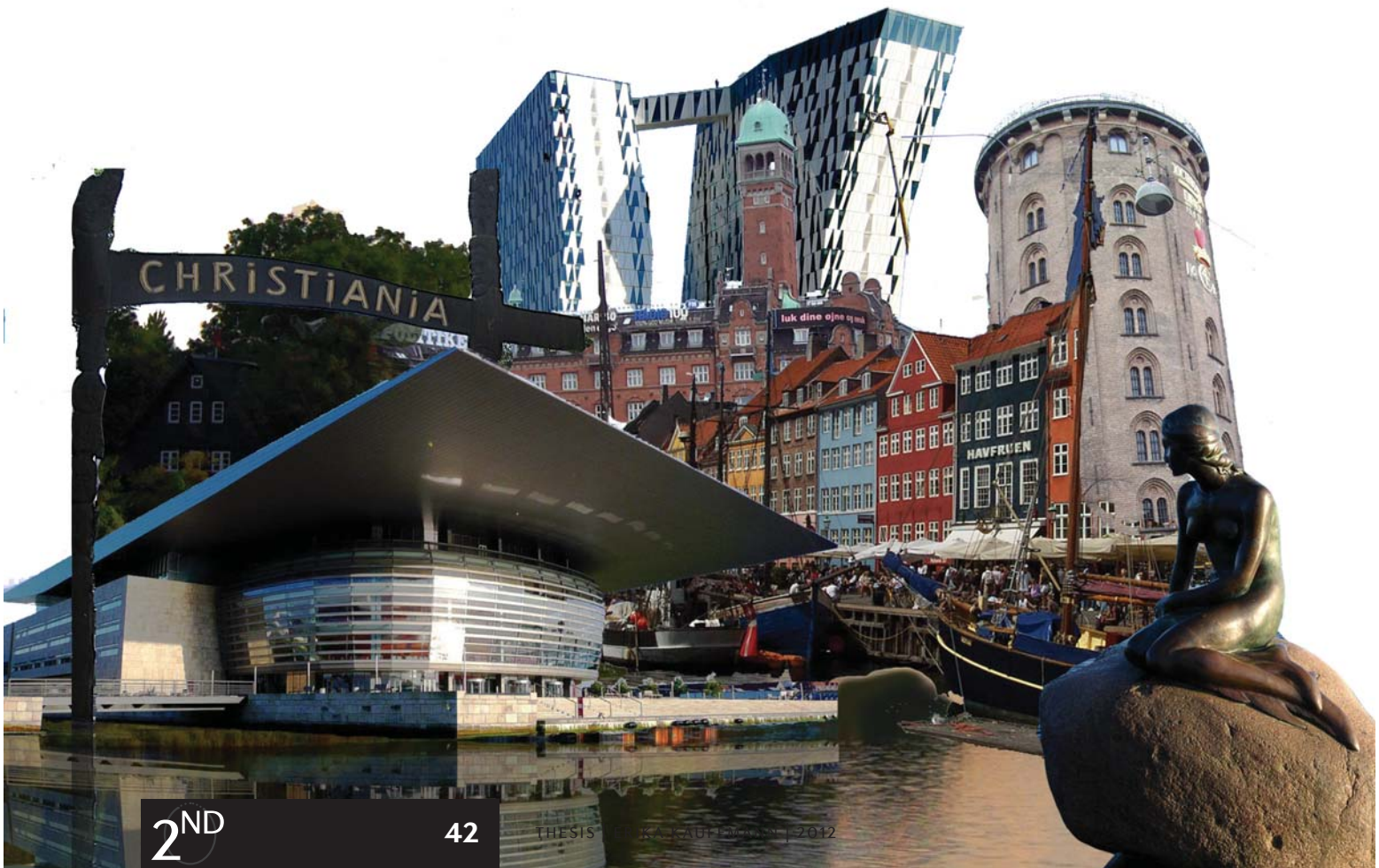


Helsingør is 50 minutes by train and 45 min by car away from central Copenhagen. With its location in the metropolitan area, the city relies heavily on the developments taking place in the region with regard to housing, commercial development and infrastructure development.

The capital region is located on the island of Sealand and is the most populous island of Denmark (pop. 2012 est. 2,491,090) Copenhagen (Danish: København) means 'Merchant city' and is the capital city of Denmark. It is the biggest city in the Øresund region and of Denmark with 540.000 citizens within the municipal borders and more than 1.8 million in the greater Copenhagen area. The national government is settled in the city. Helsingør is not only on a governmental level dependent from this city.

Copenhagen is the main centre of the region and within the (polycentric) network with other cities. Helsingør is one of these centres. Helsingør's inhabitants use the regional, national and international functions that this metropolitan has to offer.

Fig. 57 Impression cultural hightlights in Copenhagen (by author)



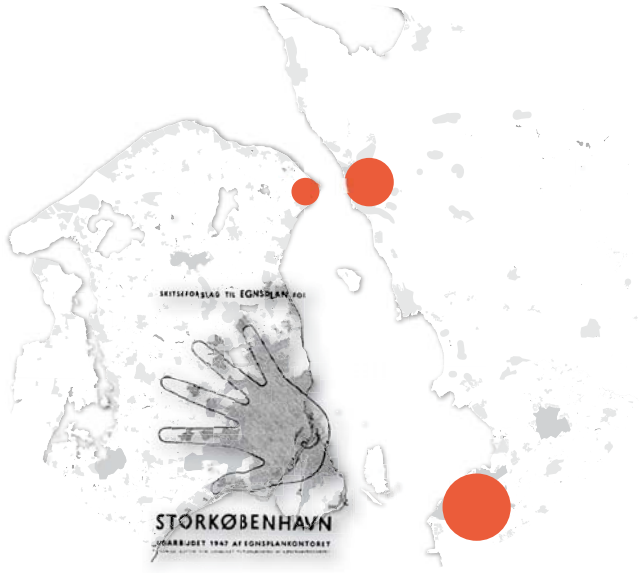


Fig. 58 Fingerplan from 1947 in current structure (modified by author)

Green Wedges of the Finger plan

The hierarchical Danish planning system allows little flexibility. The most recent structure policy plan for the capital region, the "Finger plan" of 2007, retains strict guidelines for preserving the main structure. (fig. 59)

One of the structure characteristics of the "Finger plan" are the green wedges that fill up the space between the "Fingers" of the structure. These areas are strictly determent, therefore no development is allowed, unless it is resolute on the National level.

For Helsingør, this means it reached its determined boundaries for further development. If Helsingør needs to grow, it could only densify the existing urban structure (Fig 60).

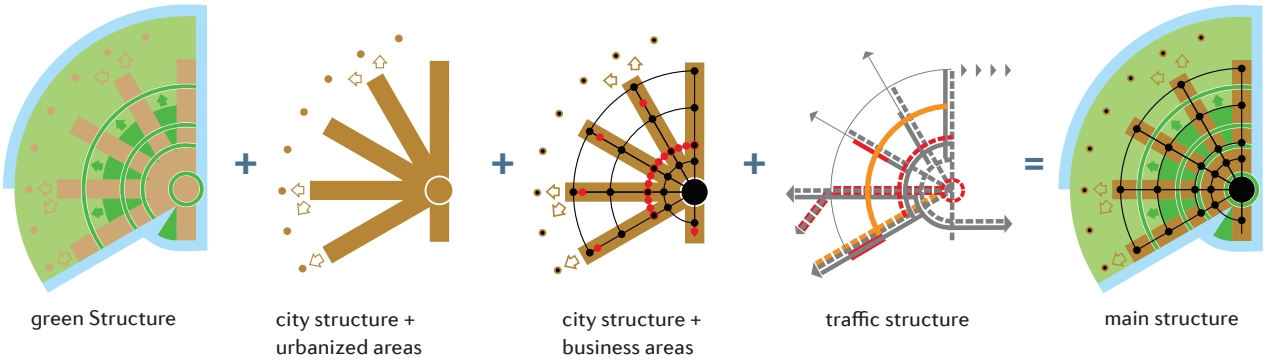


Fig. 59 Fingerplan structures 2007. Source: Danish ministry of Environment

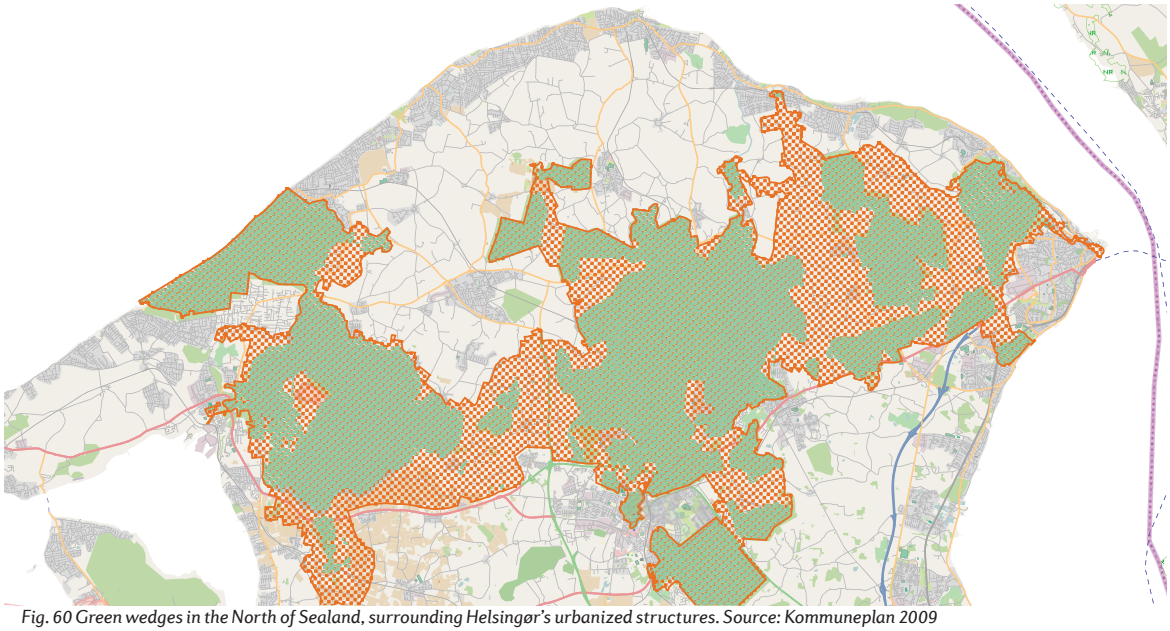


Fig. 60 Green wedges in the North of Sealand, surrounding Helsingør's urbanized structures. Source: Kommuneplan 2009

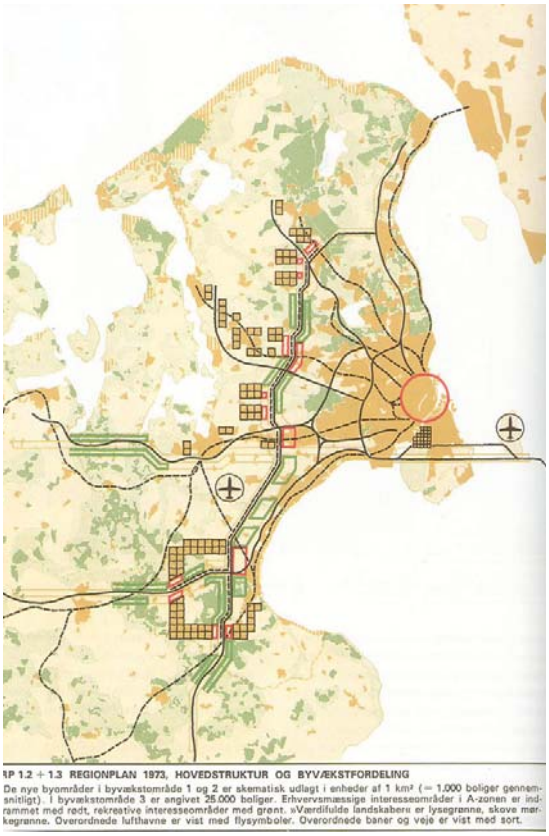


Fig. 61 Regional plan 1973 with reserved corridor. (Source: Danish ministry of Environment)

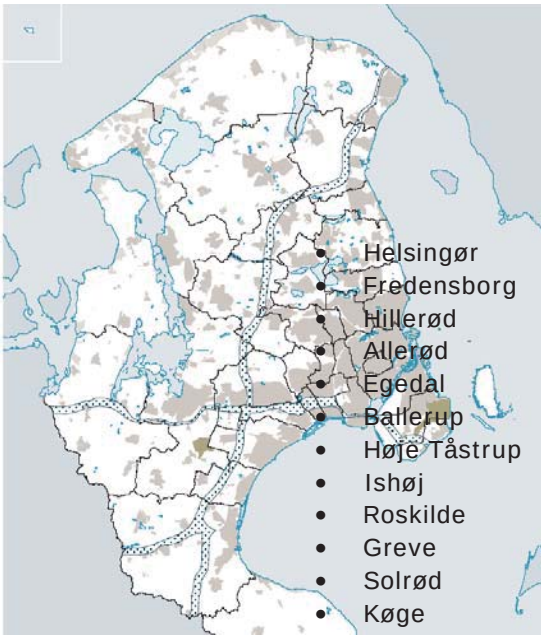


Fig. 62 Current corridor, reserved for a future ring, with municipalities that are involved. (Source: IBU)

Transportation corridor: Ring 5

A corridor originated from an infrastructural plan from 1973, occupies a string of untouched land around greater Copenhagen that now gives possibilities to develop a new highway, named ring 5, from Helsingør to Køge, southwest from Copenhagen. The transportation corridor west of Helsingør is reserved for possible future infrastructural purposes, like rail constructions, highways, runways and power lines. The ring will connect to the possible future development of the fixed HH connection.

The transport corridor is covered by the ´Finger Plan 2007´, the regional structure plan for the Danish side of the Oresund. Therefore municipalities covering the corridor are not allowed to urbanize the corridor area. Now, 3 out of 27 of Sealand´s municipalities are against using the corridor, because it would conflict with land use along the corridor. Proponents are currently lobbying for the establishing of both the corridor as the H-H link. According to the planningdirector of Helsingør, R.J. Hansen (2011) its inevitable for the developing and fast growing region to establish both projects.

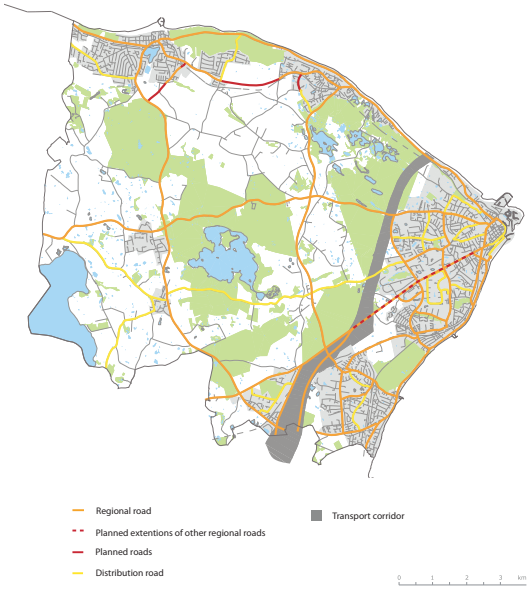


Fig. 63 Corridor through Helsingor (Source: Helsingor Kommune, 2009)

LABORMARKET & COMMUTING

As been said before in the context section, the economic, cultural and social differences between the Danish and Swedish parts of the Region are some of the factors that drive integration forward (Decoville, Durand et al. 2010). Residents on both sides of the Øresund have benefited from increased cooperation.

In recent years there has been an increase in the labour market integration in the Øresund Region as a result of lower unemployment in Denmark. A large number of Swedish citizens have found work in Helsingør Municipality. At the same time many Danes live in Sweden, while they are still working in Denmark.

In Helsingør Municipality 45 % of the people who work in another municipality. The proportion is low compared to other metropolitan area, although it has been rising for years. The low commuting rate reflects Helsingør despite its proximity to Copenhagen has a large share of local jobs. Commuting into the municipality has increased slightly and now represents 28%, the proportion is low compared to many of the more centrally located suburbs of Copenhagen.
Level of education has for many years been increasing in Helsingør Municipality, although it is still slightly lower than average in the Capital Region.

45% of the economically active population in Helsingør is commuting, while 55 % are working in the municipality. Of the 45 % commuters working 20 % in North Zealand, primarily around the cities Hillerød and Fredensborg, while 25 % is working in Greater Copenhagen.

Compared to other cities of similar distance to Copenhagen, there are relative few inhabitants who commute to the capital. A considerably large proportion of the working population in Helsingør lives and works in the municipality.

Top 10 workcities for Helsingor residents:
Helsingør 54,9%
København 12,2%
Hillerød 4,5%
Fredensborg-Humlebæk 4,2%
Hørsholm 2,2%
Karlebo 2,1%
Gentofte 1,9%
Lyngby-Taarbæk 1,8%
Birkerød 1,5%
Græsted-Gilleleje 1,4%
Søllerød 1,3%

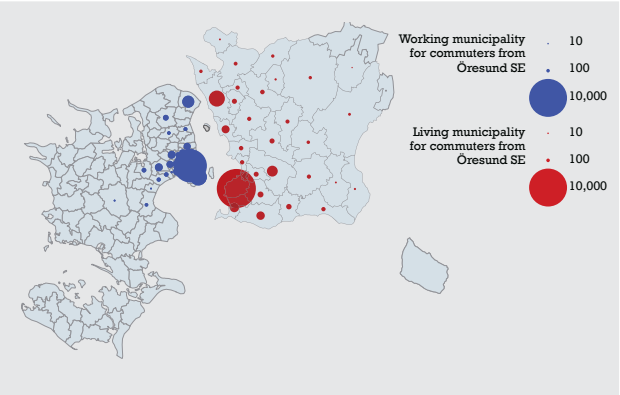


Fig. 64 Cross-border commuting; 95% of the commuters live in Sweden and work in Denmark. Source Orestat. Map: Region Skane

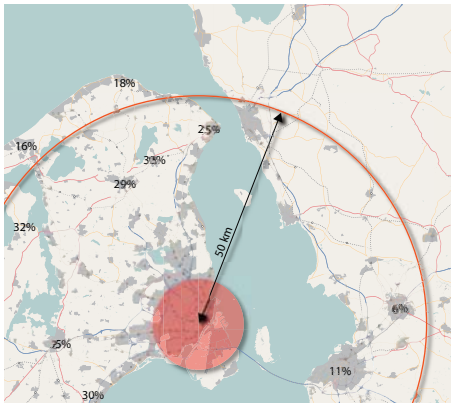


Fig. 65 Percentage of commuting labour force of municipalities to Copenhagen with a similair distance. Source: author

The proportion of commuters in Helsingør Municipality has the last 10 years increased from 40 % to 45 %. In recent years, commuting, however, stagnated, so it may well be expected to remain at 45 % in the coming year at unchanged conditions.
The Danish average travel time increased from 53 to 61 minutes a day from 1993 to 2003. The daily average distance travelled is also increased from 33 to 39 km per day. According to the AKF is the distance between home and work increased from 13.3 in 1981 to 17 km today. Lower educated people travel an average of 15.8 km to get to work, while highly educated people travel 20.9 km a day to work. According to Denmark Statistics 10 % of the working population has more than 40 km between home and work. Evidence suggests that the general trend is not assignable to Helsingør. Until 2002 the number of commuters has increased every year, but after 2002, commuting remained virtually unchanged.

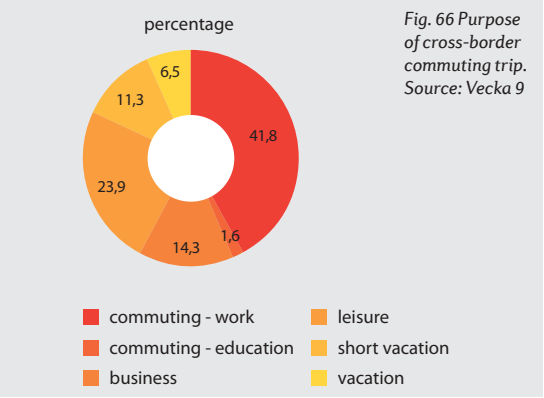


Fig. 66 Purpose of cross-border commuting trip. Source: Vecka 9

According to demographic trends predicted by Statistics Denmark (Orestat, 2007) Helsingør will lack almost 2,000 persons active on the labour market in 10 years, while commuting pattern remain unchanged since 2006 and the municipality is planning to increase the job market with 5%.
A decrease of 45 to 40 % in commuting will fill 1,500 jobs. With an employment rate of 75% and a commuter rate of 40 %, at least 1,000 people should move to Helsingør to fill the remaining 500 jobs.
There is a deficit of 7,000 jobs in Helsingør because of more people commuting to the city than that inhabitants work outside the city. Especially in the financial and business service sector and the public and personal services there is shortfall of local jobs. Education levels are lower than in Copenhagen, but higher than the national rate. The level is generally rising.

Calculations show that with just a rail link the total commuting across the Øresund would increase by 20-25 percent by 2050. If built both a road and rail connections, commuting across the Sound could increase by 40-50 percent. (TENDENSØRESUND, 2008) (Fig.50)

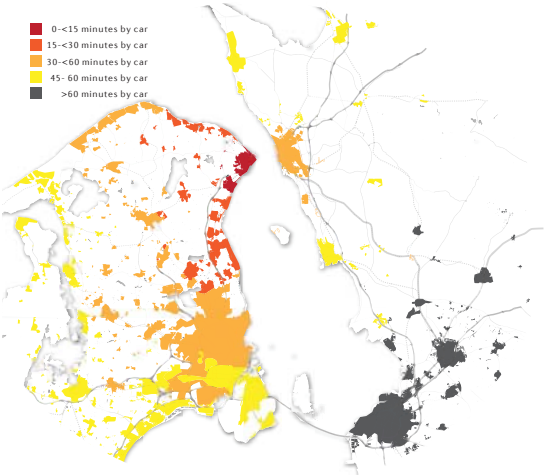


Fig. 67 Proximity from Helsingor without fixed H-H connection. Source: interpreted by author, based on WSP report

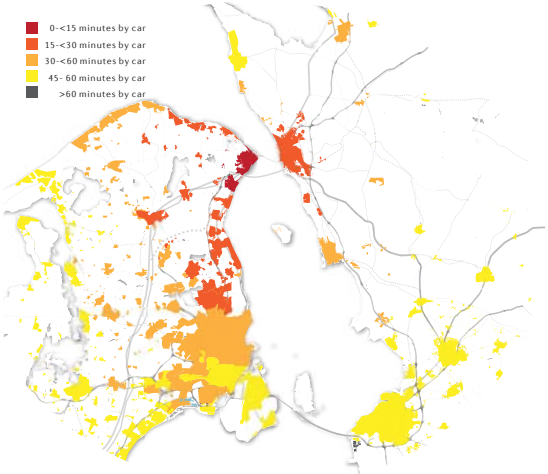


Fig. 68 Proximity from Helsingor with fixed H-H connection. Source: interpreted by author, based on WSP report

Fig. 69 Medicon Valley is a leading bi-national life-sciences cluster in Europe, within the Øresund Region. A large number of life science companies and research institutions are located within a very small geographical area. The idea of Medicon Valley slowly emerged during the early 1990s and was formalised and financially supported through the European Union Interreg II programme. Medicon Valley connects academia, hospitals and companies in the Øresund Region. Source: Naestved

BUSINESS DEVELOPMENT AND TOURISM

The Oresund Region is a hub for high-tech companies and research organisations. The sectors which are especially strong here are pharmaceuticals/ biotechnology (Fig 59), IT/telecommunication, food, environment, logistics and design.

There is great potential for strengthening the competitiveness of the Øresund Region through increased public/private/research partnerships on both sides of Øresund. Public and private investments could work together even more distinctly than they have in the past and benefit from and strengthen the total research and innovation environment in the region.
Manufacturing industry is a major industry in Skane (particularly in the municipalities east of Helsingborg). Business and trade industries are prominent on the Danish side

Business development in Helsingør
Out of a total of 3,000 businesses in Helsingør only 31 companies have more than 100 employees. From these only 15 are private companies. In the longer term it is estimated that there is a need for more knowledge job supply.

In Helsingør, five business areas contain 10% of the enterprises and 20% of the workplaces. Most of the city is inhomogeneous in terms of business types and more or less locally oriented. Most companies deal with manufacturing, wholesale and auto trade. Approximately 800 jobs are estimated to be knowledge-intensive jobs, primarily because of the company Coloplast .

Developments in Helsingør's retailing in recent years have declined and the employment in this sector has dropped. Helsingør's hinterland is limited to the south and west. Swedish commerce seems to be declining, while increased commuting out of town also has contributed to the decrease of urban retailing. A research report (Jensen, 2007) analysed the retail statistics in Helsingør and identifies the size of the stores as the primary reason for the decline. Small shops have a small selection, but the trend among costumers is an increasing demand of different kind of stores. Unfortunately, chain stores have no great desire to invest in Helsingør.
Helsingør Municipality has not much influence on strengthening the retail sector, in staid it should focus on related industries such as cafes and restaurants that attract customers. And more important, they can influence the urban environment, traffic and culture.

Another reason why the retail market is declining is the increase in tax rate. Because of the proximity to Sweden, Swedes used to be frequent guests. With high retail costs, they don't come to Helsingør for that purpose. Instead, Swedish tourists increasingly come to Helsingør for more experience-related activities. A move in this direction is expected to continue, and will be supported by the municipality's focus, partly on the culture and experiences, and partly on year-round tourism in North Sealand cooperation.

The HH region possesses first-rate potentials for successful development of new industry clusters, such as natural and cultural attractions, well-developed hospitality infrastructure, geographical proximity between the cities as well as political determination to pursue cooperation across the Sound.(Gyimóthy and Larson, 2009)

GYIMÓTHY, S. & LARSON, M. 2009. Destination Network Management: Developing.

Helsingør vs Helsingborg

HELSINGBORG - HELSINGØR

Historically connected

As earlier mentioned, Helsingborg and Helsingør have always had a very strong connection with each other. As in the beginning of the 13th century Denmark conquers the southern part of Sweden, Skåne, and the route between these two cities becomes the main access to cross the Oresund.

For centuries both cities will flourish, particularly because of the toll they receive that is paid by ships that want to cross the straight.

Having a sufficient harbour was essential in this time and particular for these two cities. After 1657, when Denmark lost Skåne again from Sweden, the cities started to compete more.

Fig. 70 In March 1892 the ferry berth was brought into service when it was inaugurated by the paddle steamer "Kronprinsesse Louise". It was run by DSB (the Danish State Railways), and thereby launched the history of the Helsingør-Helsingborg crossing.

Helsingør had to enlarge it harbour several times, but was struggling with the fact that there was simply not enough space. They enlarged the docks and deepened the water, all so that they could receive new ships, that became bigger and bigger. As it failed to be competitive, Helsingør harbour would have to accept the fact that ships would seek other harbours such as Helsingborg, which was significantly larger.

In the end of the 19th century the cities lost their Oresund toll income. But Helsingør had built a lucrative shipyard and Helsingborg developed fast during the industrial revolution. The narrow straight between the cities was still the most important crossing.

Fig. 71 Impression cultural hightlights in Helsingborg (by author)

During the 20th century, Helsingborg consolidated and developed its position as a significant shipping centre, with one of the country's biggest ports. The first steam ferry connection between Helsingborg and Helsingør had opened in 1892 and the ferry traffic increased, particularly after World War II. Since the establishment of the railways in both cities, even the train could be transported with these ferries.

Helsingborg and Helsingør's history are tightly connected. The inhabitants share a very similar culture and also their dialects are so close, that they can easily understand each other in their own language. Helsingborg is much more industrialized then Helsingør. The trade and the transport industry flourished and the city grew.

Fig. 72 From Helsingor to Helsingborg 1658. Source: Buxtehude

Fig. 73 From Helsingborg to Helsingor. Picture by Bertil Alm

The HH connection and the cities

Helsingør and Helsingborg also often work together, especially when it concerns the new link. For many decades the concept of a bridge or tunnel between the two cities exists. Especially the last 10 years more serious research has been done to the impact of a new link.

Model calculations show for example that a fixed HH connection will make a significant contribution to the integration of labour in the Øresund Region. (MOCCA,2009). Virtually all the growth will fall at Helsingør and Helsingborg, as the improvement of accessibility happens here. In terms of commuting trips per day in 2050 there can be a difference of 5,500 commuter trips per day without a permanent connection to approx. 25,000 commuting trips per day with road and rail link between the cities. Only a very small amount of people is shifted traveling from the Oresund Bridge.

One reason for the large effects is that the connection is quite far in distance from the current Øresund Bridge, so the two compounds are complementary. This means that new populations will have a significantly better accessibility when crossing the water and thus increases commuting considerably. If there would had - hypothetically - placed a new bridge beside the existing Øresund Bridge, then it would not increase the availability in such a way. Because these areas already have good accessibility to the Oresund and a parallel connection will primarily increase congestion along these routes. Another reason is that today's commuting with ferries is not only done by the local residents from Helsingborg and Helsingør. A relatively large number of people commute to Copenhagen and the surrounding municipalities.

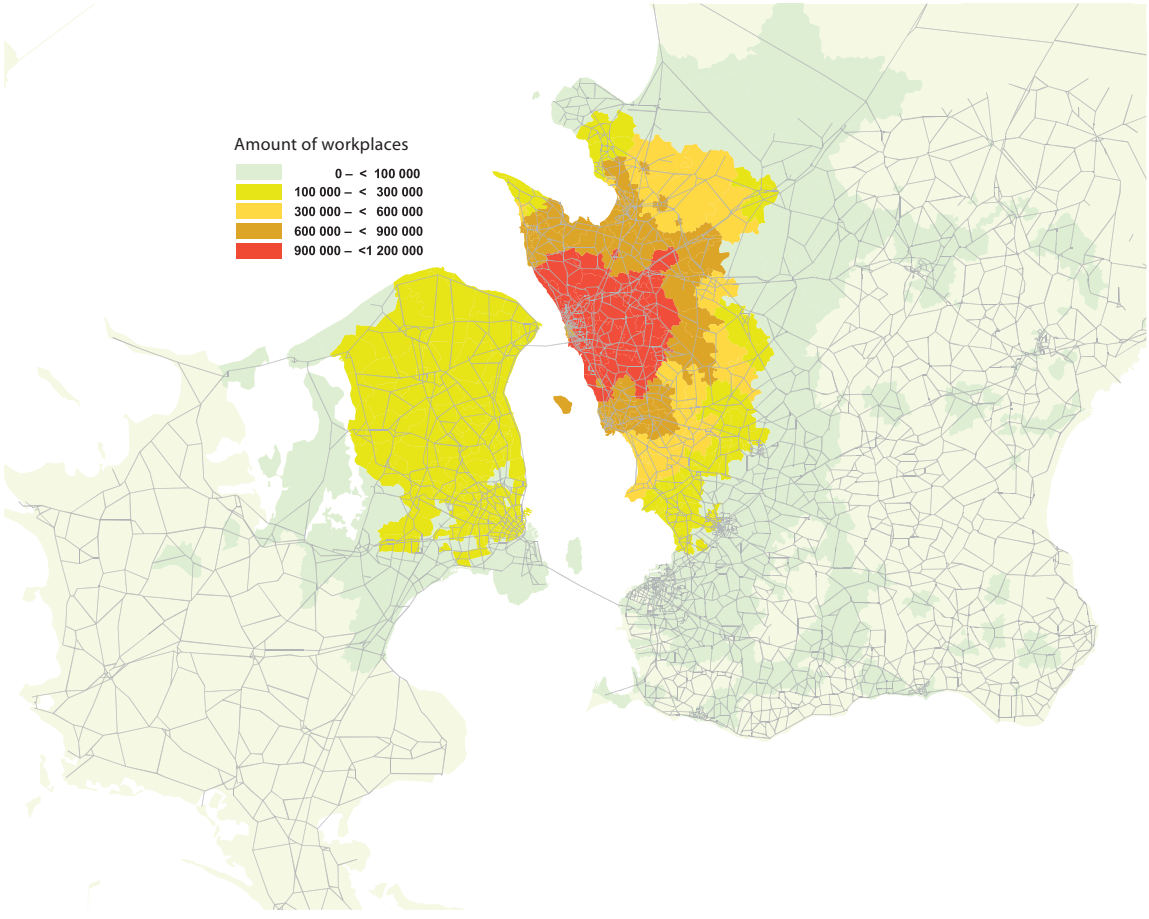


Fig. 74 Number of extra jobs which is reached at max 1 hour by car fixed-HH connection. Source: IBU-ØRESUND, DELAKTIVITET 4, 2010

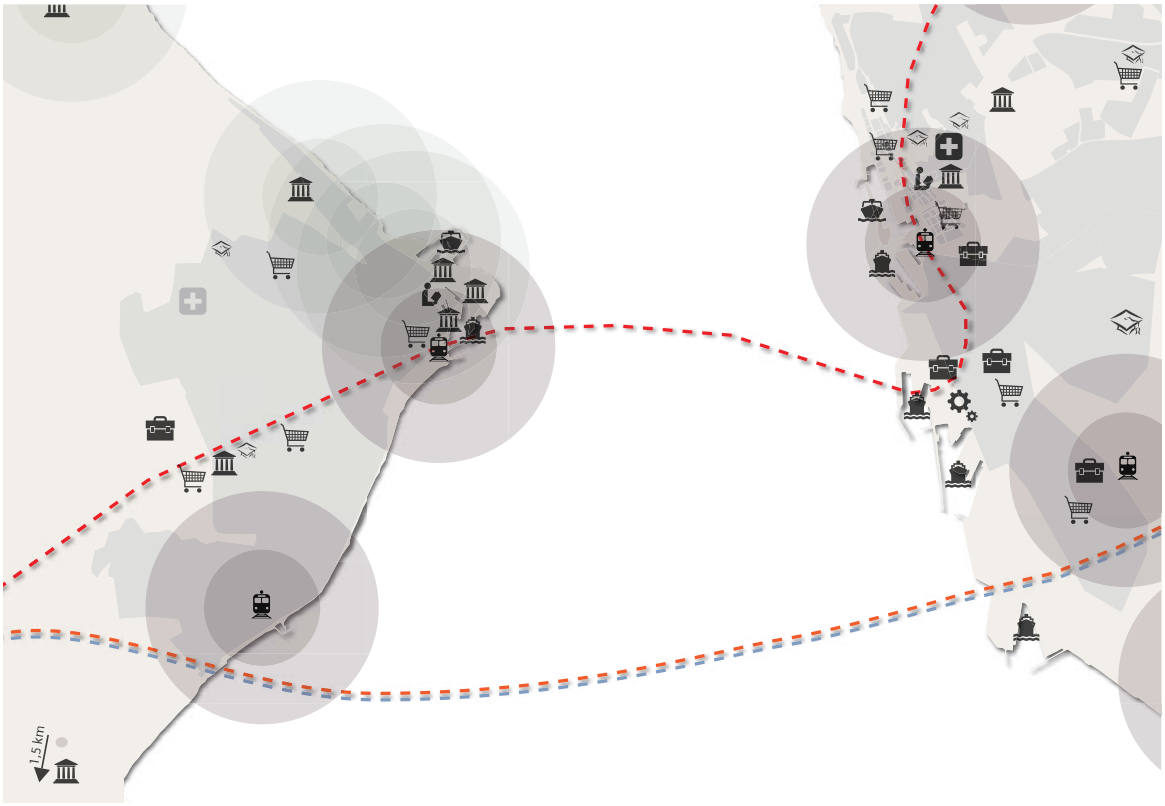


Fig. 75 Helsingør-Helsingborg with exisiting infrastructure (train stations incl 300-600m proximity and harbors) and assumed future tunnels (by author)

Fig. 76 & 77 Building structure of Helsingør (left) and Helsingborg (right) (by author)

Functions

Helsingør and Helsingborg play function-wise different roles. Helsingør is predominantly village like, with a very small centre were preliminary local functions that serve the locals are established.
These functions are mostly food and retail consumption related. Generally small companies provide jobs. One of the exceptions is the regional hospital that will disappear in a few years, because a neighboring city, Hillerød established an even bigger hospital that will serve the whole northern part of Sealand. The other exception or exceptions are the cultural developments around the Kronborg castle. More about these developments in the Helsingør section further in this paper.

Helsingborg functions really as a city with a population over 120.000. It is the second city, after Malmo in the Skåne region. Because of its industrial developments and large harbor, the city still plays an important economic role for Skåne and Sweden and provides therefore many jobs.

The Helsingborg of today came into existence at the turn of 1970–71 when the city was amalgamated with the municipalities of Kattarp, Mörarp, Vallåkra and Ödåkra. Twenty years later, the primitive shunting of train sets through the city ended with the advent of the "Knutpunkten" terminal, where ferry, train and bus traffic meets.

Collaboration with Lund University resulted in the establishment of Campus Helsingborg in 2000. Also several investments where done in the development of culture, like the Dunkers Culture Centre, established in 2002 acquired a new, significant cultural arena for the Skåne region.

Program

When looking at fig. 75 we can see a programmatic resemblance of living environments and functions within 1 km proximity around the ferry harbour, the entrances directed towards each other.
Helsingør has the big castle on the outer edge looking over the water and Helsingborg has a castle that looks out from the main street, directly towards the water over the Oresund. The centre of Helsingborg is bigger and the typology is also more of that from a bigger centre that serves as the whole northern part of the Skåne region. Buildings are also higher buildings and there is more diversity of functions. The building typology is also very different than the overall image of Helsingør. Where we see an endless urban sprawl of detached houses on the Helsingør side, Helsingborg is much more a typical Western European urban centre with a high urban habitat level at the central parts. The dense areas in and around the centre mostly consist of housing blocks , only on the outskirts we find neighbourhoods with detached housing. Therefore the density in Helsingborg lays much higher and many more users ask for more facilities.

Helsingborg is much more self-serving then Helsingør is. Its industrial areas and harbour provide many jobs. The city also has attractive neighbourhoods

Helsingborg is an industrial city, and has therefore in the years struggled with existing factories that are still in the city and very close to urban parts. The process of moving industrial areas out the city or outsourcing industries has been relatively slow compared to other modern cities. This has been pressing the development of the city and pushed off new inhabitants.

Helsingborg is therefore establishing new plans to develop the city to become an attractive center. A recent competition for the regeneration of the southern part of the city has led to new attractive plans that seem to be able to revive the city. (Fig. 79 & 80)

Fig. 78 Google map satelite picture of Helsingør and Helsingborg with 4 km of water in between. (Source: Google. Modified by author)

Fig. 79 Schønherr Landscape / ADEPT Architects' vision for Helsingborg: "The Tolerant City"

Fig. 80 Schønherr Landscape / ADEPT Architects' vision for Helsingborg: "The Tolerant City"

Conclusions position Helsingør within regional development

SO WHAT IS THE PROGRAMMATIC AND SPATIAL POSITION OF HELSINGØR RESPECTIVELY WITHIN THE ØRESUND REGION, THE CAPITAL REGION AND IN RESPECT TO HELSINGBORG?

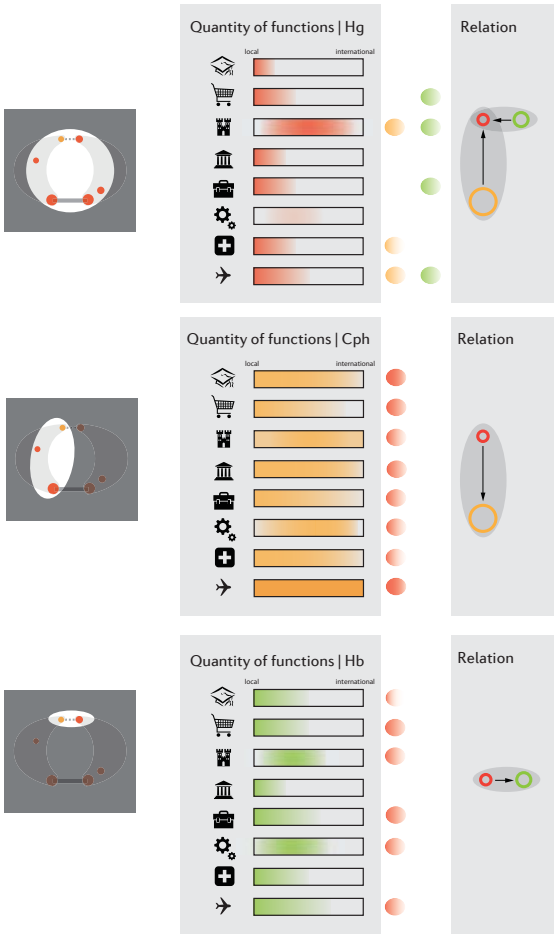


Fig. 81 Conclusions for Helsingør (Hg) of programmatic relation with Copenhagen (Cph) and Helsingborg (Hb). (by author)

Programmatic

The figure on the next page gives an indication of the relation that Copenhagen and Helsingborg have with Helsingør. The relation that Copenhagen has with Helsingør is mainly unilateral. Helsingør is beyond the local level, notwithstanding the distance, very dependent on the Greater Copenhagen; the capital region provides work for almost a quarter of the population; the airport, governmental functions, higher education, research, medical treatment, culture, retail and food consumption are all regularly used by the residents of Helsingør. For most residents (especially the group that is active on the labour market) visiting Copenhagen and surroundings is part of their weekly pattern.

Conversely, Helsingør has not more to offer to greater Copenhagen than for some attractive living areas, some recreational areas and off course the Kronborg castle as an extension of greater Copenhagen's cultural attractions.

The relation with Helsingborg is very different. On one hand the cities are closely related in terms of history and culture. The cities offer each other jobs and housing, dependant on the economic situation of the countries -Helsingør in a lesser extent in relation to Helsingborg, because the city is considerable smaller and has not as much facilities to offer that are useful for Helsingborg's inhabitants-.
At the other hand the relation is affected by the physical barrier formed by the Oresund water and the fact that they are dealing with a transnational situation.

The consequences and importance of this exchange of program in a transnational situation are further elaborated in the next sections: the theoretical framework and case study.

Priorities for the region by IBU-Oresund

2030 is approaching fast, and if the desired developments are to be realised it requires serious effort and joint action now. IBU-Øresund analyses have highlighted solutions and proposed measures that will promote growth in the Region, make it more competitive in international markets and tie it closer together. The time to act is now.
Planning and implementation of the proposed measures will take time. It will require large investments in the infrastructure if the Øresund Region is to have good international and inter-regional accessibility in 2030.
The priorities include:
• a fixed link between Helsingborg and Helsingør,
• a fifth ring road west of Copenhagen, maximizing the full potential of the Fehmarn Belt,
• strengthening the position of Copenhagen Airport and making is a multimodal hub,
• establishing a fast, cross-border train service for the entire region that is linked to a comprehensive regional network.

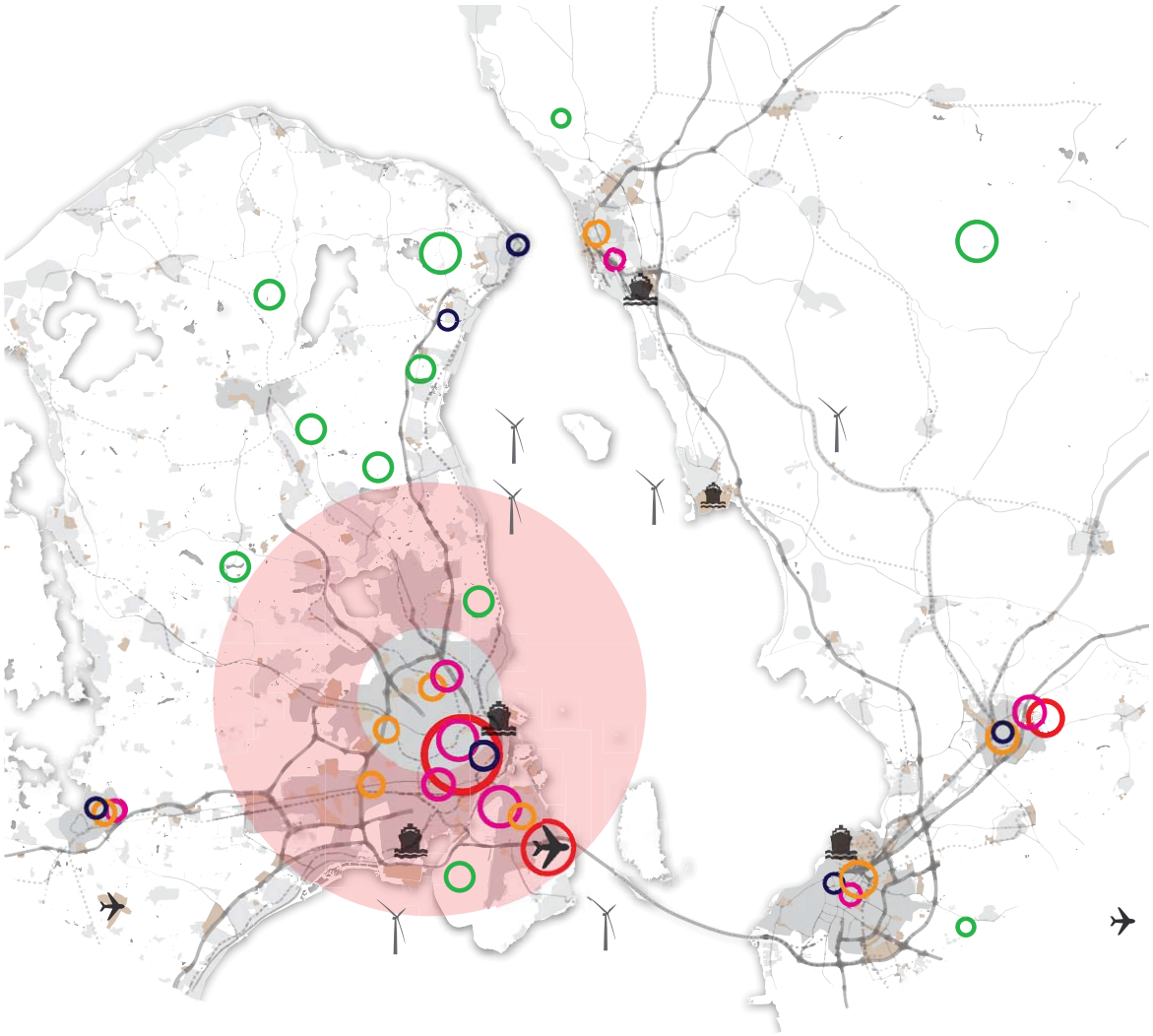


Fig. 82 Current type and division of centres across the Oresund region, with Copenhagen as the metropolitan hub (by author)

In the current situation Copenhagen is the main center within the structure, and other cities are sub to this city. But the possibilities for Copenhagen alone to be able to compete with other regions around the world are limited. To be able to capture enough labour force and the necessary facilities that stimulate economic growth, the centres where these things evolve around should be more spread to be accessible for a great amount of people. In this case it mostly still revolves around Copenhagen and in a lesser extent on Malmo and Lund. But this is not enough, when looking at traffic congestion on the existing Oresund bridge for example.

The picture on the next page shows how different centres function and how they are positioned. Without a solid connection in the north, Helsingør is not more than an far outskirt of greater Copenhagen with some limited connection with Helsingborg.

MAIN CHALLENGE IS TO STRENGTHEN THE REGIONAL COMPETITIVENESS OF THE ORESUND

- worldwide competing regions challenge economical development
- congestion and reliability on non renewable resources
- staying connected with the outside world
- monocentric structure is expanding and becomes increaingly ineffecient
- challenging stakeholders for the development
- maintaining and improving the general well being of individuals and societies

3. WHAT ARE THE PUSH AND PULL FACTORS OF INTEGRATION IN A CROSS-BORDER SITUATION FOR ENHANCING THE SOCIAL AND SPATIAL DEVELOPMENT OF WESTERN EUROPEAN REGIONS? (METHOD: LITERATURE REVIEW)

4. WHAT ARE THE PUSH AND PULL FACTORS IN OTHER EXAMPLES OF (SUDDEN)CROSS-BORDER SPATIAL INTEGRATION? AND WHICH FACTORS ARE RELEVANT FOR THE SITUATION OF HELSINGØR AND ITS RELATIONSHIP TO HELSINGBORG WHEN A FIXED LINK IS ESTABLISHED? (METHOD: COMPARATIVE CASE STUDY)

5. WHICH PUSH AND PULL FACTORS ARE RELEVANT FOR THE SITUATION OF HELSINGØR AND ITS RELATIONSHIP TO HELSINGBORG WHEN A FIXED LINK IS ESTABLISHED? (METHOD: DESIGN BY RESEARCH)

III Theoretical framework

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*
THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Cross-border integration

As a result of the globalization process, on one hand the competition between many western European cities has increased vastly, at the other hand regions and cities are becoming gradually interlinked with numerous people living and working in more than one country. This trend has led to cooperating of cities and the rise of growing regions. These growing regions often transcend national or administrative boundaries. This process is complex, therefore in order to benefit from the various gains arising from cooperation, enhance the process and the trajectories, the push factors driving this kind of integration and the barriers inhibiting must be understood.

Decoville et al. (2010) has found, that the engine of integration in regional cross border areas are disparities and differences in the structural conditions such as the labour and housing market. This implies that regions (people) are exploiting the functional differences that the cross border regions give them.
This is also noted by Knowled and Matthiesen (2009) emphasising that international borders also create artificial opportunities for travel by taking advantage of cheaper cross-border prices which are due to different tax levels and currency rates. This is further underpinned by Lundquist and Trippl (2009) who emphasize that the driving forces for cross-border integration processes, e.g. the differences in economic structure, innovation capabilities and cost giving rise to new complementarities and synergies, often generate the barriers that exist between the different parts of a cross-border region. As they state: "Consequently, this tension and interplay between differences working as driving force on the one hand and as barriers on the other hand add further complexity to the understanding of cross-border integration processes".

Same analysis also suggests that the amount of cross-border residents has a linear connection with the amount of commuters. So activity leads to residential integration where there is a centre - peripheral relationship, as captured by A. Decoville et al (2010): "…primarily from the periphery towards the metropolitan centre is residential flow towards the periphery." This dynamic, which leads to a process of cross- border suburbanization, involves a process of functional specialisation of space, with the centre concentrating economic activity and jobs while the periphery, which is attractive in residential terms, is relegated to the role of a dormitory area.
This relationship varies and is also influenced by others factors such as language and cultural barriers (Knowles and Matthiessen 2009:158). But despite that cross border regions and metropolitan areas experience increased interaction, it does not necessarily entail any convergence in many respects (De Boe, Grasland, and Healy, 1999).

Interaction across borders take place in a number of different layers of society (Schack, 2000, 202-219) These complexities are not weakened when adding aspects of urban structures. Cross-border integration of pairs of border cities has been analysed in a number of articles see e.g.
Ehlers et al. (2001). A binational city structure (like Malmo-Copenhagen or Helsingør-Helsingborg) requires social ties, respected cultural differences and a common identity. To focus on these points is also suggested by Finnish geographer Paasi (2002: 137-148) (Paasi, 2002, 137-148) arguing that territories in fact are not "real" in the sense of being visible and tangible; instead, they are rather social constructs that are created in political, economic, cultural and administrative practices and discourses According to Paasi territories emerge, develop and exist through a process of "institutionalization" that is the outcome of the simultaneous and interconnected working of four different forces a territorial shape, a symbolic shape, an institutional shape as well as a shape that has to do with socio-cultural identity. Jointly, these forces determine whether an area does exist (or not) and its chances for future development.

Meijers et al. adds to this notion with similar argument and note how recent thinking on urban and regional development places much

emphasis on the cultural dimension. Here, the cultural dimension is concerned with the feeling of togetherness and the creation of cultural symbols that help in perceiving the urban region as an entity. (Meijers et al., 2003:202).

Building cross-border social ties and a cross-border identity is a challenge in the presence of strong urban structures with each their nationally defined hinterlands and adjoin social dynamics. It is not clear that a common understanding is emerging in the Øresund Region.
According to several researchers as indicated in the review paper, it is in anyway impossible and unfruitful to put resources into "artificially" forging an identity from top-down.

In spite of numerous and sizeable initiatives to promote integration and regional enlargement in the Øresund Region, the segregating effects of national borders continues to be a hazard to cross-border dynamics. Copenhagen is expanding its cross-border footprint, but a full match for this local cross-border enlargement requires patience. The regional enlargement in the Øresund Region will evolve with a holdup relative to this urban cross-border enlargement.(Schmidt, 2005, 249-258)

The discussion about regional cross border integration is complex and multifaceted. The above suggested influences the spatial development of the urban structure and the programmatic interpretation.

For the urban planner it becomes very complicated to respond to this understanding and develop a profitable strategy, for the reason that spatial enhancement is very much determined on the economic, cultural and/or political situation that changes over time. Besides, it is a long term process that makes predicting the future situation very difficult to grasp. A flexible approach of spatial enhancement is therefore inevitable to navigate time and all the other above called factors.

In the attached literature review (appendix), I elaborate further on cross-border integration. The abstract of this review can be found on the next page. This is followed by a case study that will elanborate further on tihs subject.

Litereture Review (Abstract)

"PUSH AND PULL IN A CROSS-BORDER REGION"

Inquiries into push and pull factors of cross border regional integration

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Abstract: This literature review explorers (potential) push and pull factors, respectively driving or inhibiting regional cross border integration. It first inquirers into general push factors in a broader European context and then discuss these findings with an emphasis on the Øresund Region between Denmark and Sweden. The literature and research revolving around conditions that foster integration, generally note that asymmetries and differences in labour and housing market creates strong incentives for integration, along with other differences of economic character. Moreover does it inquirer into the discussion about identity and cultural difference and what role it plays in integration – theoretically and in practice. The research on this field do point towards that culture and identity matters, but as some authors propose is identity formation and cultural convergence difficult to obtain in practice and from top down and additionally it is found to be a long term process.

Key words – cross-border; regionalization; integration; competitiveness; push-factors; binational cities

The complete review can be found in the appendix.

Case study: push and pull

5, WHAT ARE THE PUSH AND PULL FACTORS IN OTHER EXAMPLES OF (SUDDEN)CROSS-BORDER SPATIAL INTEGRATION? AND WHICH FACTORS ARE RELEVANT FOR THE SITUATION OF HELSINGØR AND ITS RELATIONSHIP TO HELSINGBORG WHEN A FIXED LINK IS ESTABLISHED? (METHOD: DESIGN BY RESEARCH, *COMPARATIVE CASE STUDY)*

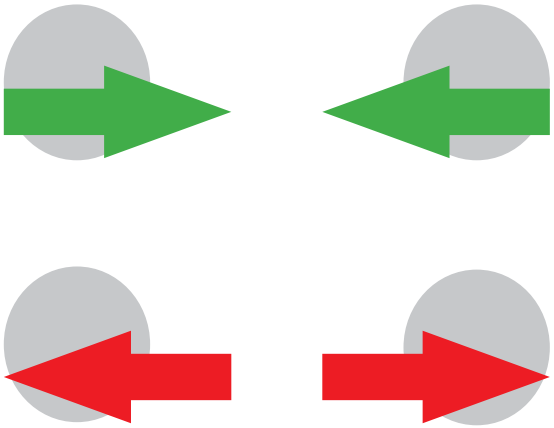


Fig. 83 "Push" and "pull" factors (by author)

This research is relevant to understand what functions and developments are recommendable in the region and in Helsingør to improve the integration of the region and cities that could benefit the possibilities of sustainable cooperation on both sides of the water.

In this chapter the research on the "push and pull factors[1]" of cross-border regional integration is described. This part is in extension of the literature review in which this subject forms the main topic. In the context of this project "**push factors**" can be described as the driving forces for further integration, while "**pull factors**" inhibit cross border inclusion .
The aim of this research is to grasp the initiation process of the fully developed cross border region, where both sides benefit from the cooperation. What are the important factors that lead to economic benefits and in the same time social cohesion? What indicators drive these tendencies forward? What spatial implementations, which form the basis of some of these factors, are most beneficial for Helsingør and its relation with Helsingborg and the cross-border regional development of the Oresund in general?

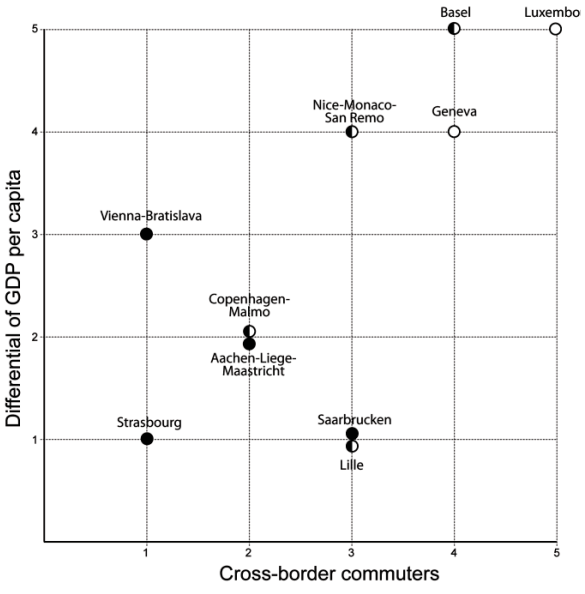
APPROACH OF RESEARCH

For this study I qualitatively measured "push and pull factors" by using case studies to quantify the level of integration and compare them with the case of the Øresund and Helsingborg- Helsingør.

First, different measurable indicators are posed.

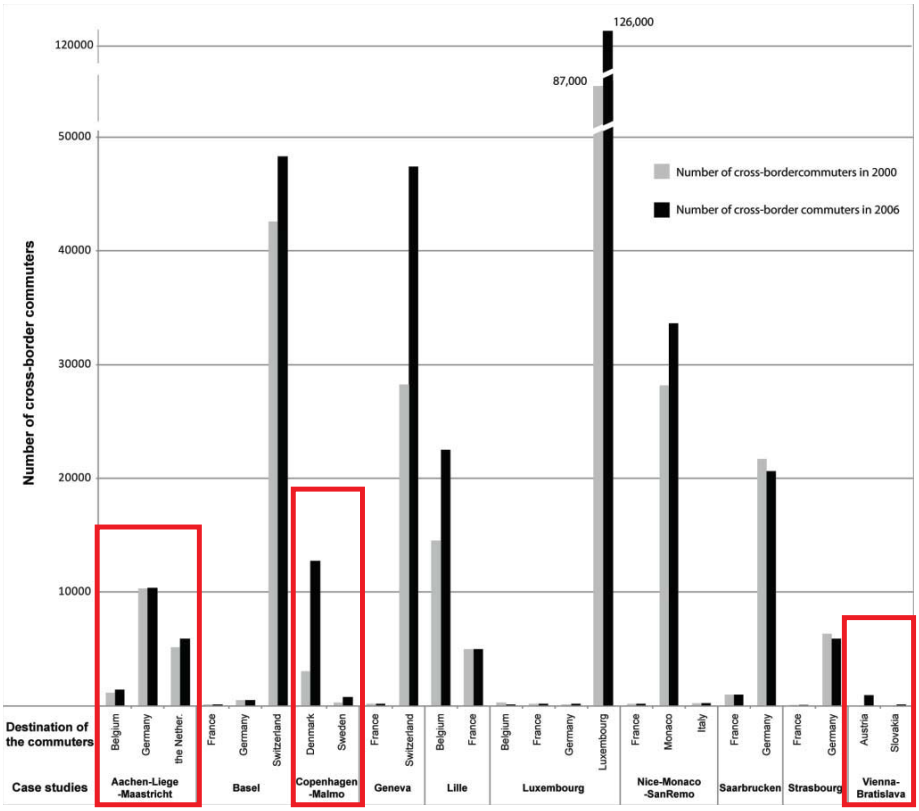
These indicators are partly taken from the research of "spatial integration of cross-border regions" by (Decoville et.al., 2010). For their research they quantified three different indicators: economic interactions, economic disparities and territorial homogeneity. These indicators were valued on a scale from 1 to 5 to be able to measure and compare them statistically with cases from the EU project of ESPON (2010). The first two have been incorporated in this study. In addition I have added a few other indicators that are measurable by spatial analysis and historical check-ups.

These indicators are then measured on their 'push' and 'pull' value. Most of these measure-



Flg. 84 Cross-border commuters and differentials of GDP per capita (2000, 2006) from study Decoville et.al. (2010)

1 In geography terms "push and pull factors" are described as follows: The push factor involves a force which acts to drive people away from a place and the pull factor is what draws them to a new location. This project clearly uses a different interpretation.



Flg. 85 Development of cross-border commuting in Europe's cross-border metropolitan regions (2000, 2006) From study Decoville et.al. (2010)

ments are as well taken from the earlier mentions report and by subjective interpretations based on various sources. This is done to be able to compare them and test their relationship to draw conclusions that are more specifically based on the spatial situation of the cases. For example it would clarify the relationship between cross-border commuters and the degree of cross-border functions. Does the amount of functions and the policy implementation that triggered them have any influence on the amount of commuters?

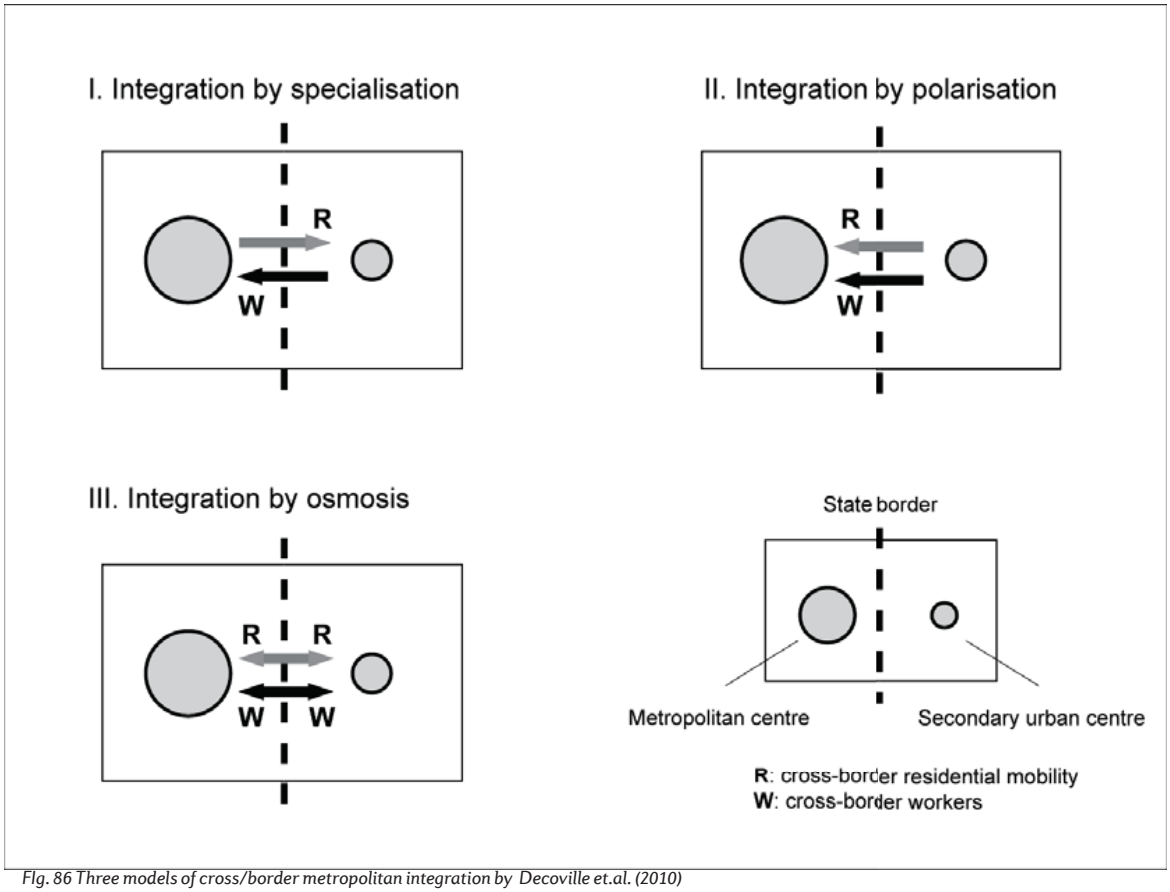
Drawn conclusions will result in recommendations for the strategy of the Øresund region and the relation of Helsingør with Helsingborg, when developing a spatial strategy and design. The added indicators are: existing cross border functions, the crossing itself, spatial positioning and cultural factors.

INDICATORS

*Economic interaction*s and *disparities*: In order to examine the impact of economic interactions on the cross-border integration of communities, the cross-border commuting indicator is compared with the number of residents originating in the neighboring country for each cross-border metropolitan region. It is important to emphasize that the data are expressed in absolute terms, independently of the local demographic context. The significance of the phenomenon of cross-border commuting must thus be interpreted in relation to the total population of the cross-border area in question (Decoville et al., 2010) GDP diparities and housing prices are also compared to study the influence on the integration process. As already discussed in previous chapters, economic disparities between Sweden and Denmark have let to a certain integration. How does this work in other cases? What does it mean for the Oresund?

Cross-border related functions: Top down policy, committees and other parties that strive for integration on different levels, strengthen the integration mostly formally. In the EU, intra-metropolitan regional cooperation develops in principle: networks and mechanisms of governance expand across borders as a result of local governments seeking resources and opportunities in response to European Commission regulations and policy frameworks.(Brunet-Jailly, 2004)In all these European cross-border relations, projects have led local government officials to set up institutions of cooperation that span the border.

A distinction can be made between regional cross border functions and local cross border functions. The regional functions potentially benefit the whole region, in other words these functions have something to offer to the rest of the region. This can be e.g. a national airport or public/ private cooperating institutions. Often these func-



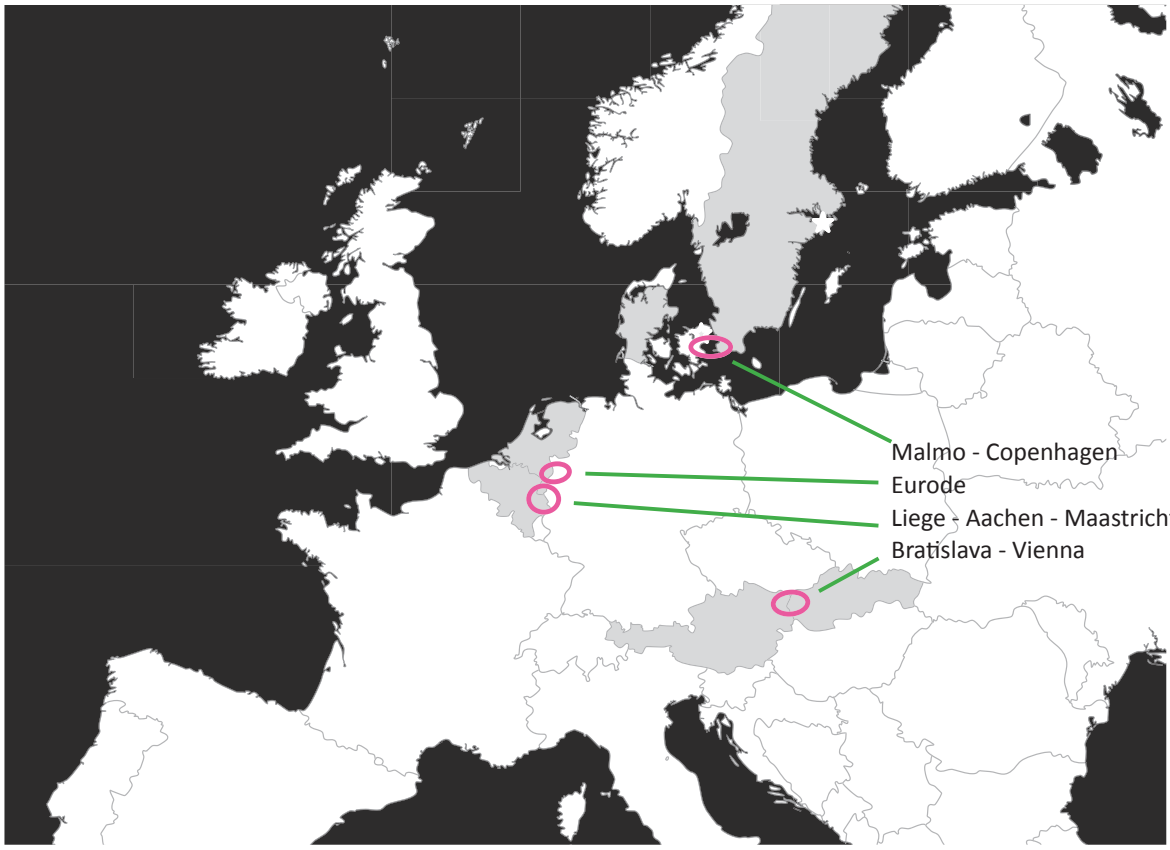
Flg. 86 Three models of cross/border metropolitan integration by Decoville et.al. (2010)

tions are established by top down policy that is oriented on the cooperation within a econmic binational region. The local functions are aimed to involve citizens in the cross-border integration process, so that they can also benefit from the situation. This involves smaller businesses and smaller (often) public institutions as cooperating schools (like in Malmo and Copenhagen or Eurode, where children that live in the other country then where they from they are still able to learn there original language.) Local policies direct these tendencies often, but many of these initiatives starts from bottom up.

Crossing: The actual crossing and the effort this takes for crossers is a very direct indicator of the effects of the existing situation of the cases. The effort is measured by the costs, the amount of physical connections and the distance between the city centres and city borders. The existing crossing policies are negligible because all cases are within the EU, this means open borders and therefore no direct.

Spatial indicator: The spatial indicator revolves around the (historical) spatial development of the cities and the degree of connection. Distance between the centres and (un)natural barriers can have strong influence on the gradation of (spatial) integration. Historically centres could have been connected, but due to external factors been seperated or the other way around. Sometimes recent development of suburbs are built toward sthe bordering centre. When comparing this with other factors, the causes can be percieved. What functions can be found along different routes towards the connected centre, also this can be an indicator. Do these functions form backsides for the city or are the a welcoming entrance?

Cultural factors: These indicators can be interpreted in different ways; therefore a relatively extensive list is posed. It involves social integration, demographic distribution, cultural identity and language (barrier). Considerations are based on e.g. the Finnish geographer Paasi (2002:139) arguing that territories in fact are not “real” in the sense of being visible and tangible; instead, they are rather social constructs that are forged in political, economic, cultural and administrative practices and discourses. Meijers et al. (2003:202) adds to this notion with similar argument and



Flg. 87 Map of case studies (by author)

note how recent thinking on urban and regional development places much emphasis on the cultural dimension. Here, the cultural dimension is concerned with the feeling of togetherness and the creation of cultural symbols that help in perceiving the urban region as an entity. Gert J. Hospers (2006) emphasise the importance of identity on cross border regions drawing on conclusion from a number of studies noting that a binational city requires social ties and a shared identity.

In short, language, cultural identity (local, regional and national), social cohesion and historical social integration are all considered as cultural indicators.

Additional influencing factors

The economic interaction embodied by cross-border commuting and residential displacements from one country to another can be abstracted in three models (fig. 3) (developed by Decoville et.al., 2010) of cross-border metropolitan integration. Decoville uses ideal type descriptions: "the essential characteristics of each model are underlined; insignificant variations and the complex configurations found in reality are disregarded." The case studies that represent metropolitan regions can be (to a certain extend) associated with one of these models. In addition, the schema proposed does not prejudge the dynamics originating outside of the metropolitan region. The models will be further described in the section of the cases.

The study cases consist of 3 cross-border metropolitan regions that are defined as functional urban regions which cross one or more international borders (Herzog 1990; Sohn forthcoming). For this project 3 ESPON cases are used: Bratislava-Vienna, Aachen- Liege- Maastricht and Malmo-Copenhagen. The fourth case, the case of Eurode (Kerkrade- Herzogorath) is added, to capture the different dimensions of integration. Not only regional integration is important to grasp, but also local integration, when developing a strategy. Eurode does not form a region, but the cities do have a strong connection that is comparable with Helsingør and Helsingborg in e.g. size, history and distance.

The cases and the associated measurable data can be find in the appendix of this project.

Variables that are used are for the cases studies:
Village: <20.000
Small cities: 20.001-100.000 inhabitants
Medium cities: 100.001 - 500.000 inhabitants
Large (Metropolitan) cities: >500.001 inhabitants

Conclusions on push and pull factors

FIRST NOTES ON THE ECONOMIC DISPARITIES AND INTEGRATION.

The result of measuring the relationship between different indicators (see appendix) of cross border integration builds on in many aspects of the research of e.g. Decoville et.al. and the OECD. According to these researches a significant part of the focus on integration is confined to commuters, housing and economic gains very narrowly. Cross border activity is spawned by rational actors' interest and then lead to integration and activity on the housing and labour market, as people exploit differences on these two markets.

Seen from an economic angle this could be beneficial as the region and the economies are benefitting from each other's functions or in other words: their competitive advantages.
But in practice this is not a fertile ground for sustainable integration, when one party is always dependant on the others wealth. Decoville et al. (2010) has found that the engines of integration in regional cross border areas are disparities and differences in the structural conditions such as the labour and housing market. This implies that regions (people) are exploiting the functional differences that the cross border regions give them. This is also noted by Knowles and Matthiesen (2009:158) emphases that international borders also create artificial opportunities for travel by taking advantage of cheaper cross-border prices which are due to different tax levels and currency rates.

This is further underpinned by Lundquist and Trippl (2009:9) who emphasizes that the driving forces for cross-border integration processes, e.g. the differences in economic structure, innovation capabilities and cost giving rise to new complementarities and synergies, often generate the barriers that exist between the different parts of a cross-border region. As they state: "Consequently, this tension and interplay between differences working as driving force on the one hand and as barriers on the other hand add further complexity to the understanding of cross-border integration processes". (See the literature review for a more detailed interpretation)
After the research with the added indicators, some more practical recommendations can be made for the spatial integration of the region and the development for a program of e.g. Helsingør.

EXPLANATION PER GRAPH

Commuting vs. GDP disparity value
The comparison of GDP differential per capita with the cross border commuting intensity has also been investigated by Decoville et.all. (2010). It shows that there exists a certain relationship between the two phenomena. In other words, the greater the differential in terms of wealth between two countries, the more the country with the most favourable labour market conditions will tend to attract a high number of cross-border commuters. Decoville claims: "as the cities which are best integrated into globalised capital circuits are also those with the highest economic disparities with their surrounding border areas." Respectively, when differentials in terms of the creation of wealth are low (less than or equal to 40 percent), the intensification of the cross-border commuting phenomenon declines. The fundamental relationship between wealth differentials and cross-border commuting exits, however, to be subject to various limiting factors. Firstly, apart from income differentials, other factors associated with the labour market are involved in determining professional paths which cross the border. As suggested in the report by MKW Wirtschaftsforschung and Empirica (2009), the availability of jobs, their attractiveness, the career progression prospects and the quality of national 10 social security systems are also taken into account. (Decoville et.al., 2010)

Vienna Bratislava is an exceptional case, there does not seem to be causality between the relatively great disparity and the amount of commuters. This can be explained by the fact that new EU member state workers require a work permit when they want to work in older (before 2004) member states, this blocks the flow of commuters.
In the Oresund the GDP disparity does at the other hand play a smaller role. Despite the amount of commuters, the disparity of GDP is low. Still the clear unilateral commuting flow (from Sweden to Denmark) could be questioned. As is shown in the regional integration models of Decoville, this situation is especially competitive in economic terms, as it is based on the complementarity of territories and their respective competitive advantages. It raises the question of the social and territorial cohesion of the regions. The commuting flow from Helsingborg to Helsingør is lower; therefore the relation of the two indicators is more balanced, but could be

increased to gain the same integrations as in the southern part of the Oresund. The challenge now is to make both countries profit equally from the economic benefits, for a sustainable development of the region and an increase in the social cohesion.

Spatial positioning vs. Economic indicator
The economic indicator implies various factors that bring the different cases closer together in 'push and pull' value. Apparently there is also a pretty strong correlation with the spatial positioning of the cities with their binational opponents relative to each other, especially In the case of Bratislava- Vienna and the Euregio (Maastricht- Aachen- Liege). The centres in the Oresund score quite high on this last factor; the challenge is to exploit this strength, possibly by more and faster connections to benefit from it economically.

Cross border functions vs commuting
The existing cross border functions compared to the commuter's value have a very strong relationship. This counts for all cases. Therefore a strong conclusion can be made: The more cross border functions the more commuters it attracts, the more the integration process is pushed forwards. Helsingør and Helsingborg are very much in line with this indication, but are behind on Malmo and Copenhagen. So for the Oresund region as a whole there seem to be the fertile ground for a balanced increase like in the M-C combination, but on both indicators should be worked.

Crossing effort vs. commuting value
This context appears to have no real strong connection except for the Øresund cases. This is notable, because it seems at the first glance obvious that crossing effort is a significant drive for commuting. It seems that several other factors have much more influence on the commuting factor. Helsingør and Helsingborg scores low on both indicators, but are in the same line with the balanced Malmo and Copenhagen; it could be interpreted as having the same possibilities.

Cultural factors vs. spatial positioning
These indicators are clearly strongly related. The Helsingør- Helsingborg relation even scores striking high, mostly explained by it close history. The indications for these cities are in line with their region. Both these indicators are for H-H strong push factors, which should be to the utmost exploited.

Crossing effort vs. cross-border functions
Cross border related functions don't seem to be on influence on the crossing effort. Only in the Oresund region these indicators are correlated. In the H-H situation and the Malmo Copenhagen situation, crossers have to pay toll for crossing the water; they are also the only 2 cases where water has to be crossed. The functions seem to have adapted to these crossing barriers. In the new situation of H-H with a new link, the situation will change drastically, when the effort becomes less. A sustainable development demands related functions.

Cultural factors vs. commuting value
There is a correlation visible when we look at the cultural factors and commuting. The small centres of Eurode and H-H are here a little of an exception, in the case of Eurode this could be designated to a strong tendency that started when the two cities where divided to their countries. For more than 150 years the cities have been oriented to their country instead of each other, still on a local level citizens have very much in common and even share a street. Just like H-H top down policies are necessary to make it more attractive to commute and make use of each other's functions and abilities.

Spatial positioning vs. crossing effort
There is no clear correlation between the crossing effort and the spatial position; except for Malmo and Copenhagen. The cases tend to be not that influenced by the spatial positioning relative to each other. When the effort to cross in the H-H situation declines, it will likely correspond with the spatial positioning, similar to Malmo- Copenhagen.

The next section will explain how this influences the strategy for the regional development of the Øresund and what it possibly means for the region in particular how it will determine the spatial and programmatic implementation of Helsingør.

6. HOW TO INTEGRATE A REGIONAL SOLID CONNECTION IN THE EXISTING URBAN STRUCTURE OF HELSINGØR? (METHOD: RESEARCH BY DESIGN)

IV Vision & strategy

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*
THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

General challenges for the region

There are many challenges every urbanized area copes with, for the Øresund region these are the most important ones:

- Worldwide fast growing competing regions challenge economic development
- Congestion and reliability on non-renewable resources
- Staying connected with the outside world
- Monocentric structure is expanding and becomes increasingly inefficient
- Division of functions and facilities is limited outside the main centres
- Travel times are relatively long outside the main centres.
- Public transport is limited
- Challenging stakeholders for the development
- Maintaining and improving the general wellbeing of individuals and societies

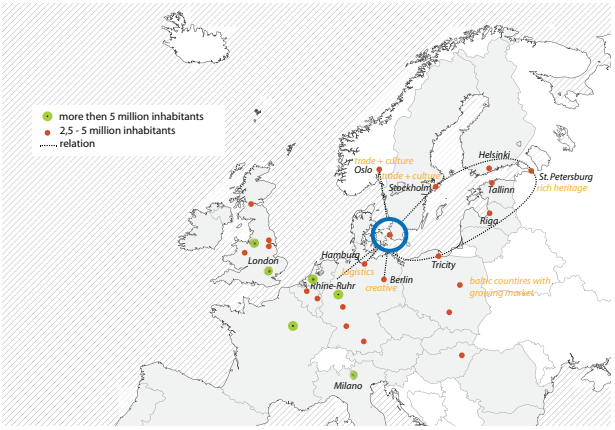


Fig. 88 Position of the Oresund in the region (by author)

- Increasing the workforce to cope with aging
- finding solutions to cope with the urban sprawl
- Differences between countries form boundaries for exchange
- Etc.

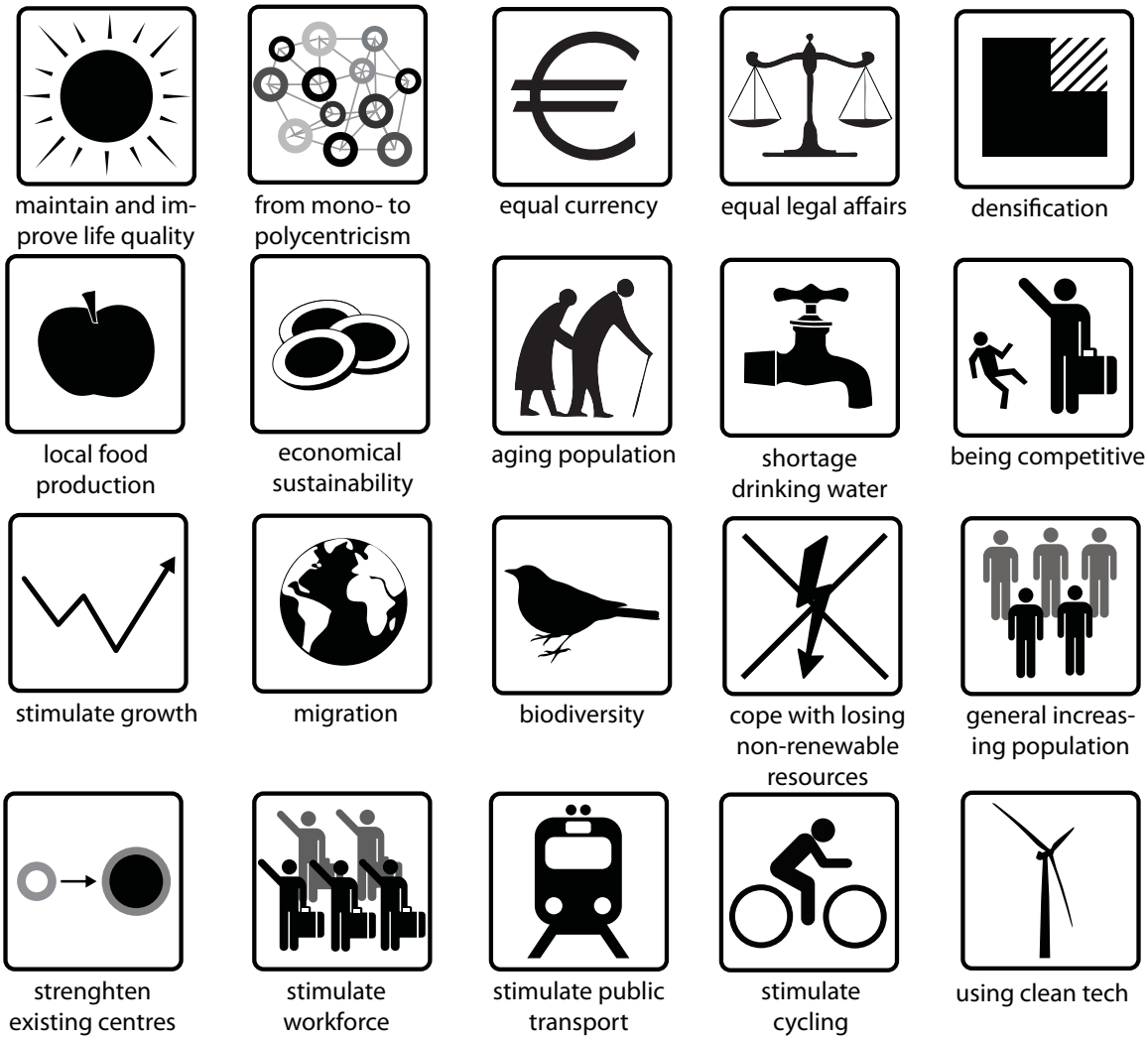


Fig. 89 Overall challenges for regions

Vision

VISION FOR THE REGION

Transition from mono-centric to polycentric structure in a hierarchic system to support sustainable economic growth
Instead of Copenhagen being the only centre in the region that functions on all levels (from local to international metropolis), functions can be more spread over other centres to be able to cope with future growth and development. It will also be more attractive for different groups of people to live in these centres. The division of city people and suburban people can be decreased, without declining the preferences of living environments of people.

Strengthen the connectivity between centres
When there are more centres within the structure of the region that play an important role in one or more fields, it is essential to connect them well. So the exchange of knowledge, labour, etc. is not obstructed by extensive travel time.

Densify urban areas
The Øresund region, especially the Danish side, is marked by sub urban areas and urban sprawl. Cities should be more compact. Residents are often dependent on their cars when travelling to bigger centres.
It's important to densify the existing structure.

Variety of housing, public spaces, functions and facilities
Existing and new centres within the existing urban structure should be more diverse to attract a higher variety of life styles. In order to create an environment that answers the need of different groups, different housing typologies a high variety of public space and a mix of urban program (from local to regional functions and facilities) that will cover different needs can be created

VISION FOR HELSINGØR

A more important role for Helsingør within the region
Because Helsingør is directly involved with the consequences that the new ring and tunnel brings, the city should benefit from this, but it should also support the regional development.
To reach this goal, the strategy for the city should anticipate on the new development with a sufficient program and adapted spatial plan.

Making the city easier and faster accessible
A regional train connects Helsingør with Copenhagen in 50 minutes, a ferry connects the city to Helsingborg and a local train and several roads connects the city with the small surrounding centres. This seems sufficient for the current situation of Helsingør, but with a new tunnel and the new ring connecting the outskirts of Copenhagen the city can be much more accessible, when applying the right strategy.

A beneficial plan for current residents, an attractive plan for new residents
Current residents of Helsingør municipality live mostly outside the city centre more or less village/ suburb like environment with mainly detached houses. There is less feeling and connection with the urban environment of the city centre. A mixed program can bring people closer together when they have a reason to gather. The plan should be an attractive living environment for different groups of people.

Decrease barriers and making the city fabric more compact
Using design guidelines that fit different groups of people and densify the city to bring them closer together, without losing the quiet and peaceful identity of Helsingør

Regional strategy

In response to the conclusions from the analysis and theoretical framework it seems the right step to establish the new northern HH link and the new ring to foster the connectivity and accessibility of the region and in particular indirectly support the competitiveness of the region.

Improving the connectivity

Improvement of the infrastructural network is essential. Currently the focus is mostly on the main centres, respectively Copenhagen, Kastrup airport and Malmo and to a lesser extent Roskilde, Høje-Taastrup, Lund and Helsingborg. The cities on the Swedish site are connected to high speed networks that lead to Oslo and Stockholm, but towards Denmark the network is cut off in Kastrup airport. It is important to connect more centres to the high speed network and/or the fast intercity train.

The strategy for the infrastructure is shown in the lower map on the next page. The main changes will be focussing on the northern centres that are within the fast train network. The outskirts of Copenhagen will be much better connected with each other, and will therefore become much less dependent on Copenhagen and its radial access. Høje Taastrup, Hillerød, Ballerup, Helsingør on the Danish side and Helsingborg will have a high speed station connection with Lund, Malmo, Kastrup and Copenhagen and therefore have the chance to benefit from this new link.

In this way there will be a hierarchy in connections and centres that is more equally spread over the region. Multi-functional centres with regional potential will off course be better connected then smaller ones. But the goal is to be able to reach all the bigger centres in an equal time, relatively to the distance and not so much to the hierarchy within the important centres.

This new situations will have a major influence on the position of Helsingor. As it now will be connected to the intercity network.

Fig. 90 Abstract current infrastructural situation. (by author)

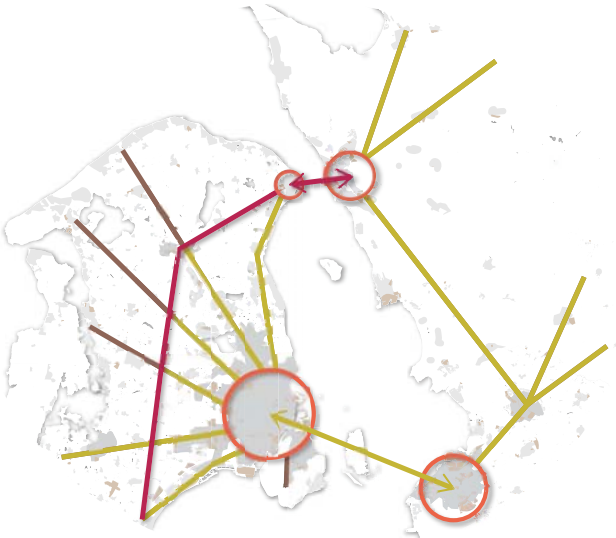


Fig. 91 Abstract new infrastructural situation: connecting copenhagen's outskirts. (by author)

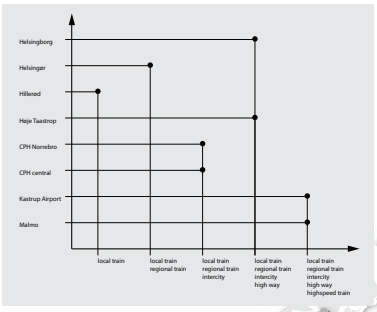


Fig. 92 Current public transport network (by author)

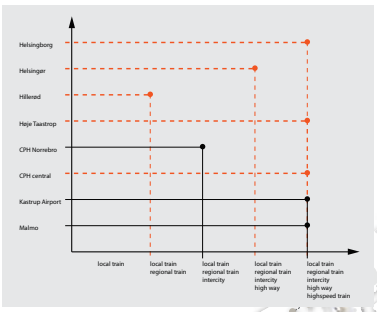


Fig. 93 new strategy of public transport network with HH-connection and new ring

high urban center environment
sub urban environment
local train station
sprinter

regional train station
intercity station
high speed station
highway

regional roads
local tracks (S-train)
general train tracks
high speed track

new regional connection
new high speed and intercity

Fig. 94 Degree of research and development (by author)

Fig. 95 Degree of research and development (by author)

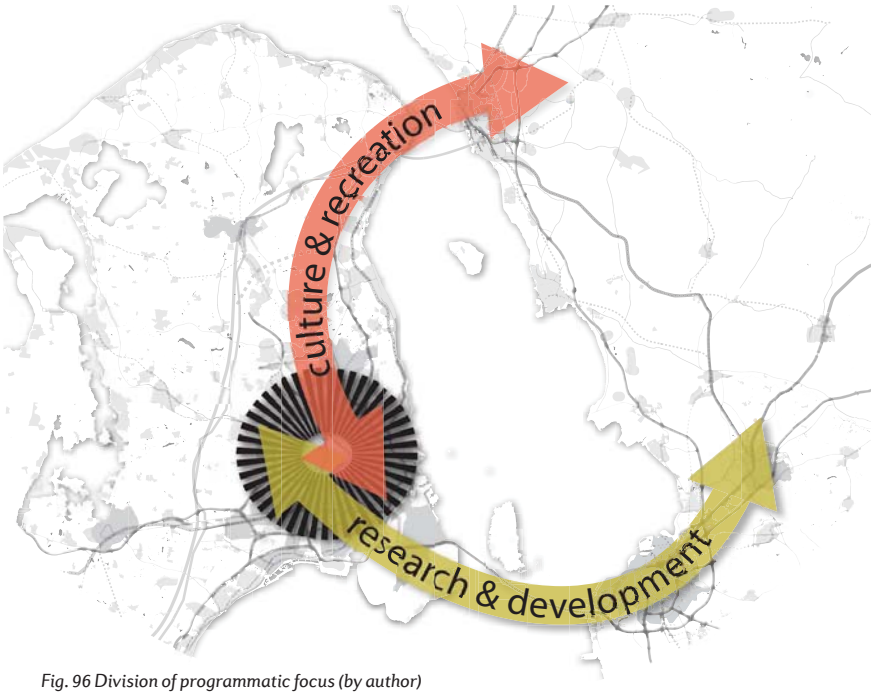


Fig. 96 Division of programmatic focus (by author)

More centres finding a balance and playing a different role

It will potentially become increasingly more attractive to live in one of the centres that are connected to the new ring or close to a hub leading to these centres when these centres offer a variety of functions. The region will also be less dependent on changing economic situations. As we have seen in the theoretical framework, economic disparities inflict border crossing (Decoville, et.al., 2009). But when these disparities diminish or change the other way around, the new srtucture is less interrelated to economical change. The region can have the ability to cope with deviations when centres become more dependent on each other and not only on the main hub. In a self-sustainable region, centres have each a role in a collaborating context. (Meijers et al., 2003) Centres will be less dependent on housing ans labour only, because they can have a specialisation that is always attractive for the rest of the region.

A cultural pathway, A R&D pathway

To form a basis for these different roles for the regional centres, a concept is established.

The concept for the overall strategy is to divide the region or actually the 'ring' that is embodied by the existing and new infrastructural fast connections, in to two semicircles. Both will have their own gravity points and the semicircles will partially overlap each other. This is based on the current presence of functions around the region. One will focus more on research, innovation and development and the other will represent culture, recreation and tourism. (See figure 96) The one semicircle will be leading along several cultural places and the other along different business areas, universities and other research related institutions.

The positive impact of this concentration is that the use of the links in north and south will overall be used differently. The southern link will be much more research, educational and business related, while the northern connection is much more used by tourists who want to see a little more than only Copenhagen, but also tourists (from inland or abroad) that are passing through like Swedes & Norwegians traveling to the south who want to make a nice stop during their long journey to see some culture or get some recreation without going into the big crowded of centre, Copenhagen.

But overall, both links will be used by commuters going from work to their home and the other way around.

Cultural institutions and recreation

- Reliefs pressure tourist flow southern bridge
- Fast connection, cuts traveltime
- More concentrated culture is easier accessible for visitors
- Attracts more visitors
- Sweden & Denmark can both benefit

-> sustainable (cultural/ social) development

Pharmaceutical companies and research institutions

- Consentration means easier cooperation between companies and knowledge centres
- Fast connection, cuts traveltime
- Easy accessible
- Both countries can benefit

-> sustainable (economical) development

Regional masterplan

ATTRACTIVE & COMPETITIVE

The new structure means more importance for more centres. Copenhagen will have two counterparts it will compete with in a healthy polycentric region: Malmo and Lund will be expanding and grow closer together; and Helsingør and Helsingborg will be a strong cooperating combination, as they seperatly lack critical mass to form worthy counterparts, in the north of the region (Fig. 98) . These three main centres will spread the regional, national and international attractive functions and facilities over a larger area and balance out their competitive position within the regional cooperating structure.

It is probable that people move closer to these core centres or other centres that are well connected with the main hubs, because it will be so much easier to have all functions and facilities within a short proximity. And because the (main) centres will maintain or create their own character/ identity, there will be a place for everyone. Young people that like to live in a dense urban environment can find their place, so can an older couple that likes the quiet nature. As long as housing typologies are adapted to various groups, all sorts of environments, in a little more or lesser density, can be created within proximity of the well-connected centres. In this way there will be more space left to be given back to nature, or to use for recreation or (sustainable) agriculture.

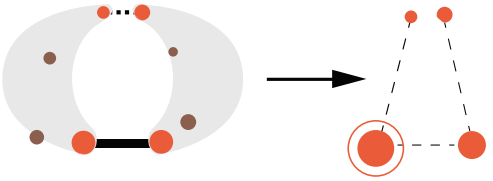


Fig. 97 Old situation with one main centre (by author)

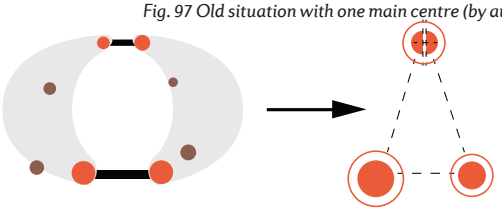


Fig. 98 New situation: H&H are cooperating to compete with other centres (by author)

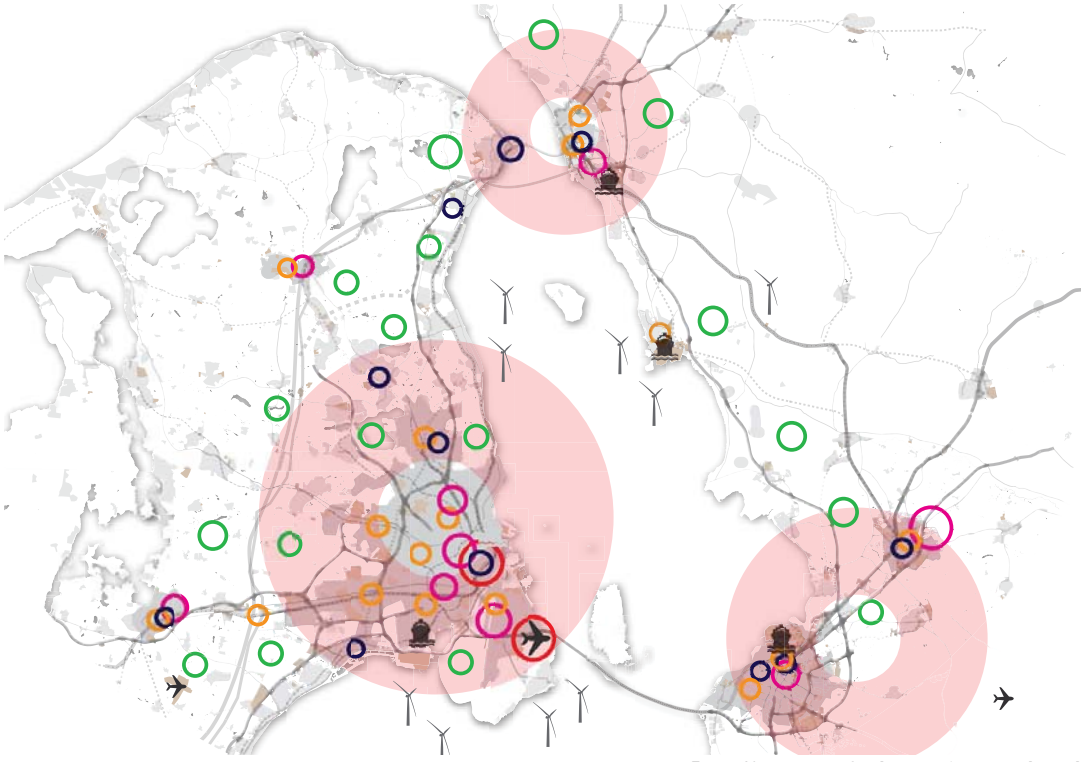


Fig. 99 New strategy for the region's centres (by author)

- metropolitan region
- international center
- high urban center environment
- sub urban environment
- supra-regional center
- tourist center
- knowledge center
- mainport
- green corridor
- airport
- connecting city and countryside
- highway
- high speed train
- regional train

Strategy for Helsingor

HELSINGØR'S NEW POSITION

As the new link will, besides connecting everyday commuters, also function to relief the pressure from the southern bridge, as an alternative attractive route for travellers crossing the Oresund between Sweden/ Norway and Germany/ the rest of Europe, the cultural functions of Helsingør are even more important. It is could not just become a cultural centre; it can be the gateway for tourist entering the north of the Øresund.

So, Helsingør will be playing a different and more important role in the network of the Øresund. But because of its lack of capacity (there is no space and will to expand or develop into high urban space) the city will never be a self-serving multi-functional centre.
With the new link, 5 minutes away there will be a centre with more capacity: Helsingborg. Together they have enough potential to form an important centre. Now that they will be so closely connected, the centres can from a regional perspective also be considered as one.
This makes sense, because toghether they have close to 250.000 inhabitants (and even more with the surrounding smaller centres that are to an extend dependent on these cities included), more facilities, more functions and has more possibilities to expand. The cities will be closely connected and in some way, Helsingør will be an extension of Helsingborg on a regional level. Because Helsingør does not have the capacity to compete with Helsingborg except on one issue: culture.

Helsingør has so many cultural developments on its way, and has the Kronborg castle as its main attraction. So within the Øresund region Helsingør will be a big cultural central. On other areas, it will have a lesser importance in the regional structure and could in some ways even be interpreted as an extension of Helsingør. Nonetheless, Helsingør will be connected to the intercity network through the new link and ring and Helsingborg will be connected to the high speed network directly with the Danish side. So there is still a lot to gain for Helsingør.

To still be able to get as much out of the link programmatically, besides from the cultural advantage, and not only being a suburb of Helsingborg or an outskirt of Copenhagen, Helsingør should have some more city like developments, that attract young people who possibly work in Helsingborg, Copenhagen or Helsingør itself. The housing typology should also fit this sort of people. Like what we find in Copenhagen and Helsingborg.
To establish this, there needs to be a place that is suitable for these kinds of developments. In the next sections this place and its associated conditions are introduced and analysed in order to understand the spatial and programmatic design for this plan area as the final part of this project.

Fig. 99 & 100 If Helsingør and Helsingborg were paste toghether...
Source: Google maps, modified by author

THE DESIGN LOCATION

The south eastern shore of Helsingør (155.000 m²) is the location for my project.
The most important reasons are:
1. because the new tunnel will go right through this area
2. most of the facilities related to the current ferry connection are located here. The ferry will likely disappear, therefore also will these facilities. This will make a lot of space available.
3. the location is favourable pertaining to the proximity of the historical city centre, the Kronborg castle, the main train station and the adjacency of the Øresund water.

In the wake of the development of the Oresund region, an efficient strategical program can be very beneficial for the advancement of the city's and regional social, economic and environmental coherence.

The location is facing several challenges and opportunities that form the conditions for a new plan. In the next section these conditions are being discussed.

After that, the program will be introduced, followed by the design proposal for the plan area.

Fig. 102 The plan area with its main dimensions and the proximity from the train station (by author)

A. WHAT CHARACTERISTICS ARE TYPICAL OF THE URBAN STRUCTURE AND THE FUNCTIONAL PROGRAM OF THE PLAN AREA AND ITS SURROUNDING AREAS?

(METHOD: SPATIAL ANALYSIS)

V Conditions

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*

THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Conditions plan area

On the next pages the characteristics of the 4 different areas are being introduced in relation to the plan area. This is done to get a better understanding of the position of the plan area and the connection it has with the surrounding areas. These relations together with its own setting and circumstances form the conditions for the design.

The map below shows the different functions in the 4 different areas. The differences between the areas are very apparent in functions, space and typology.

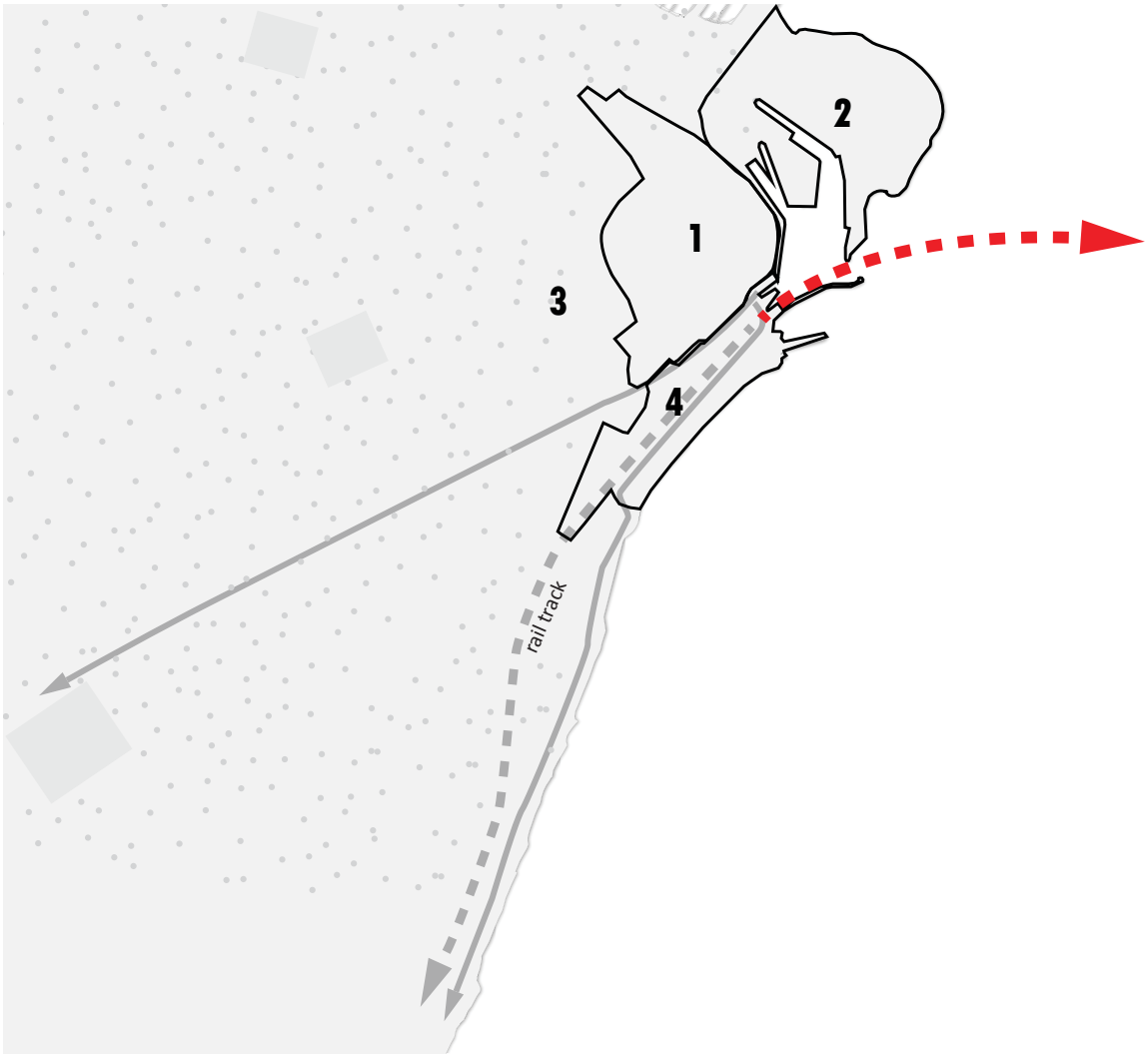


Fig. 103 An abstract impression of the project area. 4 main spatial areas can be distinguished: the historic city centre, the castle and its surroundings, the infrastrucutral functions (now the ferry harbour and the train, in the future the project area and the train) and the surrounding sprawl of (mainly) detached houses. (by author)

RELATION 1: HISTORICAL CITY CENTRE

Helsingør has several qualities; most of these qualities are concentrated in and around the city centre.

The town center is a compact, refined, historic, well preserved treasure trove of 16th/ 17th year old housing and has many qualities. Original the center was directly located along the water on the south side. But as shown in the historical change of situation on the next page, the waterfront moved out to expand the harbor for larger amount of cargo ships, ferries, rail tracks and the central station.

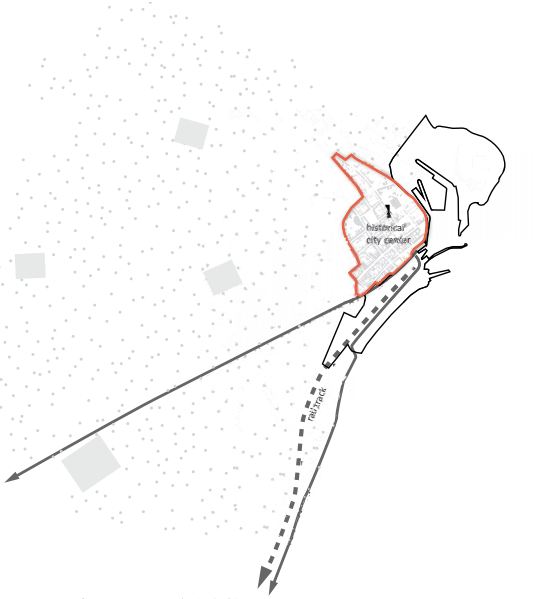


Fig. 103 Area 1: The historical city centre (by author)

The city center can be characterized as a monotone quite closed urban design with narrow spaces.
According to research by Gehl architects (2011), invite the urban spaces primarily for passive recreation (shopping and culture) rather than a more diverse urban lifestyle. There is a week correlation between urban spaces. The existing pedestrian network is undeveloped and not connected to the city center or edge of the city's other destinations. The entrance points toward the city center are undeveloped. (fig. 104)

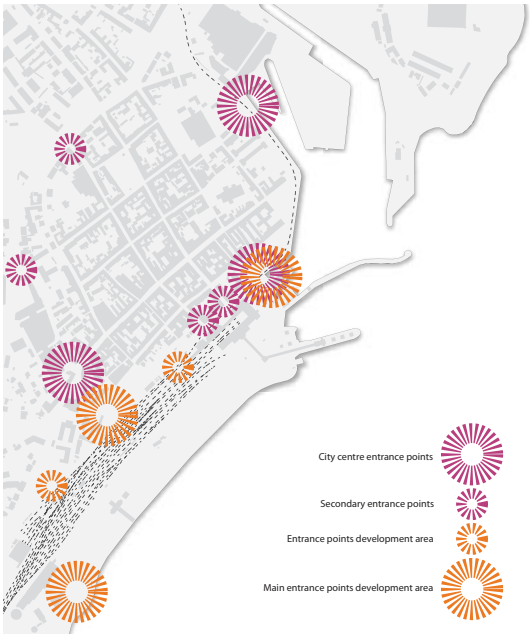


Fig. 104 Unclear entrances and barriers around the city centre and plan area (by author)

The unclear and undeveloped connections are very much visible on the station are side of the city center. There can be found several reasons that cause this unclearness:
Physical barriers, like walls, backsides of houses, and compact vegetation block the visual connection
Narrow streets and alleys are the only entrances to the city; this fits the historical typology, nonetheless combined with the first point it doesn't feel inviting to enter.
Several traffic flows occur between the city center and the train station. Cars, busses, a local train, cycles and pedestrian all use the same routes.
The facilities related with these modalities only aggregate the barrier effect. The main bus stops are located here, the end stop of the local train, several bicycle shelters and an even bigger amount of parking place make the area between the center and the plan area a very unattractive place

Fig. 105 One of the narrow entrances to the historical centre (by author)

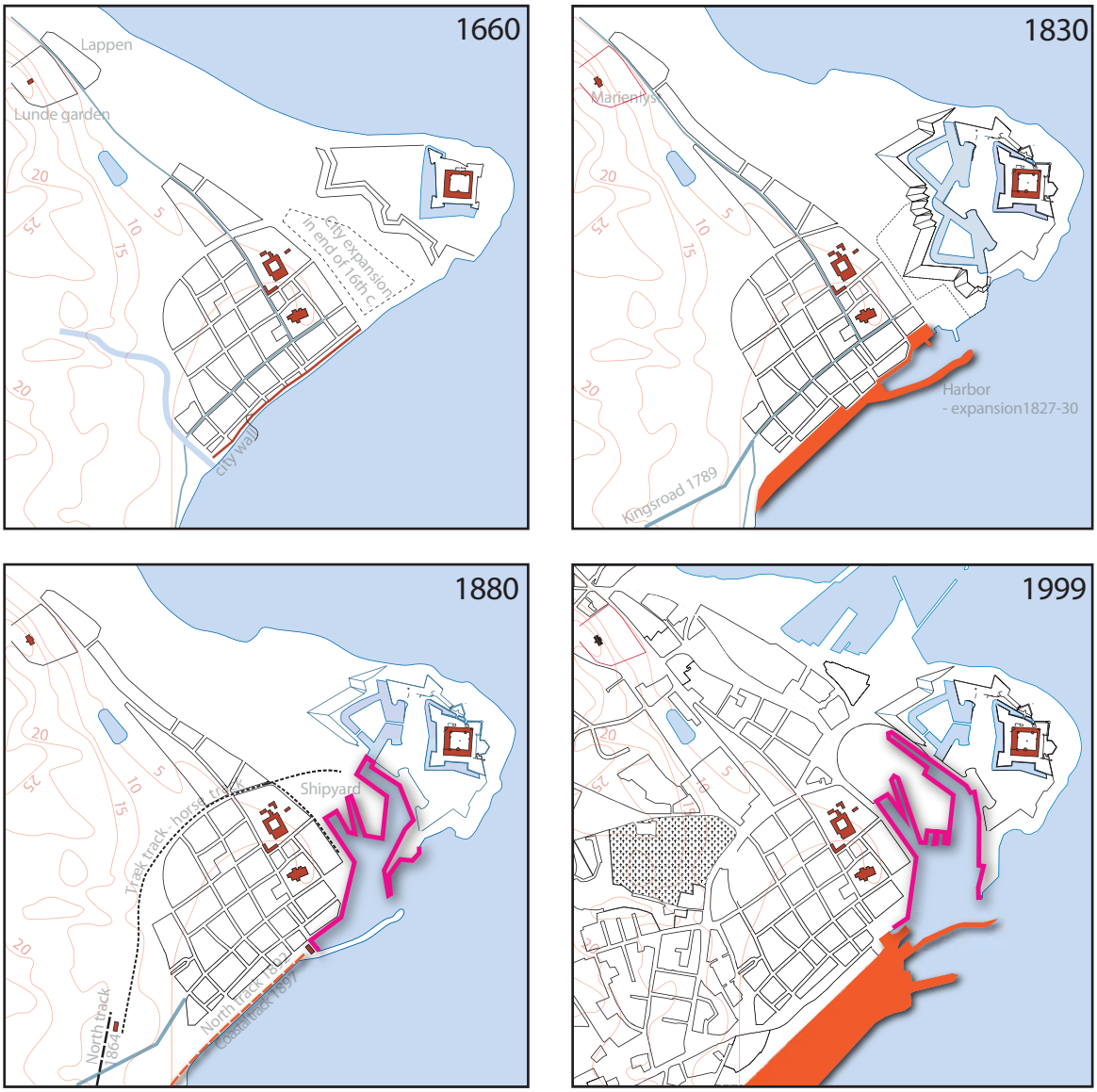


Fig. 106 - 109 The historical development of the city and the reducing relation of the centre with the water (source: Kommuneplan, 2009. Modified by author)

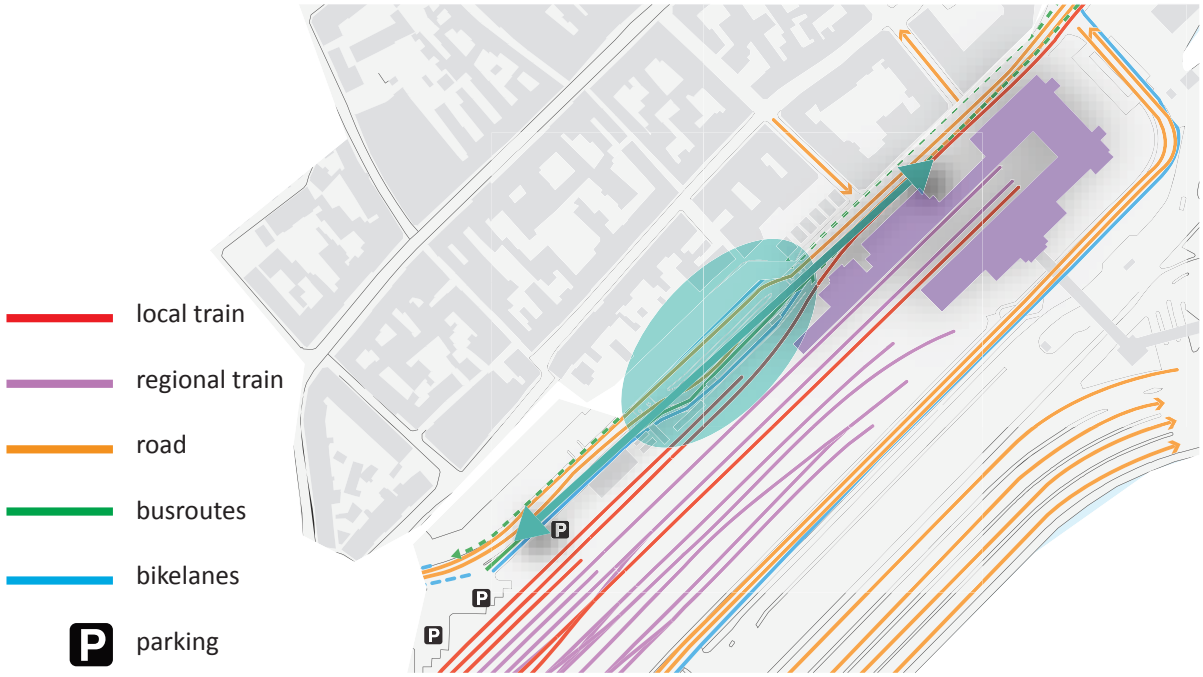


Fig. 110 Traffic flows between the plan area and inner city (by author)

Fig. 111 The local train (picture by author)

Fig. 112 The busstation (picture by author)

Fig. 113-116 No real physical connections between the centre and plan area (pictures by author)

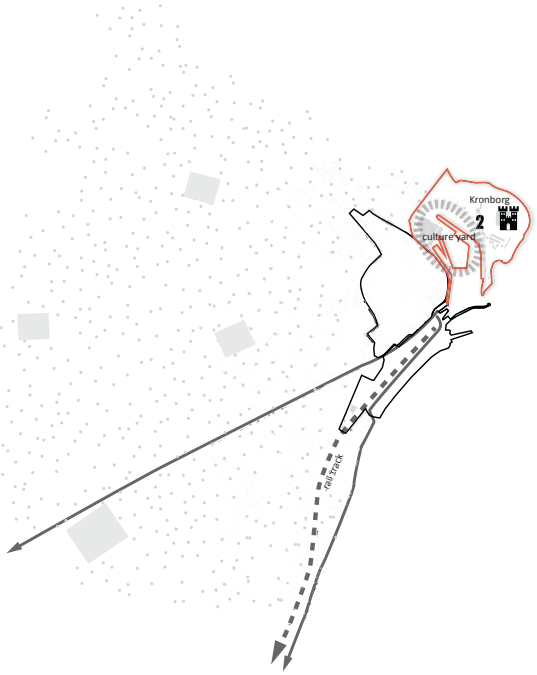


Fig. 117 Area 2: Culture yard and Kronborg castle (by author)

RELATION 2: CULTURE YARD

North east of the city centre the Kronborg castle is located. For many years' industrial and harbour related functions lay between the castle and the city, but at the moment the place is getting transformed and turned in to a "culture yard." These developments enrich the city centre and it adds a fantastic frame. On the map on the next page existing and new projects, including public open space, are indicated. The culture yard consists of e.g. a maritime museum, a modern public library, an aquarium, castle related functions and attractive public space. Expected is an increase of visitors as is also indicated in the map.

The north east side of the plan area overlooks the culture yard. The front of the central station also overlooks the culture yard. This part of the city is also the outer edge overlooking Helsingborg.

This area brings many possibilities for the city and it also increases the possibilities for the development of the design area. The existence of the bay emphasizes the relation that the areas have with each other. The two edges of the bay appear as important places. One edge belongs to the Kronborg castle; the other edge (now the arrival point of the ferries) carries the possibility to develop a building with a similar appearance.

Fig. 118 The new culture yard (source: Damvad)

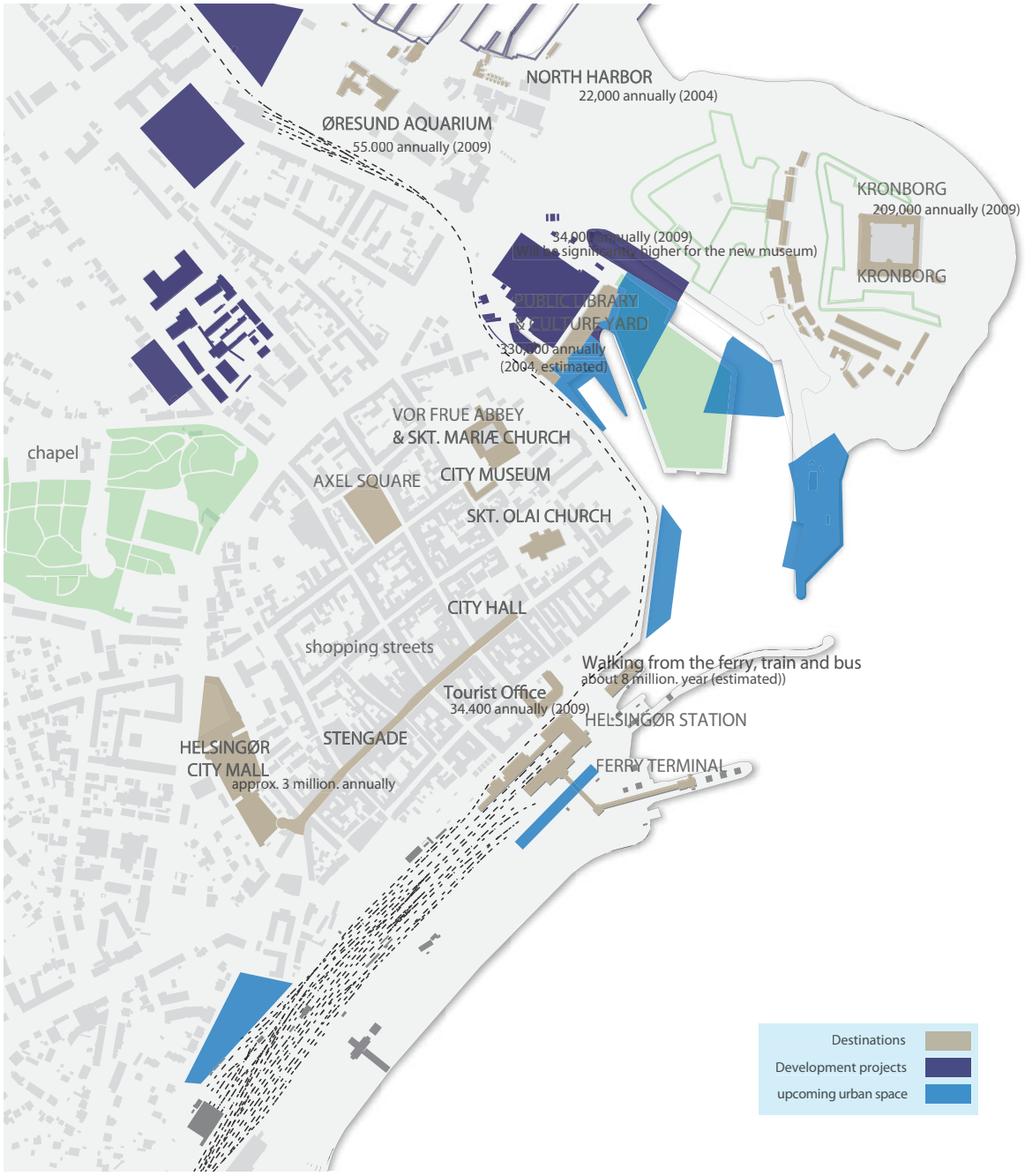


Fig. 119 Existing and new destinations for visitors of Helsingor (by author)

Fig. 120 Towards the culture yard (by author)

RELATION 3: SUBURBS

The urbanized areas outside the city centre can be mainly described as suburban environment. The housing consists mainly of detached houses. Typical for these kinds of neighbourhoods is the isolated individualistic appearance. Residents live in their own little private world with their private gardens. Public spaces are not used frequently and people mostly meet when shopping.

Between the southwest side of the plan are and the suburbs a power station is placed. It is mainly green energy that is being converted and does therefore not harm the surroundings or environment.

Besides the differences in building typology and public space, the spatial conditions of this area distinct this place even more from the city centre.

The area is located over 20 meters higher than the historical centre and the plan area. (See fig 125) The edges are overlooking the city, and this gives also some opportunities: new buildings on the design area would not easily block the view of these houses. Also a visual connection could be made.
The sections on the next page give a clear impression of the height differences. The first section shows the relation of the area plan are and the edge of the historical centre, the other two or cut through the coastal road. These also show clearly how the rail tracks cut the space.

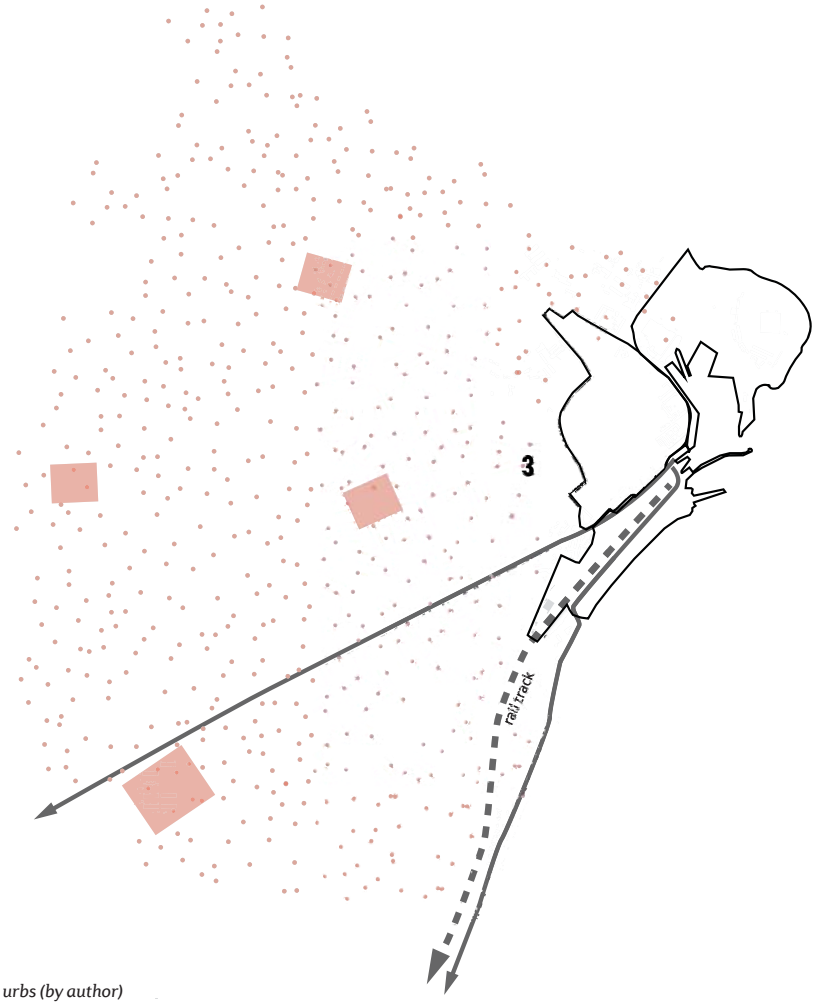


Fig. 121 Area 3: The sub urbs (by author)

Fig. 122 the south east coastal area of Helsingør with indicated sections (by author)

Fig 123 -124 Sections of the south east coastal area of Helsingør (by author)

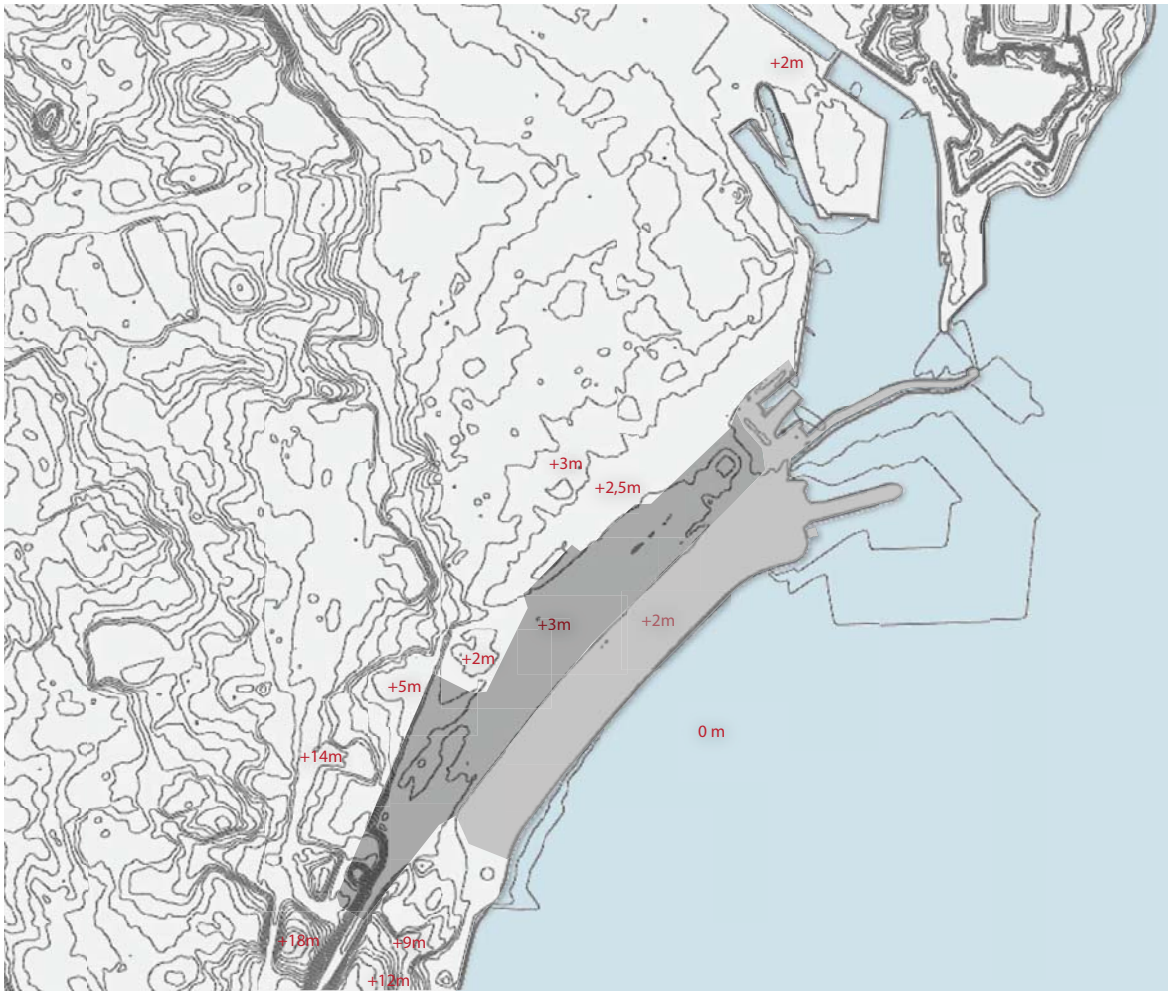


Fig 125 The height differences around the paln area. (Source: Helsingor municipailty, modified by author)

Fig 126The transition of the suburbs to the train and ferry area. (Source: Bing maps)

CONDITIONS: PARKING

The edges of the city centre and surroundings are marked by a large quantity of parking lots. This makes the entrances of the city centre unclear and the overall view of the surroundings unattractive. The parking lots take in a large amount of space and are spread everywhere. Obviously this demands a point of intervention.

Fig 127 Parking lots around the city centre and plan area (by author)

Fig 128 Images of parking lots around the area. by author

CONDITIONS: TRAIN AREA

The 19th century train station is a monumental piece. The new link between Helsingør and Helsingborg will cause extensive changes to the station.

The building exists of a main hall, where stairs lead up to the platforms. On one side the building proceeds along the platform, this is used for office and shops. There are three platforms. Two are meant for the regional train and one for the local train that leads towards the southern villages along the coastline. Outside the station a second local train track leads further north to connect the villages along this side of the coastline.

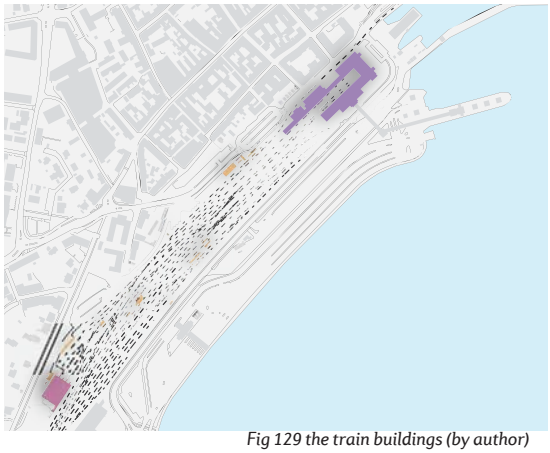


Fig 129 the train buildings (by author)

Fig 130 train station interior(picture : municipality Helsingør)

Fig. 131 Helsingør's 19th century train station (picture from google)

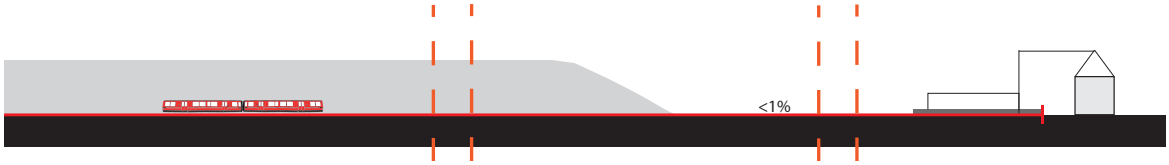
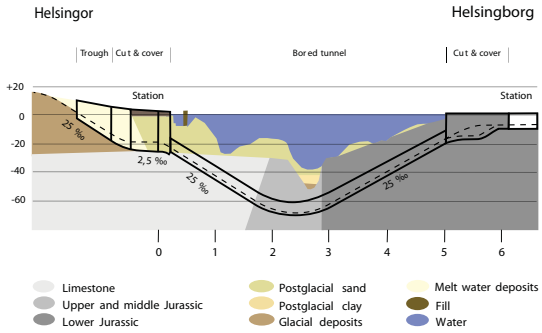


Fig. 132 longitudinal section of current situation of train tracks (by author)

Currently the train station is the end station of the regional train track. This means that it is important to store and switch trains easily. Therefore several tracks are laid out over a big area. But besides this, several unused tracks are also still present. Like the tracks in front of the old train depot and tracks leading to the ferry area, where once the train went on the ferry.
The amount of tracks can be made much more compact, although certain flexibility is demanded for unexpected necessities and future expansions.

Max. slope of passenger train : 1:300 - 1:200
Tunnel min height: 6m
Tunnel width per train: 4,5m
(based on Eurocode)
The tunnel under the Øresund needs to be at least 6km to sink deep enough until Helsingor station



Bored Tunnel, northern alignment. source: COWI

Fig. 133 section of the oresund straight with indication of what depth the tunnels can be placed (Source: IBU)

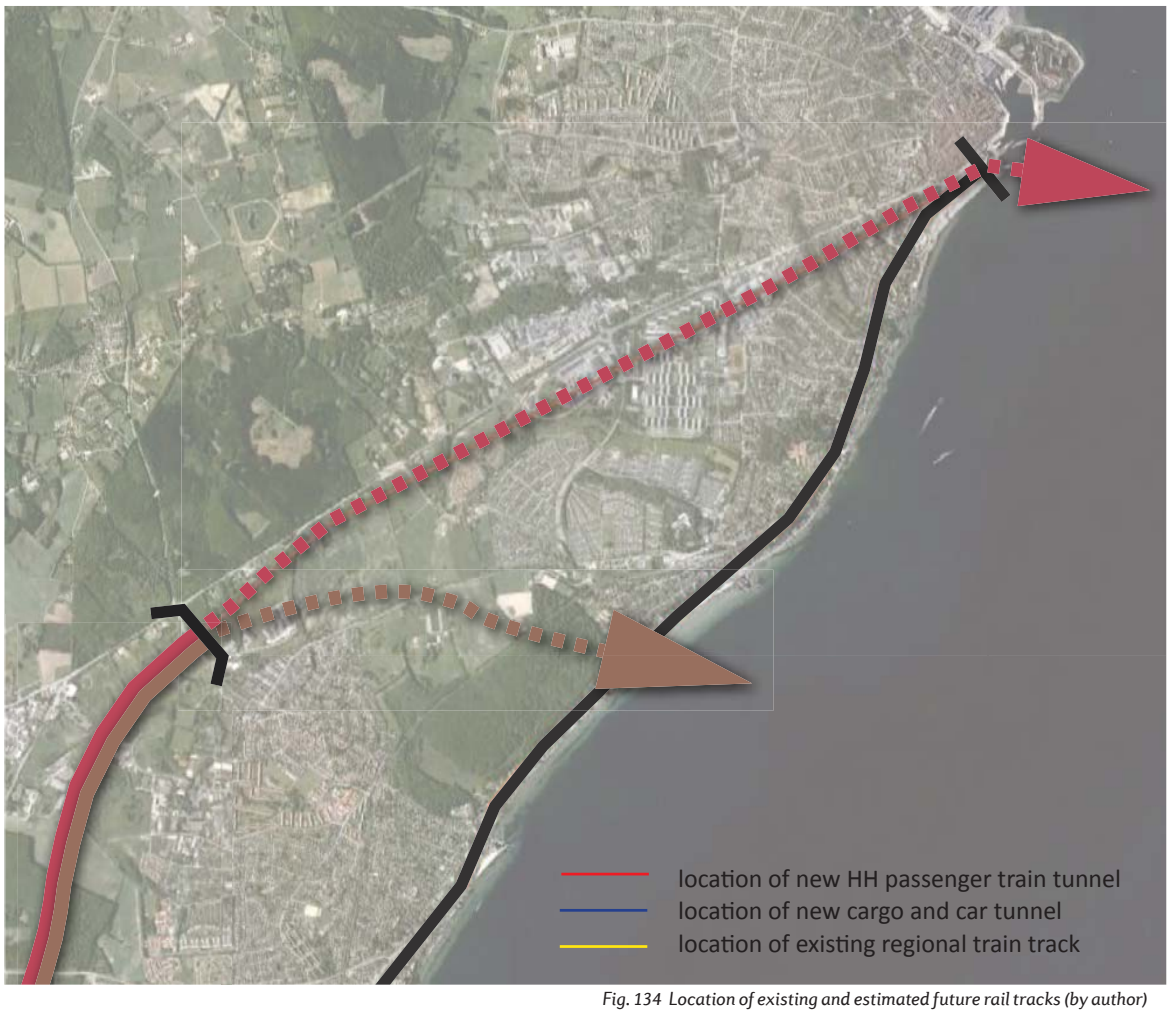


Fig. 134 Location of existing and estimated future rail tracks (by author)

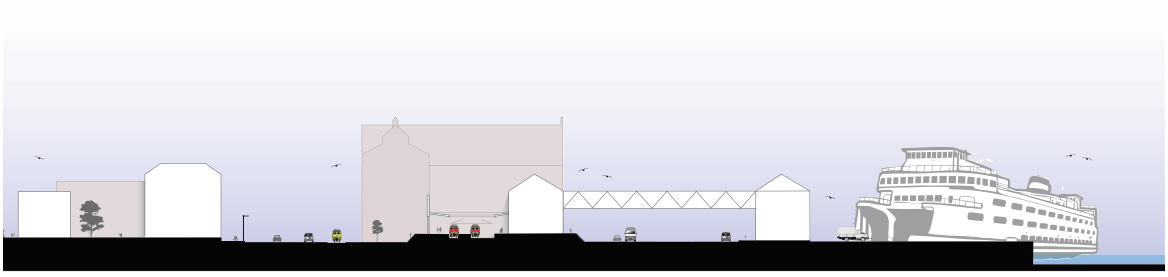


Fig. 135 section trough city centre, train station and ferry area showing the different heights (by author)

As said before the water straight between the two cities is very deep. Therefore the tunnel has to start its descent on a distance of 6 kilometres before reaching the train station (Fig. 134).

The platform to the rail tracks of the new link will be placed 20 meters under the surface. This demands a smart solution on how to reach these platforms without affecting the historical valuable train station.

The surface of the train area is 1-1, 20 meter higher situated than the city centre and the ferry area.

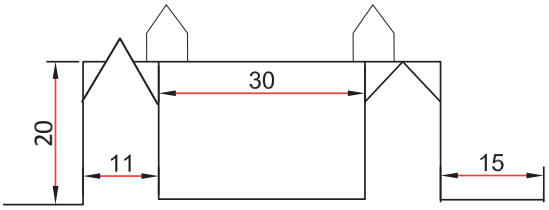


Fig 136 The train station an its dimensions (in meters) by author

The train area consists of rail tracks, which are only partly in use. They take in a great amount of space. An old unused train depot on the west edge of the plan area and several old trains are stored here.

Fig 137 the train driving through the suburbs towards the train station

Fig 138 the old train depot and vacant area in front of it. Picture by author

CONDITIONS: FERRY AREA

The ferry area is encircled by the Øresund water and a road that starts with a roundabout connecting the southern shore, the ferry area and the middle of the suburbs up to the north side of the area to the road between the centre and train area: the Jernbanvej. The area is to a large extent not accessible, other than for users of the ferry. Cars and trucks have to pass a security point before entering the ferry. The main part of the area is meant for traffic waiting to enter the ferry. The main building of the ferry facilities is located next to the train station and accessible from the train platforms. After buying a ticket a long elevated trunk, leads to the deck of the ferry. Other buildings are developed in order to receive the ferry in the harbor. Only on the top edge, in front of the train station, a restaurant is placed. The location for this restaurant is very nice, with a beautiful view over the water, but architectonic the building could use a transformation.

After the establishment of the tunnel, there will be no need at all anymore for the ferry connection to exist. This means that the buildings related to this function could be transformed or demolished after this establishment. Assumed for this project is that the whole area can be spatially transformed.

Fig 139 The ferry related buildings (by author)

Fig 140 Several ferry related buildings, with on the top left, the main building attatched to the train station (by autohor)

CONDITIONS: SUN, WIND AND WATER

The graphs and pictures on this pages show the external conditions that influence the design.

The direction of the sun is advantageous in combination with the location of the water. It is therefore possible to establish outside spaces towards the water on the south west side.

The yearly average direction of the wind also derives from the south west.

The Øresund can be considered as a sea and is therefore less dependent on yearly water level changes. The daily tide is shown in the graph on the next page.

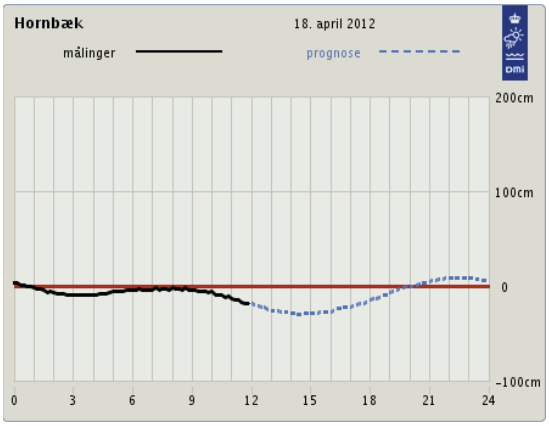


Fig 141 The tide changes on 18 april 2012 (close to average) Source: Danish Weather Institute (DMI)

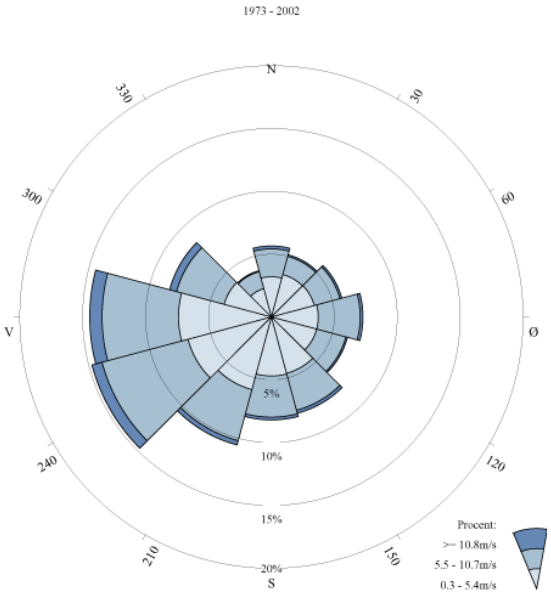


Fig 142 Average wind direction around Helsingor Source: Danish Weather Institute (DMI)

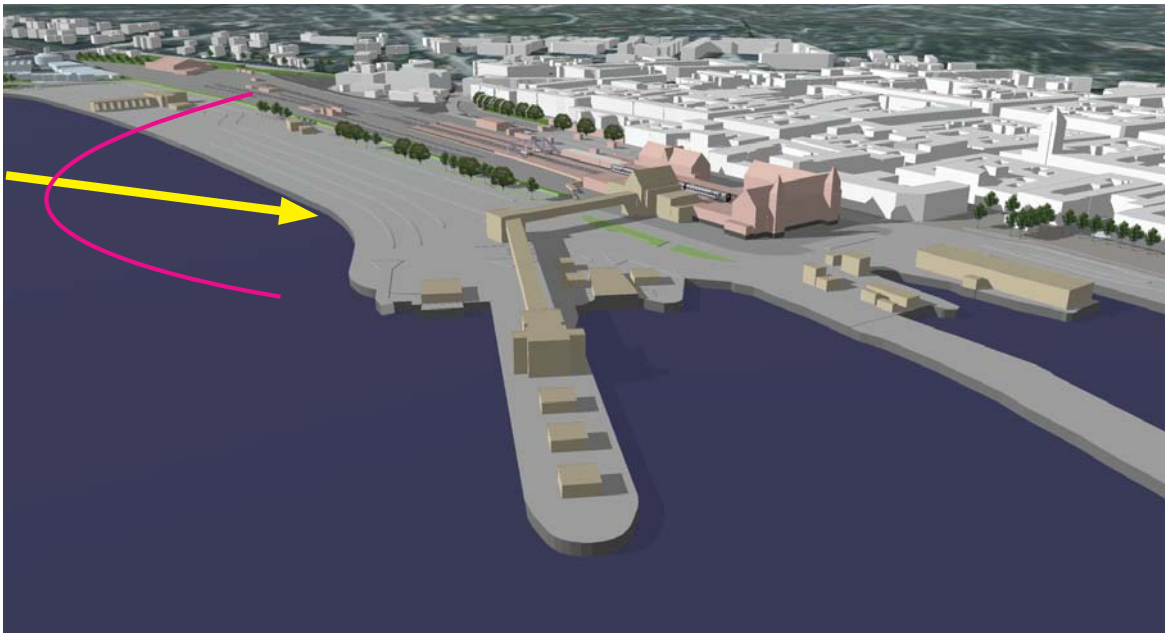


Fig 143 Direction of the sun in the plan area. Images by author

Design challenges & tools

The next part of the project proposes a design for the project area in Helsingør. The following challenges and tools form the base principles for the design, based on previous analysis and theoretical studies.

PROGRAMMATIC CHALLENGES

Programmatic challenges for Helsingør are:
- cooperate with Helsingborg by joining forces on several fields: Helsingør as an attractive extension
- increase cultural supply and make it more accessible for inhabitants
- increase visitors culture yard
- attract a greater variety of people
- attract young people
- attracting qualified labour force
- add quality to living environment
- create a innovating way of living that does not exist yet in Helsingør or Helsingborg
- create an urban environment
- add value to existing facilities
- preserving authenticity and quietness
- cope with the increase of elderly
- attract new businesses for the empty commercial buildings in and around the centre

SPATIAL CHALLENGES:

Spatial challenges for Helsingør are:
- diminish barriers and closed structure of the city centre
- connect visually and spatially with the city centre and culture yard
- use historical structure that determines identity
- connect with the isolated suburbs
- create inviting entrances city and plan area
- find parking solutions for private and public use
- cope with height differences that cut the city in pieces
- deal with intersecting tunnel
- deal with existing train buildings
-deal with ferry buildings

TOOLS:

Tools that will help overcoming the challenges are:
-restructuring traffic flows
-preserving existing structure spatially and/or visually
-emphasize connection (visual)
-use view and extend developments to connect
-restructure traffic and open up where possible
-underground parking and reallocate parking
-use heights to connect and clear up functions of areas
-transform the train station
-(the ferry buildings will eventually disappear) remove or transform existing buildings
-develop design guidelines for housing typologies

B. WHAT KIND OF DESIGN GUIDELINES AND PRINCIPLES CAN BE USED TO MAINTAIN AND IMPROVE THE URBAN COHERENCE OF HELSINGØR AFTER THE IMPLEMENTATION OF THE NEW LINK? (THEORY)

7. HOW TO IMPLEMENT THE POTENTIAL SPATIAL AND PROGRAMMATIC FUNCTIONS IN/OR CONNECT WITH THE PROJECT AREA? (METHOD: RESEARCH BY DESIGN)

VI Design Proposal

CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*

THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Programmatic proposal

On a regional level Helsingør becomes a more important centre. It will be faster connected to main surrounding centres, including Copenhagen, and better accessible from different directions, especially Helsingborg.

It will even be so well connected, that the city can be seen of an extension of Helsingborg. Combining their forces: Helsingør with its attractive, but quiet living environments; its beautiful inner city, museums and Kronborg castle: the touristic highlight of the city. Helsingborg has the typical (high) urban centre with several facilities, various workplaces, it offers higher education and many other functions that serve the local up until the regional scale.
Together they have the potential to form a main centre in the region.

Cultural breeding ground
If the route from Helsingør to Helsingborg and back becomes the touristic gateway on the North of the Øresund, the city still needs some structural developments. The current new developments in the culture yard seem to be disconnected from the closed narrow city centre and the distinct appearance of the suburbs.
The plan area should be seen as the transition between the semi- touristic culture yard and the rest of the city.
This area should be more for the inhabitants, to be able to locally connect with the regional/international function of Helsingør being a touristic centre. It can be a breeding ground for the inhabitants: Where culture, recreation and living come together.

An architectural highlight
The edge of the area, overviewing the culture yard and Helsingborg, the area closest to the train station, is the location where functions/ facilities that serve both the local residents and regional/ touristic users. A multifunctional building, an architectural highlight, overviewing the bay: Functions that can be perceived as local, but with a tiny bit of extravagance: A swimming pool, floating over the water; a (fancy) restaurant; an art-house film theater and a lecture room: all accessible for a wide range of people, a perfect place to arrange festivals that can extend to the culture yard or into the city. There is a place for everyone.

Main hub
The train station with access to the new intercity connecting ring 5 and Helsingborg will attract a lot more users. When the ferry terminal is not in use anymore, presumably the train station will become an intensively used traffic. The train station therefore needs, beside the transformation to be able to access the 20 meter lower platform, also be able to receive more people.

Mixed functions
The program for the largest part of the plan area will be a mix of houses and small business.
It is important for Helsingør to attract a stable work force. This means young families, couples and working singles. The role for Helsingør will be small in developing new workplaces. The people to attract can work in Helsingør, but many will also work in Helsingborg or Copenhagen. It should be an attractive city to live in, that is not only lively in the weekends. Young (urban) people also need facilities, beyond the standard local ones. Consequently it important to attract night life, the hospitality industry and innovative & creative companies, that keeps the neighbourhoods alive, also during the week days.

Fig 144 Impression the new plan area along the coast (by author)

Housing

To attract a variety of people, different housing typologies of different sizes should be developed. Flexibility in size and typology is desired. The houses can be considered as mansions, others as (stacked) apartments.

The living environment should add something to the existing environments in Helsingborg and Helsingør. Therefore a more unique typology should be developed that fits the quite village like lifestyle of Helsingør and at the same time be attractive for young urban groups of people that seek a city like environment. The section that describes the housing typology and design guidelines will go deeper into this matter by describing design guidelines for housing

The amount of housing will also be flexible. As will become apparent in the phasing and feasibility section, it will take many years before the area is developed, therefore there should not be strict plans for the quantity of new houses. This should be decided further into the development

.

But to make the design more concrete, for this project the amount of houses is estimated between 500 and 600 houses, depending on the demand for size. The size can differ between 80 m^2 up to 180 m^2. Different typologies are distributed over subareas, so that every area has an own identity

Underground parking will become a main issue. Every household should have the possibility to park 1,5 cars. This means up to 900 parking lots, visitors not included.

Approximately 60.000 m^2 out of the 155.000 m^2 will be reserved for housing and small business development (respectively 50.000m^2 and 10.000m^2), associated space and infrastructure. This means buildings with an average of 3 to 4 floors, the GFA will be around 210.000, a GSI of 0.38 and a FSI of 1.35.

Other facilities that should be established or transformed are:

- Restaurant
- Local café
- Child care
- local (evening) shop
- Primary school
- Sport facilities
- Underground public parking
- Transformation of the bus station and local train: close to the train station
- City square
- Marina
- Biological shop connected to urban gardens

These facilities should not compete with the existing facilities; they should be a supplement of the existing and add something to the new plan.

Spatial proposal

Fig. 145 Existing urban structure used to obtain spatial guidelines (by author)

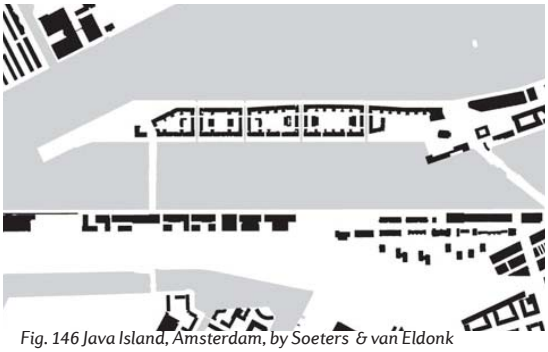


Fig. 146 Java Island, Amsterdam, by Soeters & van Eldonk

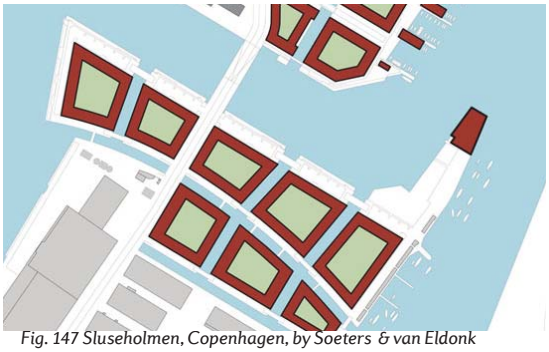


Fig. 147 Sluseholmen, Copenhagen, by Soeters & van Eldonk

The spatial design is based on several conditions and aspects, many of which have been discussed in the previous sections.

The main guidelines area based on developing a relation with the other 3 areas: the suburbs, the historical city centre and the culture yard.

Heights, existing structure and views form the main grid on where to build on. The aim is to emphasize the original relation with the water and to even bring the water towards the edge of the historical city centre.

The spatial structure is inspired by several projects (see appendix), but mainly it is enthused by the assembly of two projects of Soeters: the Java island, in Amsterdam (Fig. 146) and Sluseholmen in Copenhagen. (Fig. 147)

Architectural guidelines are limited to building heights, spatial effects and the use of a light visual determining building typology.

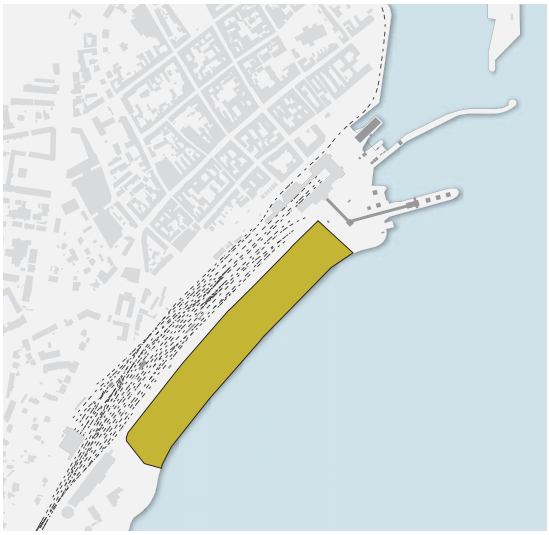


Fig. 148 Seperating the ferry area to create an independent area directed to the waterfront (by author)

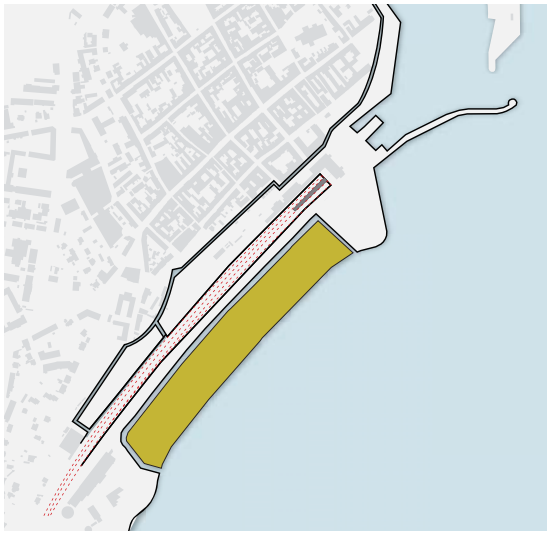


Fig. 149 Bringing the water into the plan area unto the historical centre and smoothing the north east egdes and remove all unused tracks and reduce and compress the rest to a minimum (by author)

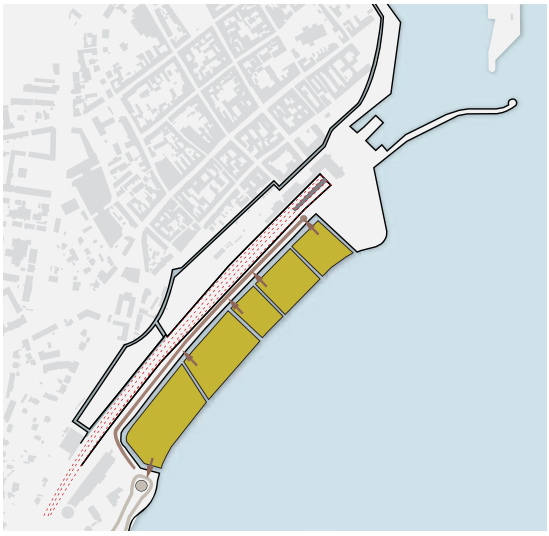


Fig. 150 Cutting out exisitng strucutral lines from the city centre and sub urbs. Connecting the 'islands' with the relocated road (by author)

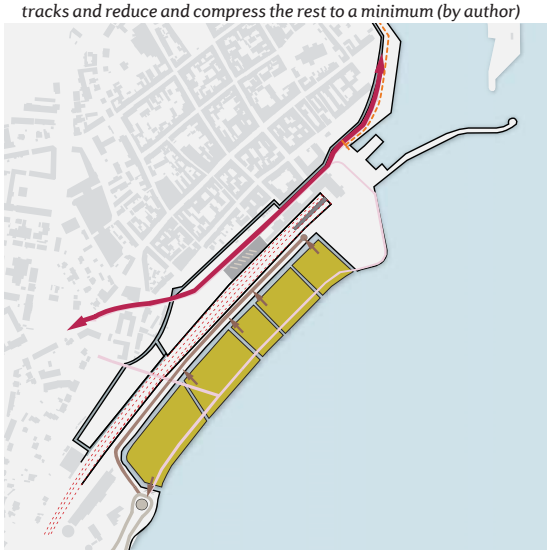


Fig. 151 Adding bike and pedestrian roads, move the busstation (by author)

Fig. 152 Place facilities on strategic locations around the area (by author)

Plan

The map on the right shows the plan for the area. The sections below show the width of the areas on two places. On the next pages, one by one all the aspects of the design will be discussed.

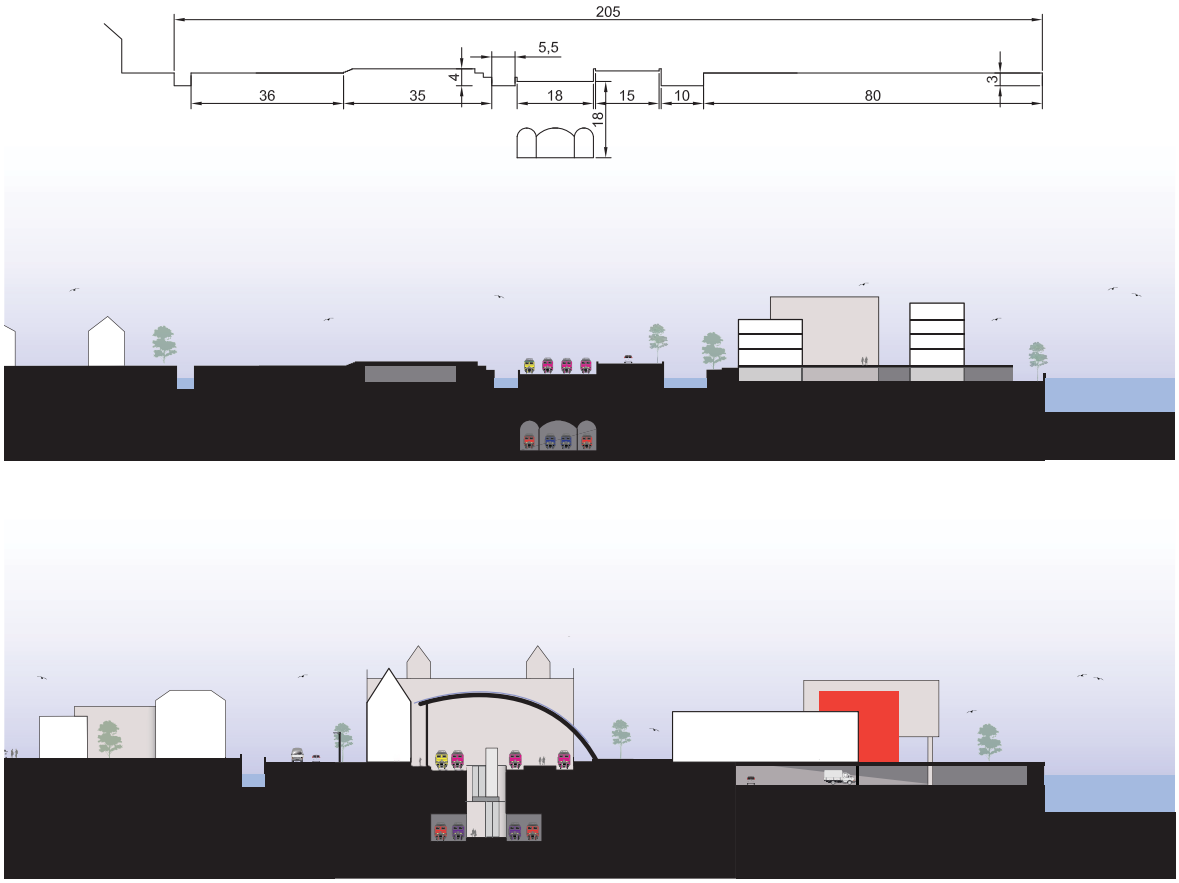


fig. 153 & 154 sections through the middel of the plan and trough the station (by author)

fig. 155 New plan area (by author)

Housing

An important theme in this project is the living environment. The way of living should be different from the existing typologies and living environments in Helsingør and adds a new experience to the city.
The building typology used for the design has to fit the program and the suggested variation of target groups. In general these are young higher educated working people, possibly with children.

In general this group prefers a more urban living environment. To realize this I looked at the other bigger cities in the Oresund where many young working people live. My interest especially fell on the Copenhagen urban blocks. These sometimes closed, sometimes half open apartment blocks are characterized by their community use of the courtyards. They often exist of big yards or squares with children's playgrounds, cycle shelters and garbage disposal. Some have small private terraces that look out over the courtyard. Almost every block in Copenhagen works with this principle and most of the city consists of these blocks.

Most of these apartment blocks are built between 1900 and 1929. After this other typologies where used in the light of le Corbusier's ideas and others, as in many cities throughout the western world. In the eighties the success of urban blocks was rediscovered and ever since many new developments are established according this building block principle.

In the appendix the (for this project modified) results of a study by Gehl architects is added that describes the conditions and characteristics of Copenhagen's building blocks. The conclusions of this study can be found in the next section.

Fig 156 Vesterbro, Copenhagen. source: Bing maps

1900 closed blocks
After it was possible to extend the city behind the ramparts surrounding the center a large number of blocks in the Copenhagen bridge neighborhoods where constructed. Because more light and air was required the design was influenced and the blocks became larger with fewer back buildings and without inner blocks.

1920 open block
Around 1920 the blocks became more open in one corner to increase the light into the Copenhagen backyards. This is the beginning of the dissolution of the block - for a while.

1930 Terraced houses
In the 1930s functionalism created the development of terraced houses.. The closed block dissolves and balconies are added - a component incorporated into a large part of the future settlements.

1950 Apartment flats (point buildings)
Multistory apartment building are increasingly used as a solution for the masses that in this time desire a form of detached houses as the most radical move away from the block. Since the buildings appear as points, not formed with courtyards, this seems to be a solution at that time.

1970 Back to closed blocks
In the late 1970s there was a revival of the classic ideal of building and also the blocks were reinterpreted – both the fully and partially closed.
There was also a conversion of existing courtyards, what caused more back buildings to be destroyed. The development of the courtyards was subsidized by the former Green Garden movement, which was funded by urban renewal funds from the State and the Municipality of Copenhagen. These courtyards were typically established as closed for the public.

2000 The block is opened again
Around the year 2000 opened building blocks turn up in many new developments, which is evident in new neighborhoods like Ørestad and Sluseholmen. Simultaneously, designers experiment with other building and courtyard types, but the open form is prominent in newer estates.

CONCLUSIONS FROM THE STUDY BY GEHL ARCHITECTS (SEE APPENDIX)

- When courtyards are open for public it becomes difficult to indicate who's owning the place, this can lead to conflict or less use of the space. Big courtyards feel also more public then smaller ones. Also the amount and distance of other public space in the neighbourhood determine the use.

- Records indicate that the transition zones are crucial to whether the open form works. And perhaps the success of ground floors is essential and not whether there are open or closed spaces.

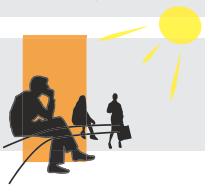
- Open courtyards can be a little more unsafe for children. This, because of more outsiders visiting the place and spatial elements like water or busy roads.

- Open courtyards are more attractive to stay, because of more life and the open character that it has that make the residents accept this liveliness.

- In open courtyards it is more important to show what places are private and which are public. Still it is attractive for residents to have certain functions that are especially for them, so that it is not just a city park, this is what closed courtyards have much more.

- Play options play a very important role in courtyards to attract people. Depending on what is desired, different activities can attract more or less outsiders. Children's playground attract the most life.

- Several external and internal conditions like sunlight and the design of the courtyard determine the use of courtyards.



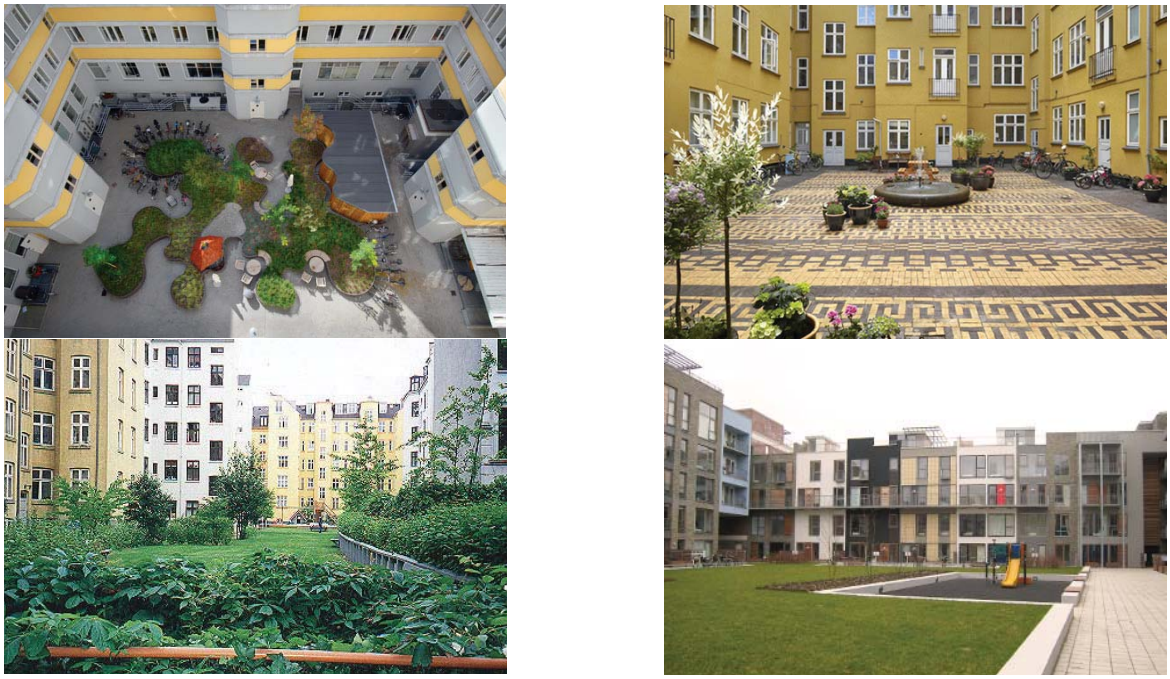


Fig .157 - 160 Courtyards of Copenhagen. source: google

HOW CAN WE USE THIS FOR HELSINGØR?

For the Helsingør plan the vision is that inhabitants enjoy the possibilities from their own little piece of city that is brought in by the new link. The area around the nod has a very cultural function that attracts (international) tourist. The transition area from this almost international centre into the local areas will be reflected into the design area. The building blocks represent this transition in the way of how the inhabitants could interact. They get the opportunity to gather in community courtyards and are therefore less inclined to retreat to there more isolate detached houses, like most of the houses in the suburbs of Helsingør.

Because Helsingør needs to attract young working people that often have children, the urban block fits very well with this group of people. The idea is to maintain a certain transition between the existing neighbourhoods and the new. The surrounding residents should not be feeling excluded from the new area and are therefore welcome in many different courtyards of these new blocks. Children will be able to play here and adults can use the many possibilities of several activities that will be established in the new area.

The scale of the blocks and courtyards will off course be different from the Copenhagen blocks. The buildings will be lower and the yards can therefore be smaller to still receive enough sunlight. This can also make it more pleasant for residents to feel more safe and contained.

The next section will discuss some more aspects related to this study and introduce the design guidelines for the buildings.

URBAN BLOCKS AND PARKING

There are different housing typologies in the area. This is done because of the visual necessity to create variation in the plan but also to be able to attract different kind of people. The housing typology of the area is strongly inspired by the building blocks and courtyards of Copenhagen. Open blocks or community space by surrounding buildings is created to get a similar kind of environment. A more city like environment than what is common in Helsingør.

On this page a few of the studies are shown on how the relation with the water, the train and the inner city should be made. A few conclusions are: buildings should get as much sun as possible; they should be as much surrounded by water as possible so that buildings on all sides can sense the presence of the water; the amount of traffic should be very low, or even totally abolished and there should be underground parking.

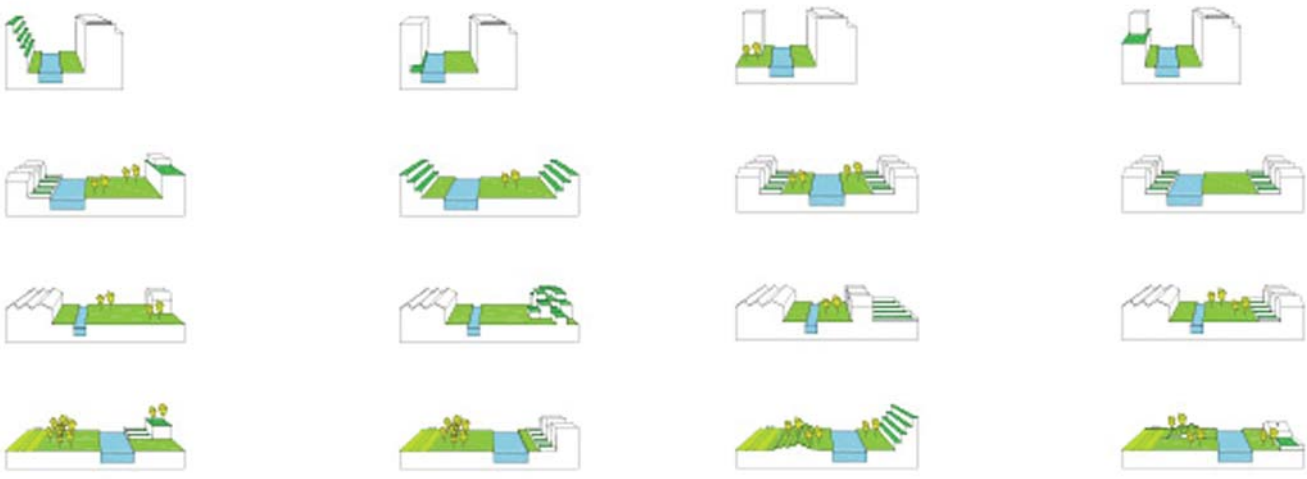


Fig. 161 Studies of buildings and their relation with canals (by author)

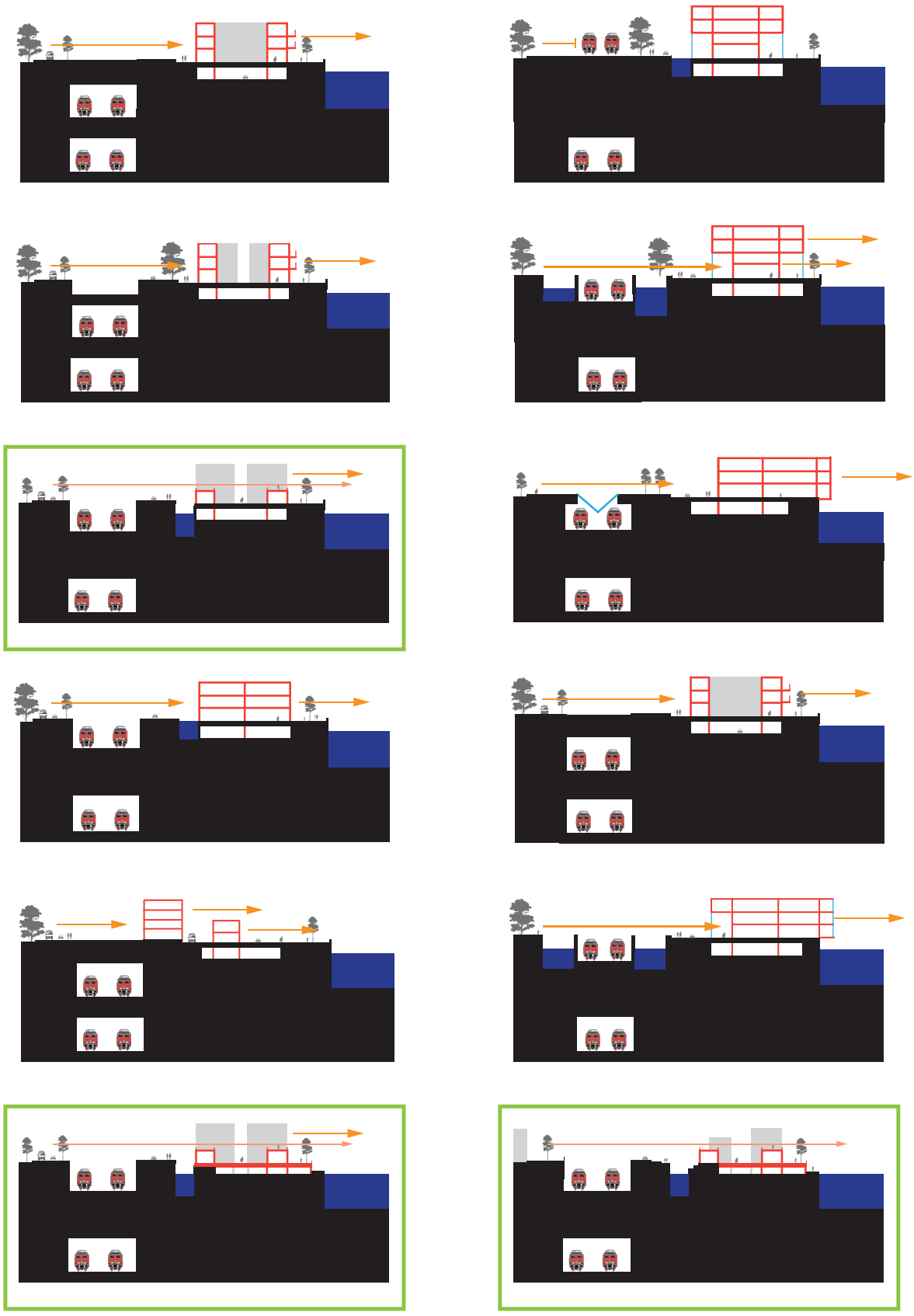


Fig. 162 study of sections of the plan area (by author)

During the development of the design the buildings and the parking were in a way growing more and more together. The result was a big underlying box, which is located under the more building blocks considered as floor -1 within a bigger all combining building: On top of the box the level seems to be the general surface. Apartments/ mansions are built on top of the surface and stick trough the surface to the bottom. The buildings are so to speak, extended into the basement.

This brings up the possibility to create a whole structure were residents can drive down to this space, park their car inside or in front of their house on floor -1, and go up with the elevator or stairs to their apartments. On the ´ground` floor (on top of the box) there is now a world without cars, the ideal place for children to play and to enjoy the tranquillity while enjoying the view over the water.

Together floor -1 and the rest of the apartments can be considered as one whole building that is accessible from -1 (by car, bike or foot) and the ground floor (by bike or foot) Overhead, the buildings seem separate with lots of open space and green in between. (See fig. 163)

The upper apartments are accessible from a gallery along the courtyard on every floor. Floor -1 is accessible in the same way. The circulation is similar on every floor. (See fig. 165 & 166)

Page 113 -115 show a detailed plan of one of the buildings in the design (area 4) Apartments on the ground floor have an extra space along the outer edge of the box. They can enter this room through the box level and take the stairs in the room to the rest of the apartment: Ideal for families that seek for some extra space.

Buildings with multi storey apartments have more parking spaces in the middle of the -1 floor.

The -1 storey must be very well illuminated. Therefore several roof windows should be made.
Besides light, another point of safety is the degree of accessibility of the spaces. In this plan the spaces under the residential/mixed areas are only accessible for residents or employees. Visitors can park along the road next to the train tracks, before entering the areas.

The apartments can have as many floors as desired. In this plan the exact amount of floor is flexible. The guidelines are limited to the direction of sunlight and a maximum height of four floors to not form a massive block that cuts of the visual relation of the inner city with the water. The buildings are built on a grid of 10 by 8 meters. The smallest apartments are therefore max 80m2 and bigger apartments are in general a multiplication of this: a double apartment has an attractive size for a family with children.

The -1 level of the building can as a variant also completely be placed under (more expensive) or on top (cost saving) of the existing surface. Due to the conditions of the location I have chosen for a half deepened solution, to overcome high costs and unnecessary blocking of views. In this way the building is also from the outside considered as a building block and not as one huge block.

The drawings on the next pages give clear impressions of the typology that is used for the design.

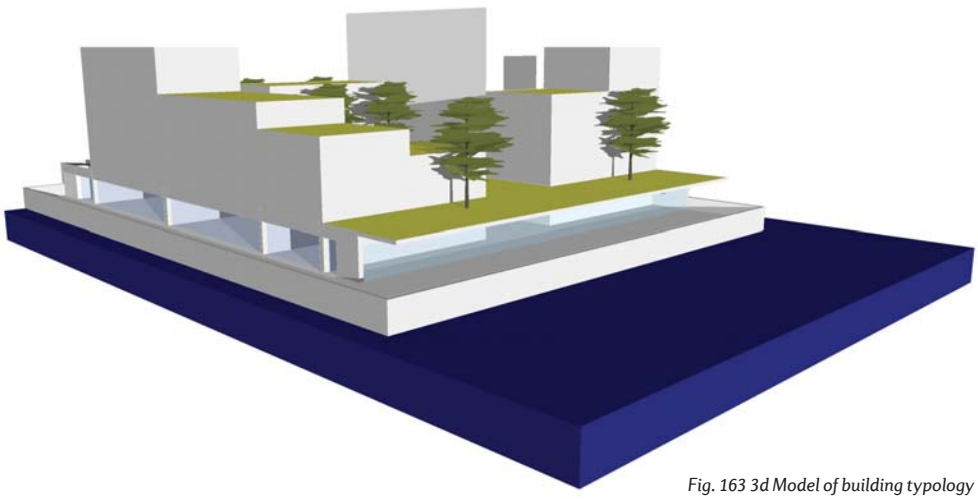


Fig. 163 3d Model of building typology (by author)

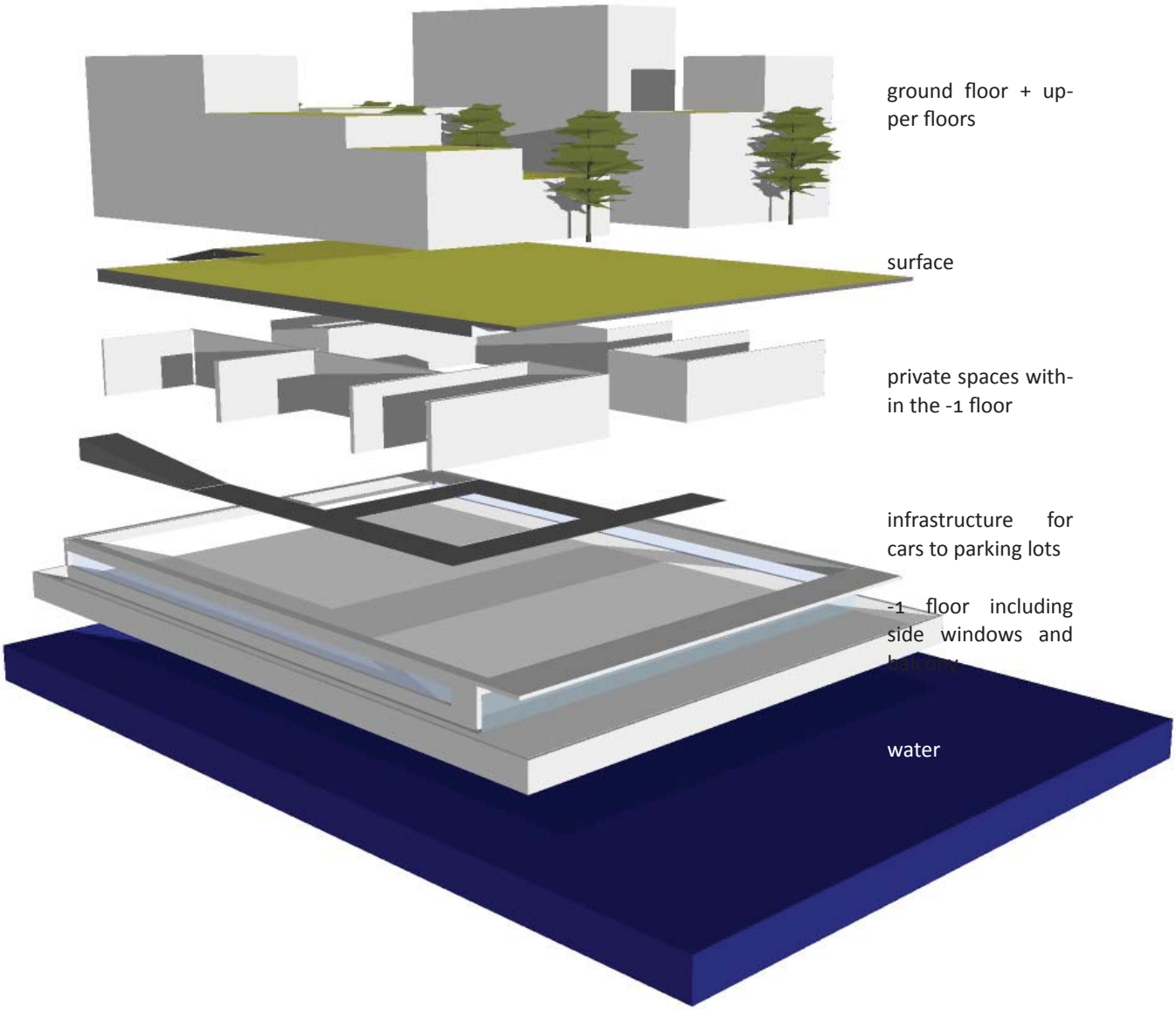


Fig. 164 3d Model of building typology: unraveled (by author)

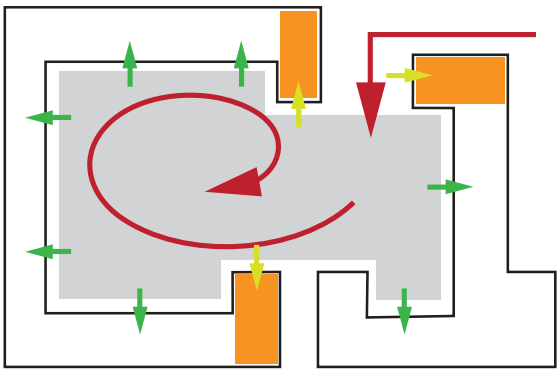


Fig. 165 Basic circulation of level -1 (by author)

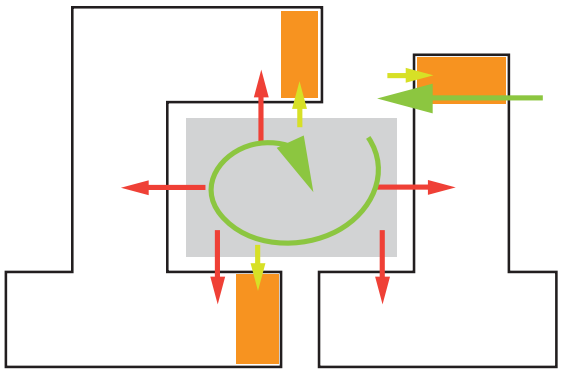


Fig. 166 Basic circulation of storeys (by author)

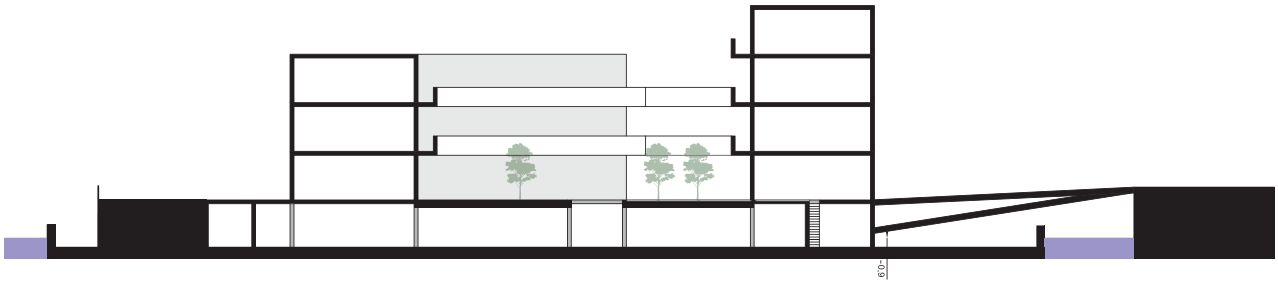


Fig. 167 Section of variant 1: basement is fully deepened ((by author)

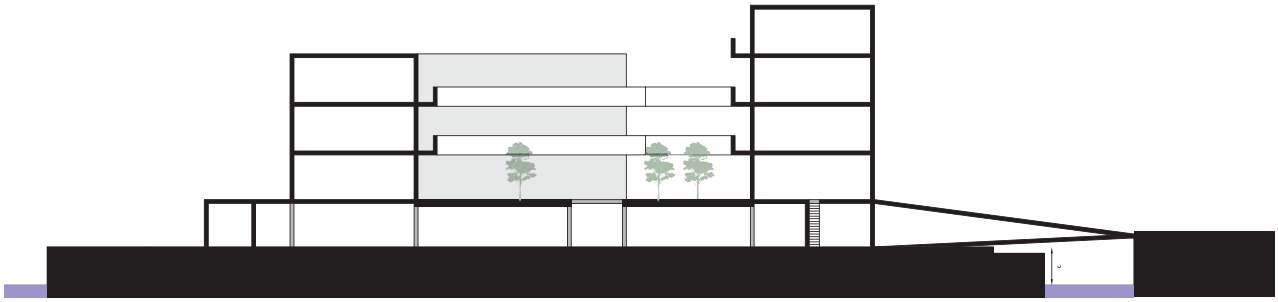


Fig. 168 Section of variant 2: basement is fully elevatied ((by author)

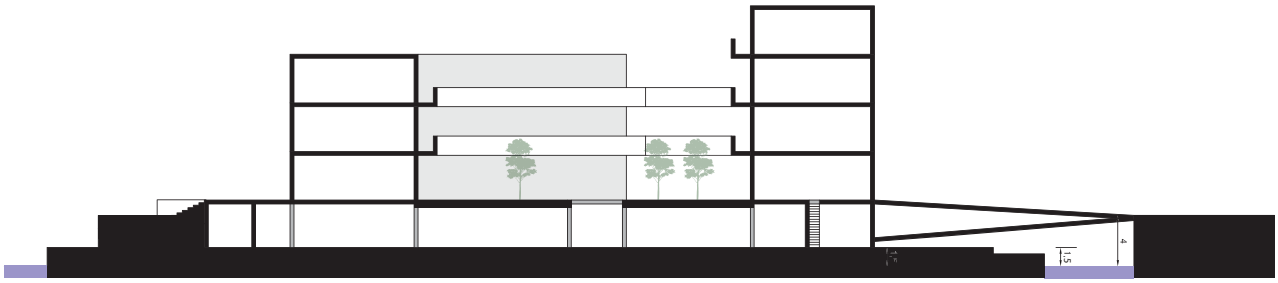


Fig. 169 Section of variant 2: basement is half deepened ((by author)

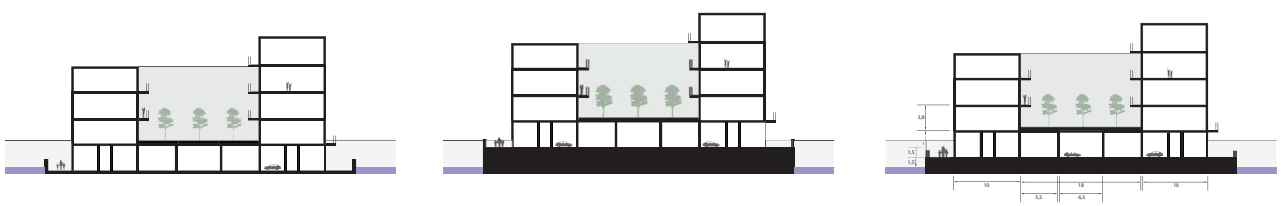
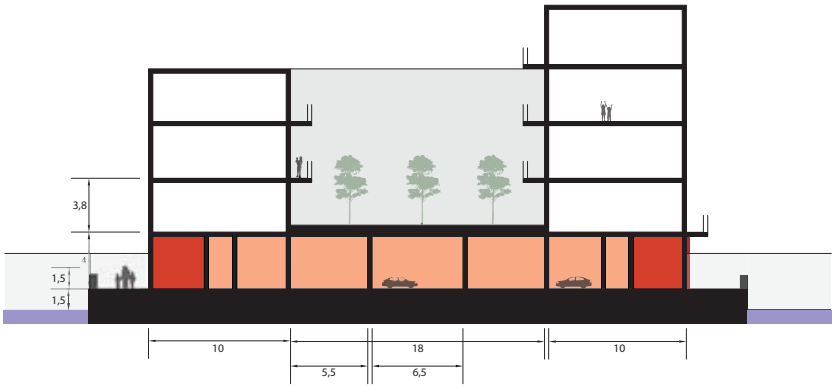
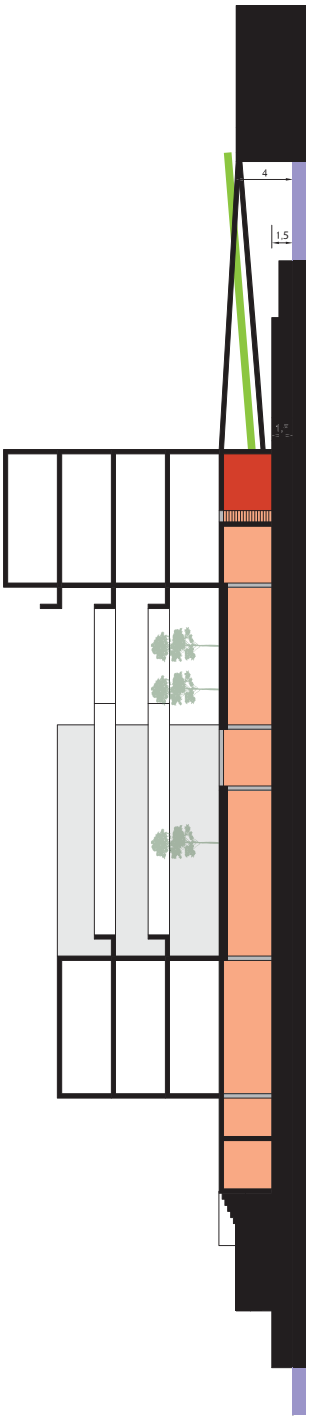


Fig. 170 Cross sections of all 3 variants ((by author)

-1

Fig. 171 Level -1 of the building: Shown in green is the movement of two cars that access the building from the outside road. After parking, the drivers step out and access their apartment if they live on the ground floor or walk to one of the elevators or stairs to go up to their apartment. This floor contains spaces as an extension of the ground floor apartments, storage rooms for the other residents, space for garbage disposal and access to the outside "balconies" (by author)





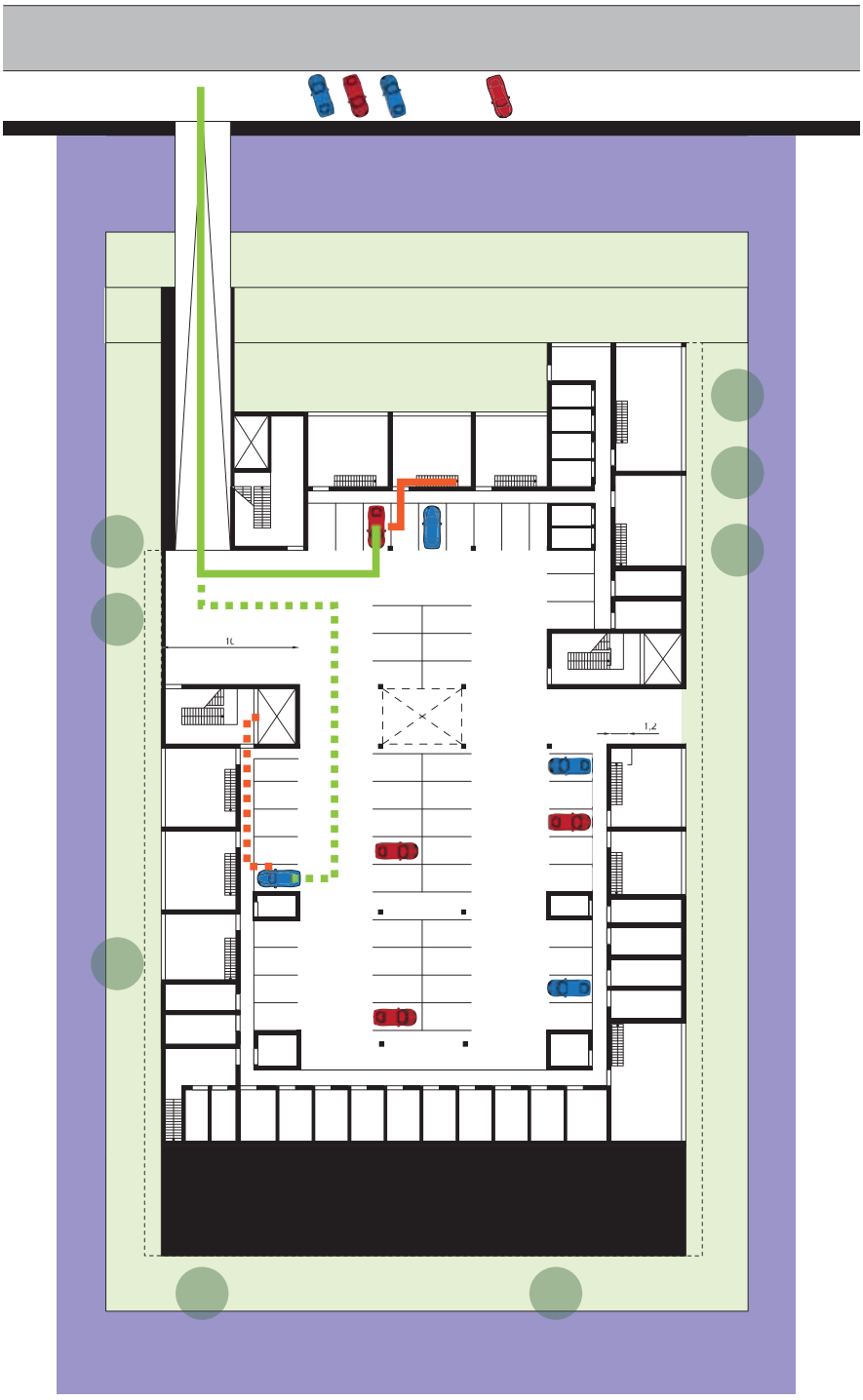


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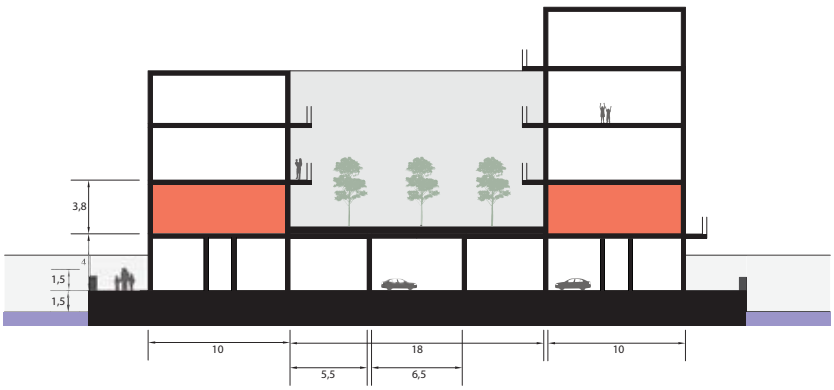
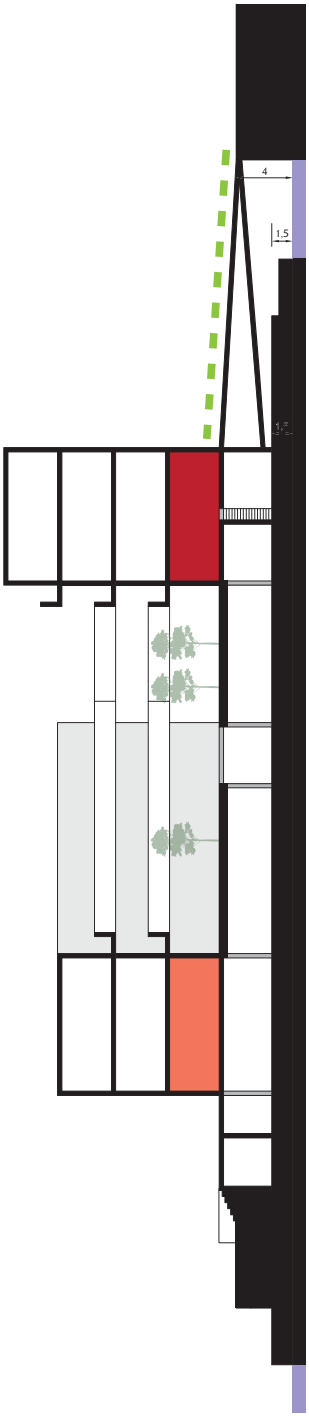
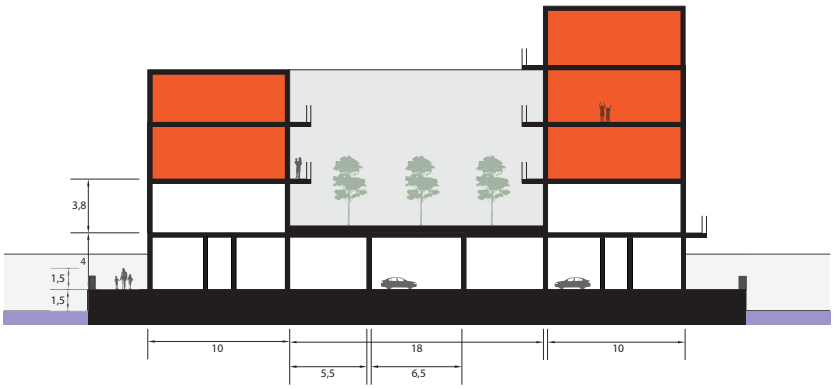
Fig. 172 Level 0 of the building: People on foot or bike can access the building also on this floor from the road, but also from the other side where the building is connected to a biking lane and pavement. From here they can go to their apartment's trough the courtyard or go up and walk along the courtyard. This floor contains apartments that are directly connected to the common courtyard (with playground, garden and other facilities) and are therefore most sufficient for families with children. There is also a view towards the basement. (by author)

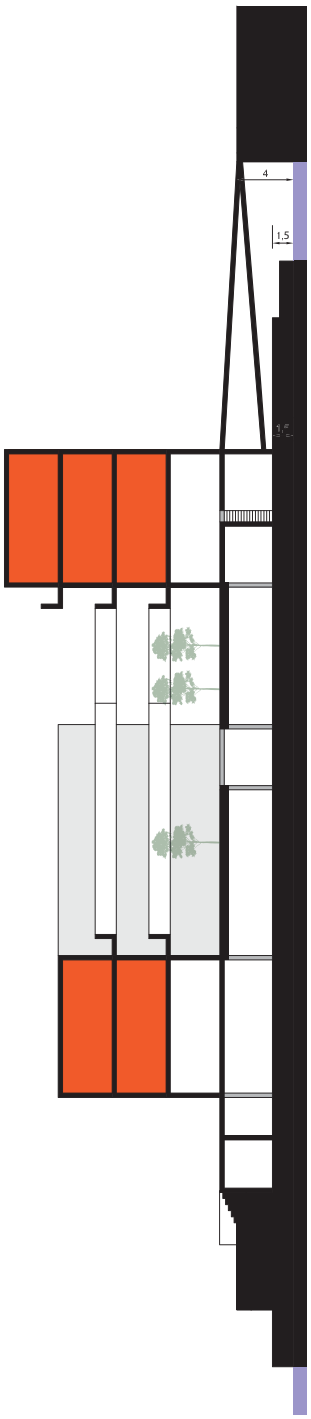




1+

Fig. 173 Level 1+ of the building: On this floor all the other apartments are located. They are accessible by staircase and elevator that connect to balconies that go around the courtyard. This makes the relation with the courtyard also more apparent. (by author)





Details of the plan

Fig. 174 The result of the use of this typology: an undergound world (by author)

Fig. 175 Housing area 1 (by author)

This area consists of approximately 100 houses and 15 offices. The houses are most closely situated to the suburbs. Their typology can also be considered as most close to the suburban areas. The urban gardens lay next to this area. The houses have private gardens and use underground parking; there is also community space with playground and other community facilities. The houses are ideal for bigger families. They consist of two floors and an attic. The houses don't use the typology as described before. The buildings use solar panels for heating and cooling.

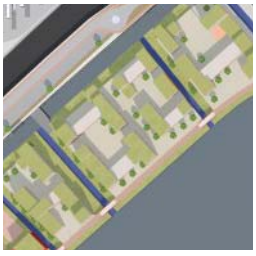
Fig. 176 Housing area 2 (by author)

Approximately 150 - 200 apartments with varying amount of storeys. The upper storeys use the roof tops of the neighbouring apartment as outside space. On the ground floor residents have the balconies on the -1 level. Therefore there is unseeingly more space. The houses use green roofs to filter water.

Fig. 177 Housing area 3 (by author)

Around 100 apartments. The buildings consist of stacked apartments. All residents have access to the -1 level to enjoy the outside space. Apartments have balconies or private gardens. They also have community space.

Fig. 178 Housing area 4 (by author)



The typology used here is most close to the half-open building block. The apartment blocks vary in height and storeys. There is underground parking but no balconies. These houses make use of the courtyard. Living here means more community lifestyle. Altogether 150 to a 200 apartments can be established here. Also space for companies is available. All the buildings have green roofs. The buildings in the middle are never higher than 2 storeys, in this way sunlight can always enlighten the courtyard and it will not block the view unnecessary for the other side of the rail towards the water.

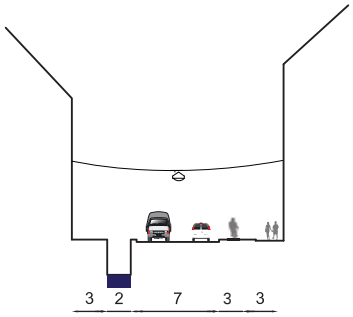
TRAFFIC FLOWS

The new link will not only connect Helsingør and Helsingborg with a passenger train, south of Helsingør will be also a highway tunnel crossing the Oresund. This will cause a declining of cars in the city, currently using the ferry to cross the water.
Nonetheless, the road between the historical city centre and the train station, the "Jernbanvej" will have a more important function: It will lead all the traffic from the suburbs along the station to towards the culture yard. It will be the only road to the train station.

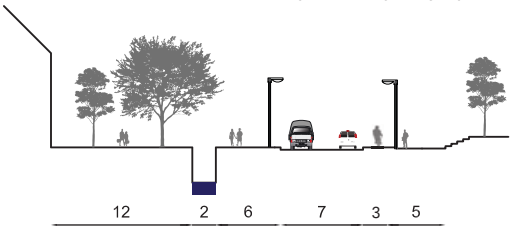
The other road, between the ferry area and the train tracks has been transformed into a channel. A new road situated higher and more toward the new train tracks will have a lesser importance, and will only be used by destination traffic.

The residential area is only accessible by car for residents. A more detailed description will follow in the section of design guidelines for the housing typology. Along the coast a cycling path is located.

Other main flows are the declined amount of train tracks, lowered to diminish the sound effect and not dominate the area, but high enough to be able to give passengers a view from the train. It will be a much cheaper solution than a deeper tunnel that is completely underground. More about the tracks in the next section that is about the train station.



Sections of Jernbanvej, image by author



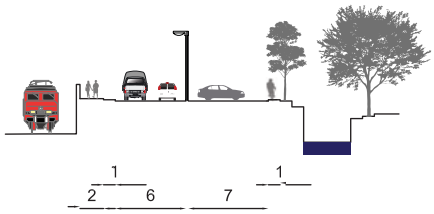


Fig .179 Sections of middle road along train tracks (by author)

Fig. 180 Impression of the end point of the new road and channel along the housing area, with on the left the train station (by author)

THE TRAIN STATION

The renewed train station can become a stunning piece of architecture as the entrance of the city. The new connection demands a transformation of the train station and surroundings. This section gives impressions how this is done for this plan.

The existing regional track will be lowered, this will change the use of the existing building, as it will be on the same height as the entrance, but outside the platforms will be situated lower. A new roof will cover all the platforms. The underground platforms will be long enough to receive extended trains and have the capacity to have to trains in a row, as there will be only to tracks.

Fig. 181 Reference: interior of the Antwerp train station (picture by author)

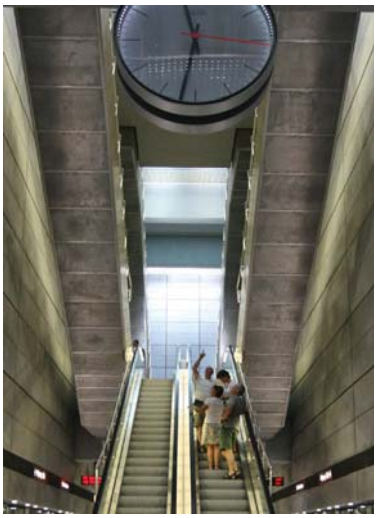


Fig. 182 Reference: interior of Norrebro metro station, Copenhagen

Fig. 183 New situation of train tracks crossing the area. With on the left side, the new city square and on the right the housing area. (by author)

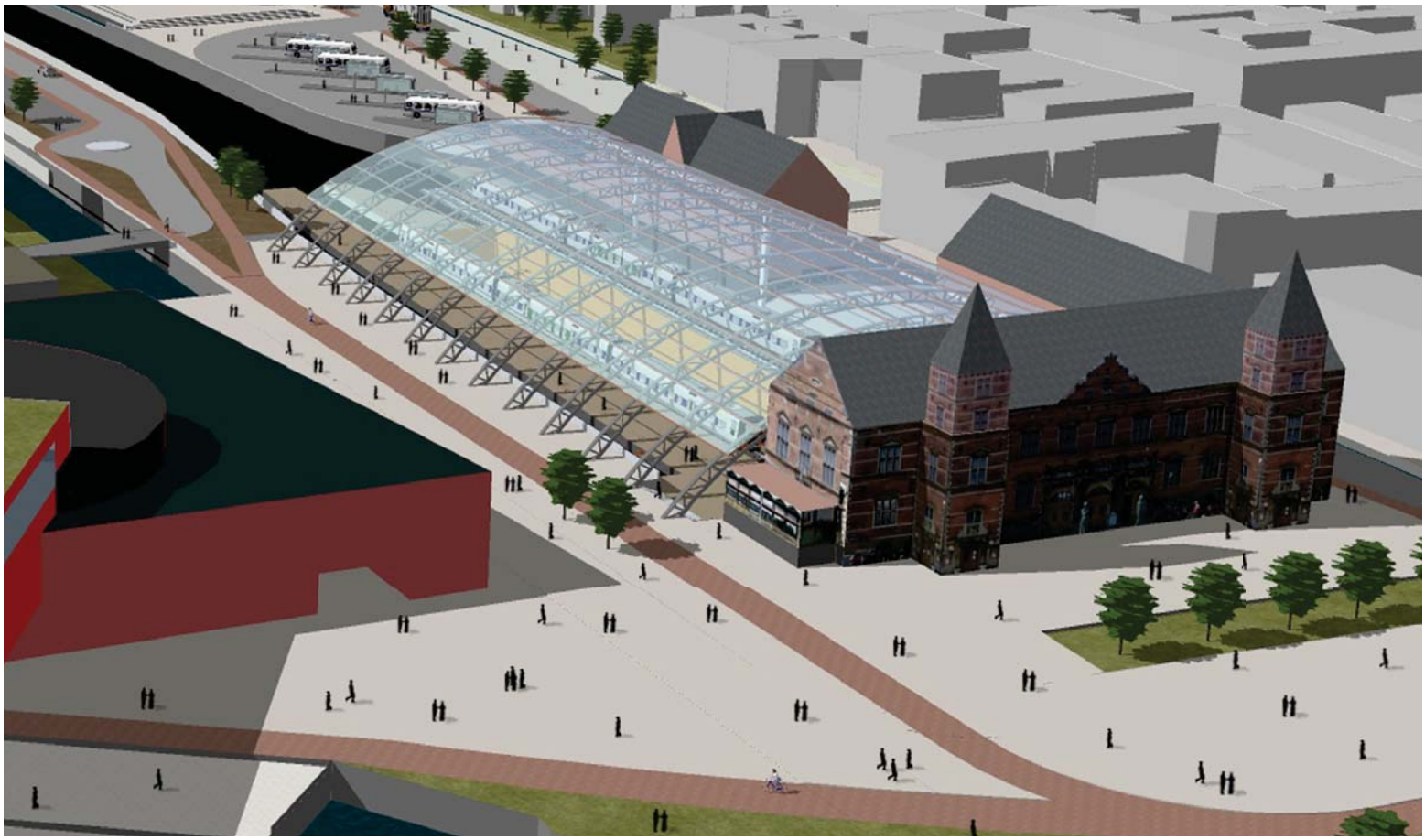


Fig 184 Impression of the transformed train station and square (by author)

The regional train tracks will be placed 3 meters deeper than in the current situation to diminish the visual barrier that now cuts the through the area. It will also decline the noise.

The ferry terminal, that will not be in use anymore by the time the tunnel is realize, has to be removed to make place for a wider range of tracks and the whole overviewing and giving light to the lower situated tracks.

Using similar constructions as the Antwerp train station or the Copenhagen metro stations, the 20 m deeper laid tracks will be impressively accessible by a spacious opening that brings light to the lower platforms. Two tracks are connected to the platforms to access the intercity trains. Two additional tracks will serve the high speed train that proceeds to Helsingborg.

The tracks and platforms are covered by a transparent roof carried by an arched truss construction. (See fig. 184 & 189))

The station and platforms are accessible from three different sides. The bus station, the inner city, the culture yard and the new buildings from the plan are all connected.

The drawings and pictures indicate the dimensions and give a clear impression of how the train station could be transformed in an attractive way.

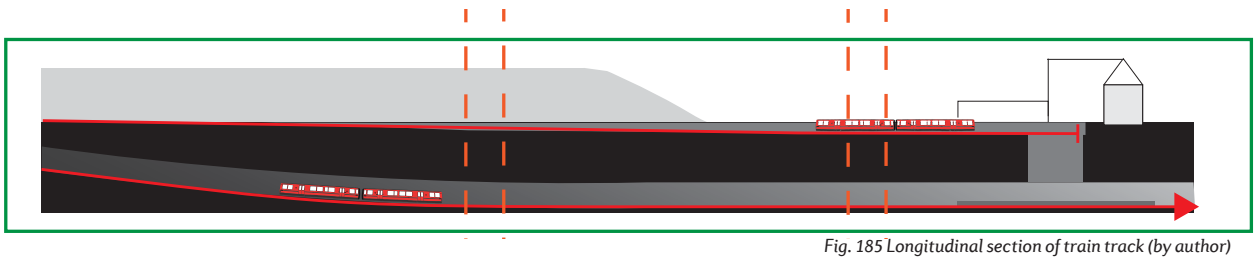


Fig. 185 Longitudinal section of train track (by author)

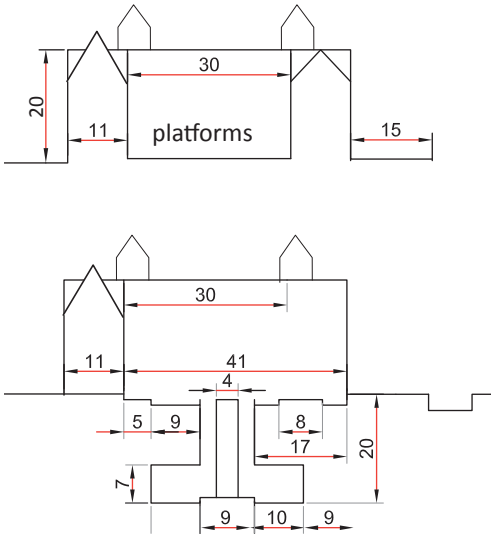


Fig. 186 Dimensions of the current and new situation of the train station and platforms. (by author)

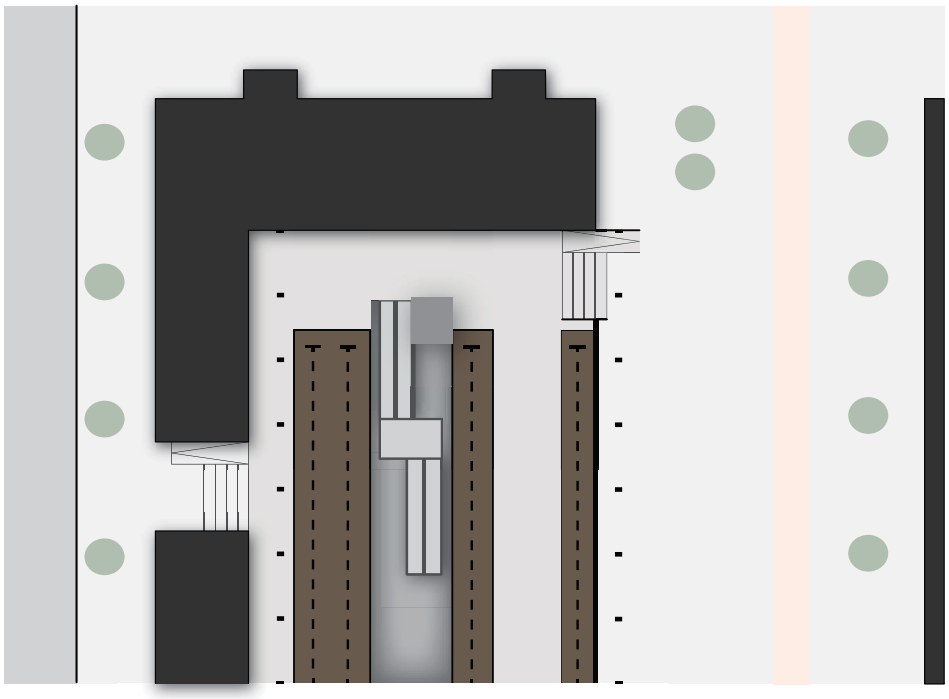


Fig. 187 Plan of the new transformed train station (by author)

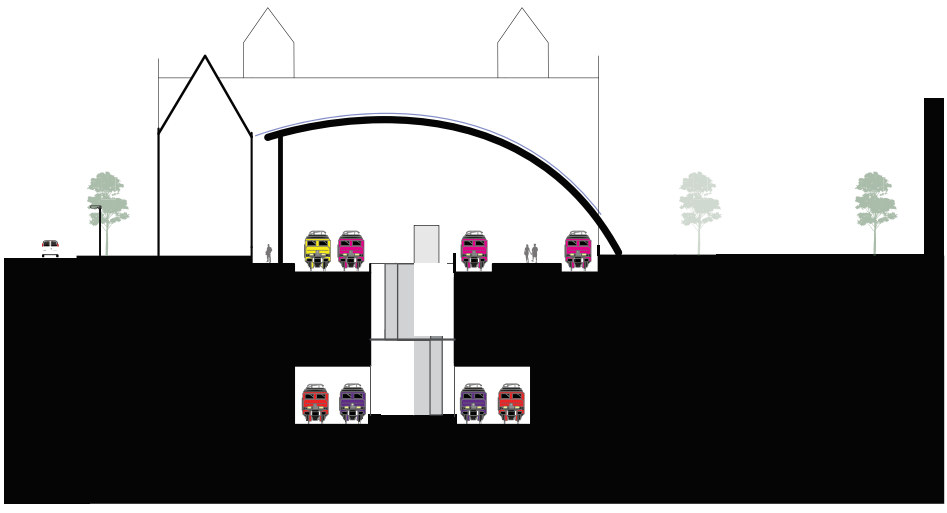


Fig. 188 Section of the new train platforms (by author)

Fig. 189 Impression of the new train platforms with roof construction (by author)

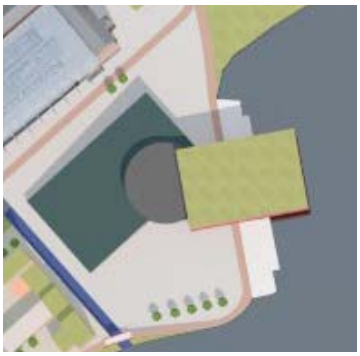
A MULTI FUNCTIONAL BUILDING

As already proposed, the building on the top north east end of the area, overviewing the culture yard, Kronborg castle all the way to Helsingborg, will be an architectural triumph. It will be the showpiece of the new area. In the footsteps of the old ferry terminal it will be extending over the water. A swimming pool and restaurant can be placed here, to give these functions an extra unusual dimension, and thus a reason for people to visit it. In the other part of the building a theatre is placed. Movies, plays and lectures can be held here.

Under the building a big underground parking area is located. The entrance is found near the Jernbanvej, but goes all the way through under the building.

The building is situated on the extension of the station square. But it will have another entrance. By passing under the building (on food or bike) a square becomes visible, perfectly located in the sun along the water with a panoramic view.

This multi functional building will be eco friendly. One part of the building has a grass roof, and the other one solar panels.



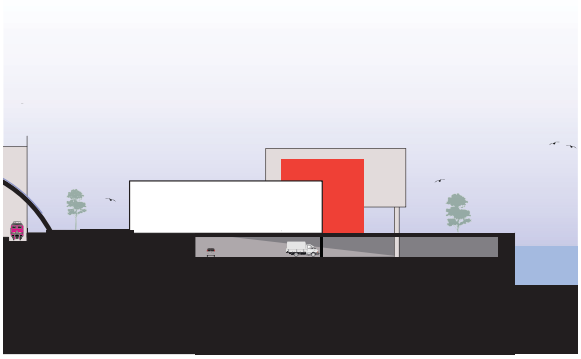


Fig. 190 Section of the main building, with on the left side the train station (by author)

Fig. 191 Reference: de Konglige teater (royal theater) by Lundgaard & Tranberg architects and in the background the opera house of Copenhagen source: arcspace

Fig. 192 Reference: Muziek gebouw aan 't IJ in Amsterdam, by 3 xNielsen. (picture by author)

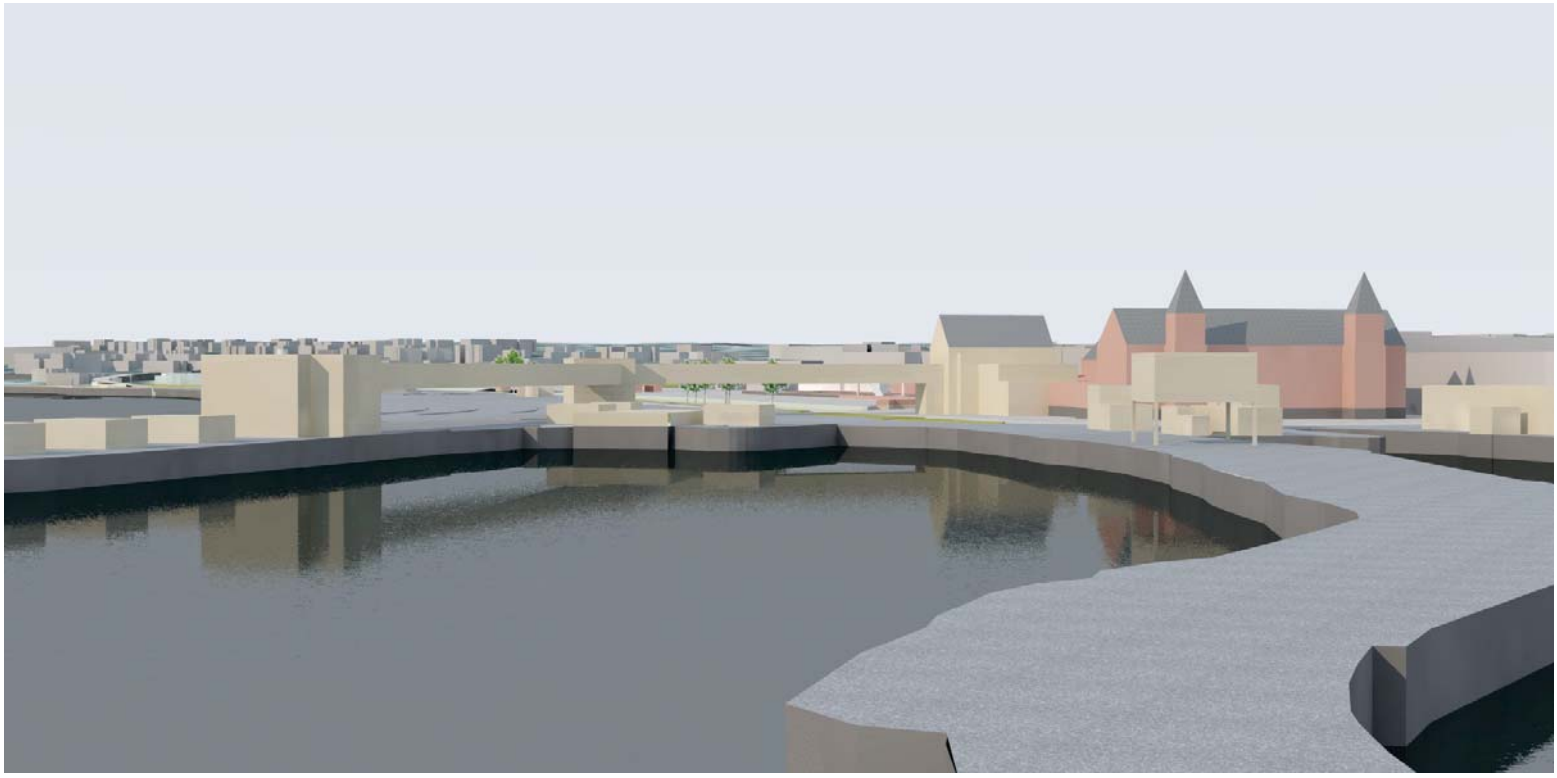


Fig. 193 Impression of current situation. of the east side of the waterfront (by author)

Fig. 194 Impression of the new developments. of the east side of the waterfront (by author)

Fig. 195 Impression of the new restaurant in front of the train station overviewing the castle (by author)

Fig, 196 Current restaurant. Source: Bing maps

RESTAURANT AND MARINA

On the outer edge of the plan area, overviewing the "culture bay" will be a newly transformed restaurant. It is combined with a new small marina. It will be a beautiful place to sit along the water watching the boats and, the castle and the water. The entrance of a large underground parking garage is integrated in the building. The ramp forms a nice place in the summer to sit with a drink and it also covers the restaurant a little. The building is kept low, not to block to much of the view from the front square of the train station.

Fig. 197 Impression of sport centre with tennis courts (by author)

SPORT FACILITIES

Between the houses a small sport park is located. It contains tennis courts and a sport hall with for example fitness and squash. The building should protect the tennis court from wind. The spot will be a nice place for residents to gather.

TRAIN DEPOT AND URBAN FARMING

The old train depot has beautiful possibilities to become a cultural and biological breeding ground. Artist can have their space here, while a café and biological restaurant and supermarket use self-grown ingredients from the city garden. This is the first spot that should be developed, because at the moment it's a deserted place, but it has a lot of possibilities. Even the old trains standing on the terrain could be reused as historical pieces or maybe be used as for example workspace or a coffee place.

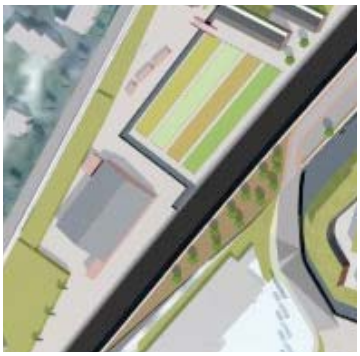


Fig. 198 Current situation. (Picture by author)

Fig. 199 Reference: Urban farming. (Source : celcias.com)

Fig. 200 Impression of the redeveloped train depot with urban gardens in front of the building (by author)

Fig. 201 Impression of the new city square (by author)

CITY SQUARE AND JERNBANVEJ

Between the train tracks and the historical city centre a lot of transformation has taken place. The more compact use of train rails and the relocation of the parking underground have given this spot the opportunity to become the heart of the town. It is led little higher than the street and the new housing along the coast and is therefore like a podium overlooking the city. This is the open space between the buildings; this is a spot where residents can gather. The square is surrounded by water, partly as a barrier to the rail tracks, partly to emphasize the concept of a podium, as a freestanding object in the midst of the city. The street is still positioned in the same place, but obstacles, like parking spots have been removed. Water is now used to identify public and private space.

Fig. 202 Impression of the new busstation (by author)

BUS STATION AND RELOCATION OF LOCAL TRAIN

The bus station will now have its own spot on one side of the street. This is safer, more structured and it doesn't dominate the space anymore as it was. It is kept open on purpose to have people experience the same openness and overview the square has too. The station is very easily accessible and visible from the train platforms, to make transferring even more easily.

The local train has moved to the front of the square towards the bay. It is not riding along the station anymore, as it was an obstacle for the other traffic flows. Now the line is shortened, but still very close to the train station and bus station.

Fig. 203 Impression of the primary school (by author)

SCHOOL

The school is located in between different parts of the city. It is therefore well accessible for children from the existing neighbourhood and new one. The target groups that should be attracted are partially young families, therefore the need for schools will increase. Besides a primary school, the building also contains a child care.

Fig. 204 - 206 References for the atmosphere of the design: green, water and bikes. (Source: Jones the planner, Scandinavian dreams)

Phasing and feasibility

Phase 0
The development of the passenger train tunnel that will link Helsingør with Helsingborg will have a long process. As long as the building of the link has not even been decided, it is impossible to make a total feasible plan. But for this project I have assumed that within a approximately 5 years the decision will be made and all the involved parties are ready for preparation of building the tunnel.

In this stage also preparations and decisions can be made for the developments of the next phase.

Phase 1
A few parts of the plan are not dependant on the construction of the tunnel. There are some necessary adaptions that make the city more attractive, provide housing and decline existing barriers between the city centre and the plan area. These are among other things: removing unused tracks, the transformation of the old train depot, development of urban gardens, building of housing in area 1, transformation of the bus station and replacement of the local tracks and its end station. Also underground car and cycle parking with on top of the parking a new central square can be established.

Phase 2
Phase 2 can only start when the decision of building the tunnel is made. Important is the declining of the ferry area, which as it seems, is almost never entirely in use and can therefore be more compact. At the same time, the existing train tracks can be lowered (with the first transformation of the train station), the road between the train and ferry area will be moved and elevated, is will have also a temporary link with the existing north end that connects with the "Jernbanvej", the canals can be partially dug. After minimizing the ferry area, the start of area 2 can be established with its underground level, housing and green and facilities.

During this phase also the start of the construction of the tunnel is estimated.

Phase 3
Phase 3 can start when the end of the tunnel construction is near. This stage consist mainly of the transformation of the station, final adjustments of the regional and southern local train tracks and the start of breaking down the still existing ferry buildings. In the end of this phase the construction of the tunnel should be finished and the intercity and high speed trains should be starting their first trips.

Phase 4
The final phase consist of breaking down all the ferry related buildings, dig out the remaining canals, close down the middle road between the southern side of the station until the connection with the Jernbanvej, built area 3 + facilities, develop the landmark building on the north-east edge of the area and finish the green areas.

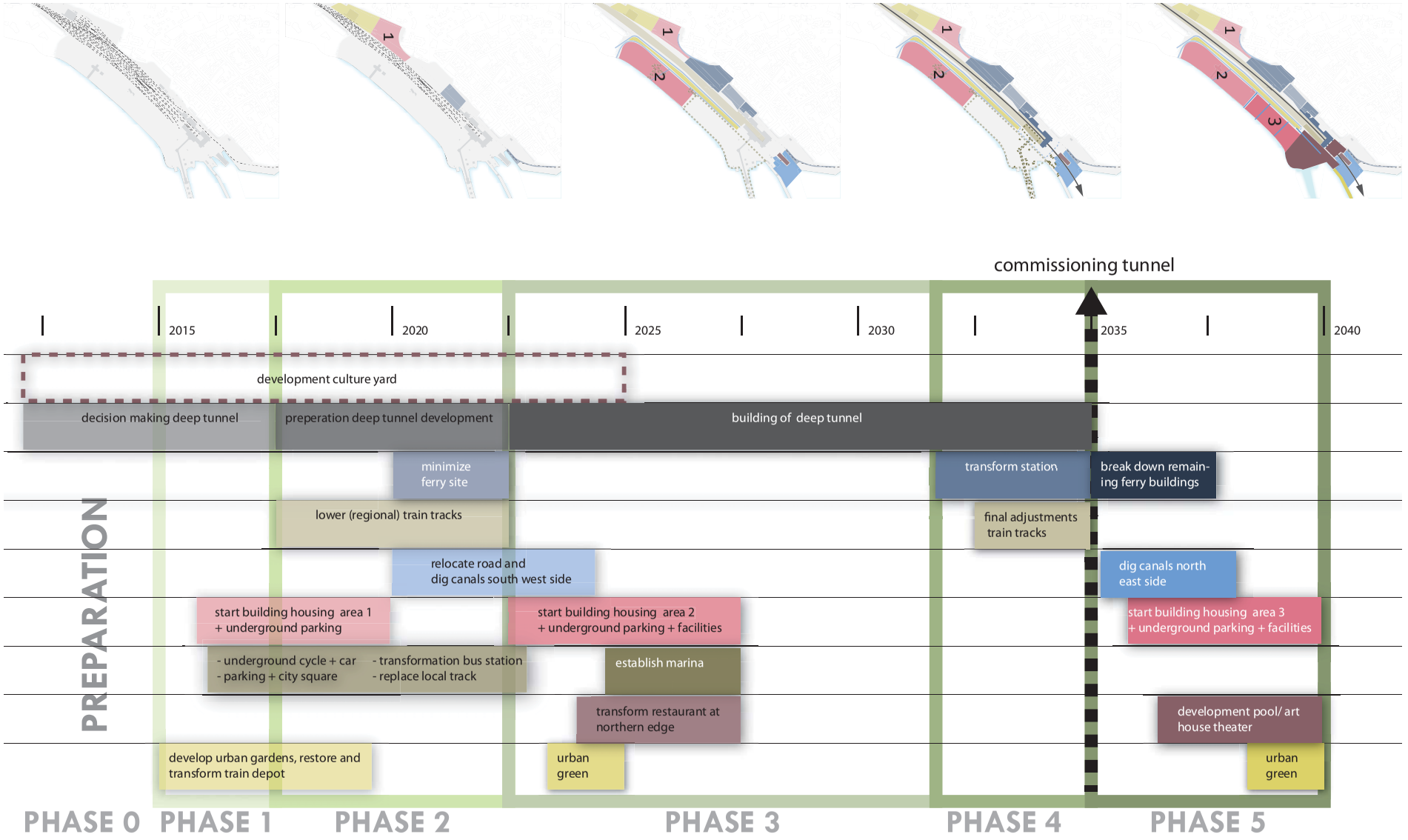


Fig. 207 Recommended planning of phasing process (by author)

Fig. 208 Overview of Helsingør's coastline with the integrated new design. (by author)

VII Conclusions & evaluation

2ND CONNECTION

& A SPATIAL DESIGN FOR HELSINGØR *based on*
THE POTENTIAL SPATIAL AND PROGRAMMATIC IMPACT OF A NEW INFRASTRUCTURAL CONNECTION BETWEEN HELSINGØR AND HELSINGBORG ON THE CITY OF HELSINGØR

Conclusions

Consequences of the link on the regional development

The new link and ring 5 will change the structure of centres and their mutual relation in the region. The importance of Copenhagen, and to a lesser extend Malmo, will be less centralised. A second connection will relief pressure from the southern Øresund Bridge and Copenhagen. These developments give room for new developments that potentially can attract companies and workforce. This is imperative, as the biggest challenge is to be a competitive region in a globalized world. The monocentric structure of the region is insufficient; it limits the accessibility of the centres and it restraints further spatial developments in and outside the main core of the cities. Therefore a structure of polycentricism should serve the region. The new link and ring can stimulate this transformation.

Northern centres and the outskirts of Copenhagen will gain more importance. The two biggest centres in the north, Helsingør and Helsingborg, will be so closely connected after the development of the new link, that if they would join their forces they could possess enough critical mass (programmatic, demographic, spatially, etc.) so they could form a third main centre in the north of the region. This will stimulate the healthy competition in the region that potentially draws economic growth.
To balance out and stimulate equal use of the 2 connections in the region, northwest centres will specialise in culture and recreation and the southwest centres in research and development.

Position of Helsingør within the regional network

Helsingør's position will change drastically in the new structure. Not only will the city be much more closely connected with Helsingborg, it will also be connected to the intercity network that increases the importance of the city.

Helsingborg will be on the high speed network. As programmatic and spatially is Helsingborg centre more capable of being the core of the northern cooperating centre. (International)

cultural highlights, a unique living environment and the connection to the intercity network, will create enough potential for Helsingør to play a significant second role in the northern partnership. Helsingborg and Helsingør should work closely together to assembled form a worthy counterpart of the southern main centres.

The case study has shown that, among other things, (economical) disparities push collaboration in cross border region together. But because of uncertain general economic changes the region should not be dependent on these developments. The cases have shown that the position of the centres is in a relatively far progress of collaboration, these developments should increase by supporting this process.
By making Helsingør and Helsingborg more dependent on each other as a complementing cooperation, a stronger support establishes that will help the future development of the region increase.

Spatial and programmatic transformation of the south east shore in Helsingør
The southeast shore of Helsingør can be seen as a transition area where the international (culture wise) the regional and local scale come together. The developing culture yard fulfils the role of an international attraction. It seems to be isolated by other parts of the city, and therefore does not connect with the residential areas.
The plan area therefore consists of cultural and recreational functions that bring residents closer together on an urban level and connects the different parts of the city

Secondly the plan offers a unique way of living, as it combines the tranquillity of the existing environment and the city typology of the housing blocks. The design offers residential facilities that are suitable for a variety of (young) families, working couples and singles from different descent. The city needs a refreshing impulse to not end up with an aging population living in isolated suburbs.
The train station will undergo a major transformation as it will serve a more people and receive the intercity at a 20 meter depth. There is an opportunity to impressively transform this building to be a showpiece of the city.

Spatially it was important to connect the surroundings with the plan area to return and emphasize the original urban structure into the plan. By using the connection with the water, anticipate on the visual and spatial connections with other areas and responding to the different heights these connections have been created.

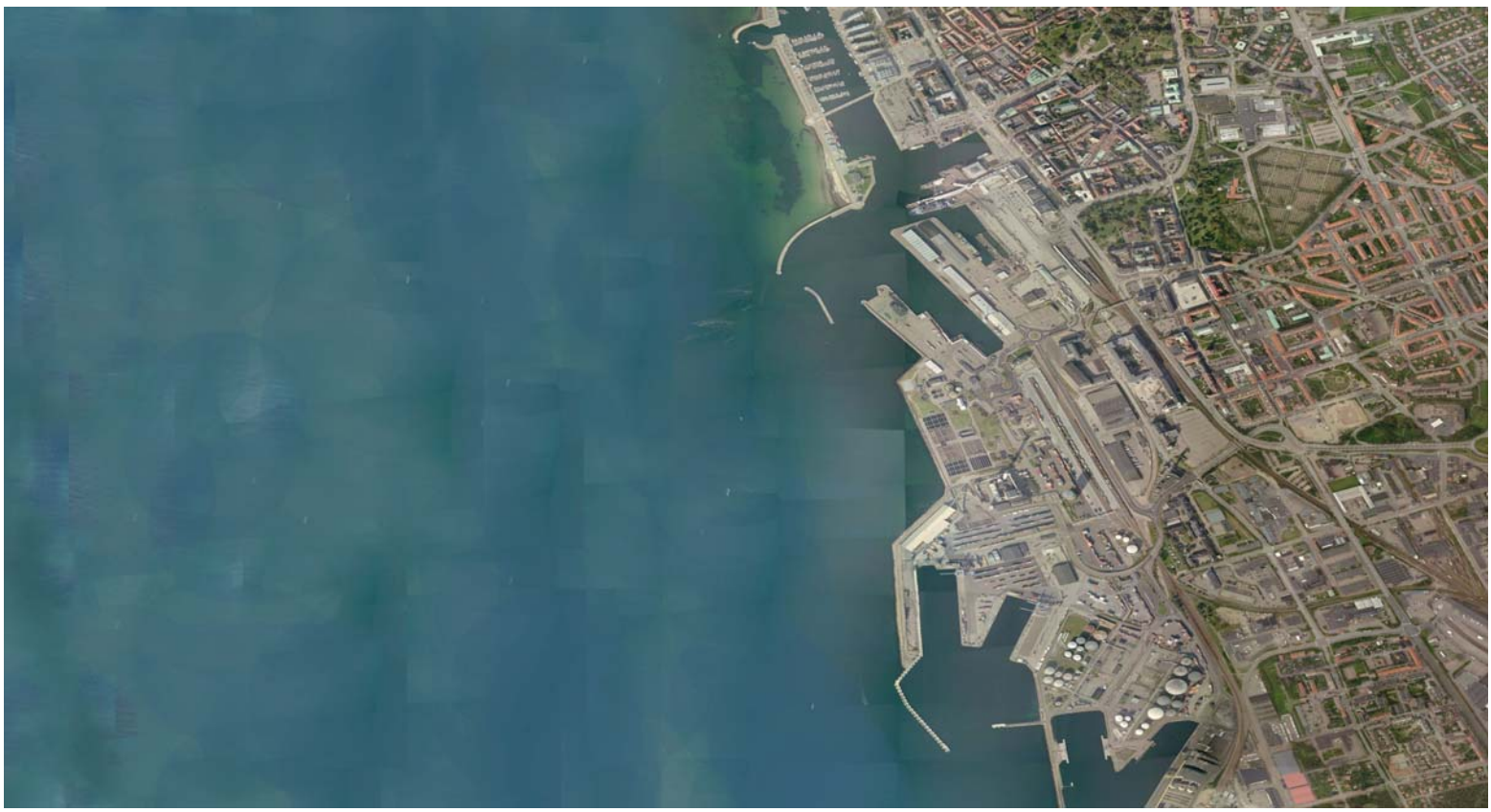


Fig. 209 Overview of the Helsingør and Helsingborg coast opposite of each other with the integrated new design. (by author)

Reflections & Recommendations

Reflections on the project

I decided early in the process to focus on both the local and the regional level in order to assess how the two levels influence each other and to understand the individual nature of both; this to make the planning more relevant. The alternative would be to focus more extensively on one level and base an eventual design on that scale and limited context analysis alone. I deemed that interesting if the design would be the sole and most important element in project together with its near surrounding, but both personally and for the sake of the intellectually progress of field of urbanism I found it more interesting to make both planning and design. And equally important planning based on a broader set of observations on different levels and dynamics.

The complexity of the cross-border situation gave the project an extra dimension. A new link that connects two countries is very challenging scenario as it is not only the infrastructure, planning and design that has to be changed, but the forecast and the way you perceive future development in terms of people and commuters behavior is dependent on a wide array of moving pieces of puzzle, like the merging of administrations systems between the two countries, political integration, judicial integration, tax systems etc., which makes it a daunting task to understand and capture, and which outcome can change the relevance of your design and plan.

Despite the effort to capture more variables and to operate on more levels it should be noted that the complex nature of the field obviously limits any complete understanding and encapsulation of the dynamics and therefore it must be accepted that also the planning part of the project is partially based on simulation of a perceived reality. As this is my perception of the planning aspect of the field the focus for the project became more placed on the translation of the abstract to the concrete: From planning to design.

Specific details for a long-term plan are not always important either possible to capture, but overall conditions that capture the social cohesion with a determined program and spatial concept and design make a project more realistic and feasible.

During the p4 presentation the question was raised why I had chosen for a “blueprint master plan.” Predictions and strategies can be made clear in schemes, graphs and spot plans. Planning structural connections of road systems or mapping out specific information are useful to understand the overall situation. But I believe that by designing a plan, the real and more concrete (and sometimes detailed) consequences become apparent. Therefore I wanted to design a master plan that is flexible enough to cope with future unpredictable developments, but detailed enough to be able to give an impression of what possibilities and challenges a regional new connection bring to a small city like Helsingør.

In spite of any shortcoming of science, analysis or perception the product should take departure within the structures of this partially simulated world and form a concrete impression of the possible impact. For me personally and also for the development of the field in general it is very interesting to be in between reality and simulation, present and future.

Reflections on the process

It is very challenging to start a project from scratch. To find out what theme, location and subject to choose is a long process and the limited time span of the project will naturally inflict on the quality of the assessment, but at the same time it is conditions that are often found on the labor market. Moreover is it not usual to sit with the whole project alone in reality, but very important to know all the processes, reflections and decisions that are made as a project develops. The project can be done in 10 months, like I experienced, but this is tight scheduled for a wide-ranging plan that was difficult to make concrete at the outset.

In a relatively late stadium I decided to put a lot of emphasize on the design of the local plan and simultaneously I had to indicate more and more specific the spatial and programmatic position of Helsingør and the impact of the new link on this city, while continuing on the further research and development of a strategy for the regional scale. In short: I made it difficult for myself, and regrettably it was impossible to finish the project in every detail.

In practice I also had difficulties in the time planning after each presentation moment, where there is a lot of feedback from the mentors and there is little time to change the current products, because one needs to continue working on the rest. These evaluation moments took longer than expected, causing all the work to shift forward. Nonetheless, I am content with the result and I hope this project can contribute to the field of Urbanism, at least it will to my personal and professional development.

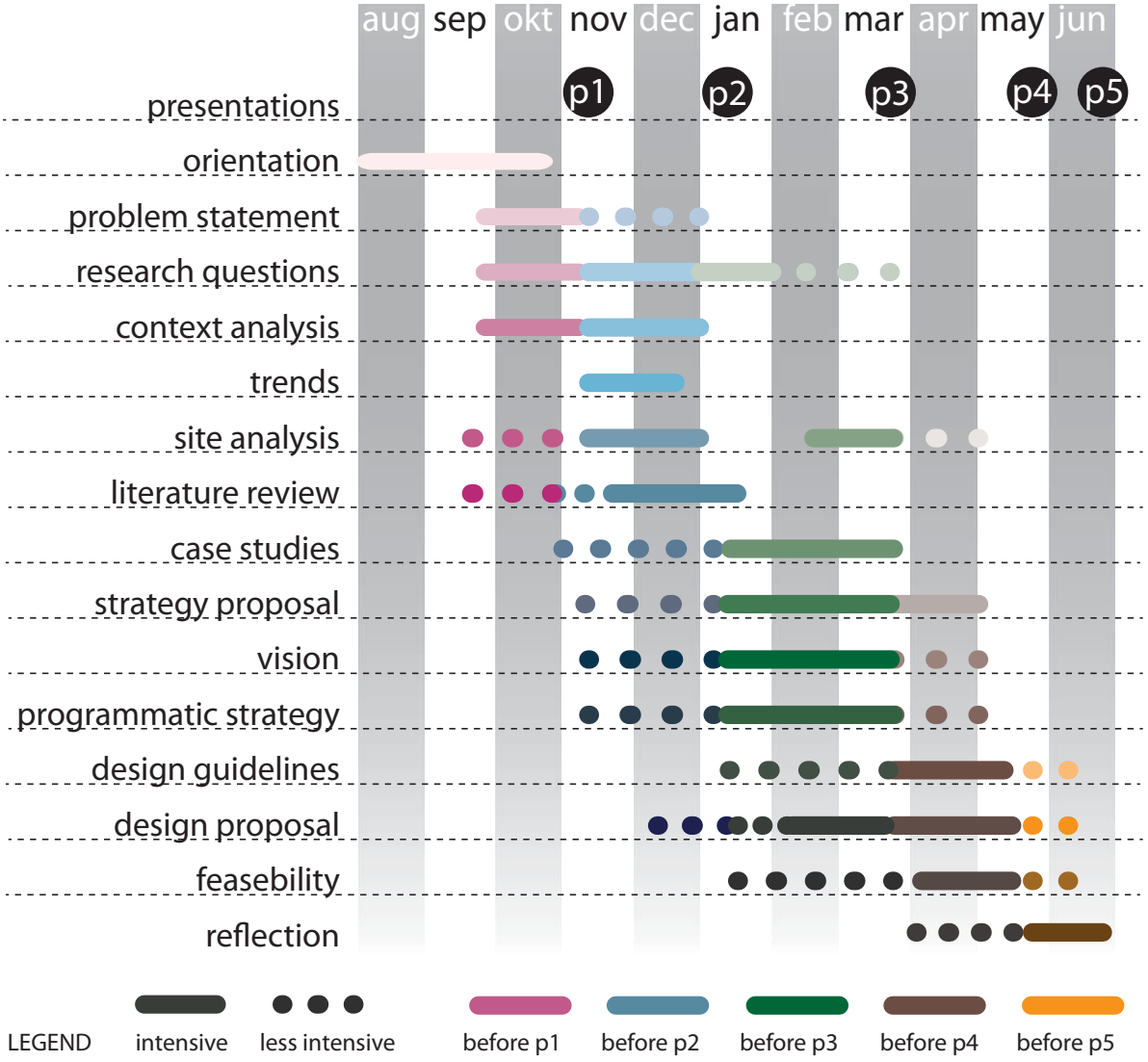


Fig. 210 Reflection scheme on process of the graduation project. (by author)

RECOMMENDATIONS FOR FURTHER RESEARCH

It seems relevant to further investigate the complexity of transnational/ cross-border cooperation, as it is a contemporary relevant development, in the wake of the expanding cities and regions all over the world. This project has remained quite concrete about the subject to be able to translate the results into a design within a limited time span. On the academic level it might be interesting to continue on the theoretical aspects of this subject.

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Appendix

- THE DANISH PLANNING SYSTEM
- HISTORICAL PERSPECTIVE TIMELINE
- LITERATURE REVIEW
- THE CASES OF PUSH AND PULL FACTORS
- PUSH AND PULL INDICATORS
- COMPARING INDICATORS
- REFERENCES FOR URBAN DESIGN
- MODIFIED STUDY BY GEHL ARCHITECTS

The Danish planning system

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The Danish Planning Act was changed in 2005 in assembly with a reform of the local government structure. The local government reform entered into force January 1 2007. Instead of 271 municipalities now Denmark had only 98 left. The counties have been replaced by 5 administrative regions. The competences of the state and the municipal level have been strengthened while the regional level has gotten a more strategic function without any direct planning competences

Integration policy

A top–down process dominates in the Øresund Region. Diverse policy instruments have been used to further the integration and regional development in the Øresund Region. Both regional/local, national and supranational authorities have contributed. A fixed link across the Strait of Øresund in the form of a bridge has been the most significant in terms of symbolic value.

National authorities have sponsored the link through a bilateral state owned enterprise. Nationally sponsored infrastructural investments have in general been sizeable and has amounted to a total of EUR 8.5 billion, of which 27% are related to the fixed link, see OECD (2003). National authorities have also helped integration through the coordination of social and tax policies.

Supranational bodies such as the European Union and previous to that the Nordic Council has furthermore focussed on integration in the Øresund Region, most recently by the prioritization of CBC initiatives like the INTERREG[1] programmes. The monies allocated to the two program periods have grown significantly, i.e. an increase from EUR 13 million to EUR 31.26 million. These funds are embedded into the Øresund Committee, which is the leading cross border organization.

Several local and regional cross-border initiatives have appeared. For example the "Øresund University" was established in 1997 and has reached a membership of 20 universities.

It has been a leading actor in establishing the Øresund Science Region (See also section: study area). Several knowledge institutions within specific clusters or networks have been built around the Øresund Science Region.

1 The INTERREG Community Initiative, in short INTERREG, is a European program that is committed to breaking down European boundaries. INTERREG is funded by the European Union and seeks to promote cooperation between regional areas in different countries. The organization promotes economic cohesion across the EU.

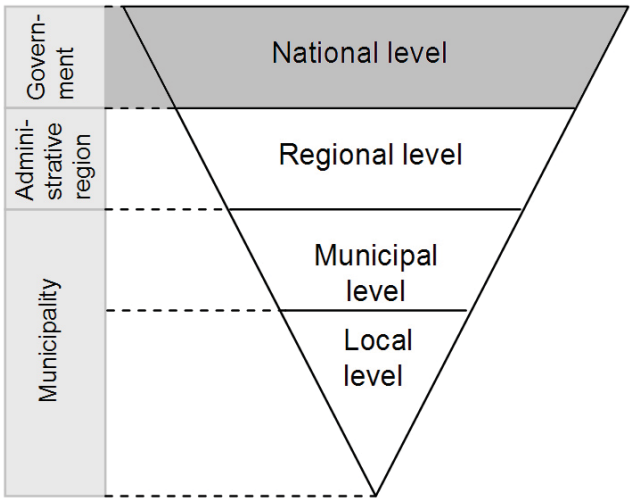


Fig. 1 Planning hierarchy of Danish gouverment (by author)

National level

The Minister for the Environment may influence decentralized planning through national planning initiatives. The state may veto the planning of municipalities. Regional planning authorities uphold national interests. Planning decisions may be appealed to the Nature Protection Board of Appeal. Only the legal issues in planning decision may be appealed.

Regional Level

The regional planning authorities are responsible for the regional planning which is strategic planning, not a zoning plan.

Municipal and local Level

The municipal councils are responsible for comprehensive municipal planning, detailed local planning and permits for construction and changes in land use in rural zones.
(COMMIN, 2011a)

Historical perspective

European level

13th century hanseatic routes

1789 : French Revolution

WW 1

1914

1919

1917: Russian Revolution

1923

Binational level: Oresund

1020, Roskilde becomes a bisopric, and is now the capital of Denmark

8th - 11th century: Vikings

1429: introduction Øresund toll

ci. 1440 Copenhagen became capital of Denmark

1567: 1-2% tax on cargo

1643: Torstenson War

1657: 2nd Northern war, won by Sweden

1658: treaty of Roskilde, Scania in hands of Sweden

1700 -21: Great Northern war: won by Denmark

1857: end of Øresund toll

1850-1900 Industrialisation and urbanization developed slowly

1865-85 development of railtracks especially in Sweden

1902 -1967 Tram introduced in Helsingborg

1914-19: WW1, Nordic countries stayed neutral

1909: new law: municipalities gain control in land use

1925: Danish town development law

1213: Denmark conqueres territory

1250-1400: several castles were built

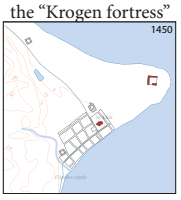
Local level: Helsingor

before 1200: Helsingor was extension of Helsingborg, mainly a marketplace to trade goods

1200: first church was built: Olai church

1429: ships payed toll in Helsingor in order to cross the Oresund

1450: main streets were laid, 2 monasteries and the "Krogen fortress"



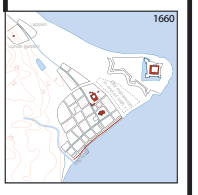
1559: Olai church becomes cathedral

1577: "Krogen fortress" became "Kronborg castle"

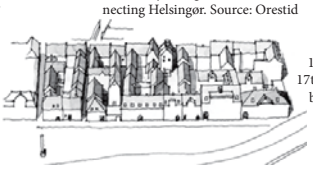
1587: establishment of Marienlyst palace

1550s: city strucked by fire twice.

Helsingør 15th century



17th century: 'Kings roads' also connecting Helsingør. Source: Orestid



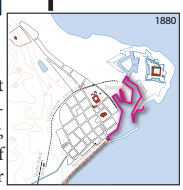
16th and 17th century building

1820: Rebuilding of Kronborg castle

1856: city hall built

1891: development train tracks (e.g. train fery HH) and custom office Toldkammeret is built

1896: train station is built



1880: first industrialization of the city, enlargment of harbor

1925:town provided c framework road cours building ty and distrib and buildi lines

19th century: ceveral beach villa's were built.

Fig. 2 Historical overview of some main events in Europe, the Oresund and Helsingor (by author)

WW 2

cold war

1940

1945

1951: ECSC

1979: EMS

1985: 1st Schengen

1989: fall Berlin wall

1993: European single market

1995: 2nd Schengen: open borders in 7 countries

1999: EMU in 11 countries

2002: Euro becomes legal tender in EMU countries

2004: European constitution

2007: Lissabon treaty

2010: European crisis starts

1929: stock market crash

1923: Pan-Europa manifesto

1949: Council of Europe

1957: EEC, Rome treaty

1987: Single European act

1991: End Cold war. European Economic Area, Maastricht treaty

1998: European bank in Frankfurt

2007: beginning of world wide "credit crunch"

'72 Dk: Se

'74 Dk: Se

'75 Dk: Se

'77 Dk: Se

'82 Dk: Se

'91 Dk: Se

'93 Dk: Se

'94 Dk: Se

'02 Dk: Se

'07 Dk: Se

'11 Dk: Se

1940: Denmark is occupied by the Germans Sweden stayed neutral

may 1945: liberation. end of WW2

1947

1972: 11 million crossings a year

1952 open borders Dk-Se

1973: Denmark joins EEC

1992: Orestad development starts:

1993: regional policy, establishment Øresund Committee

1994–1999: Oresund is part of cross-border projects of EU Interreg II

1995: Sweden becomes EU member

1997: EU-funded program EURORES started to promote a common labor market

2000: Oresund part of Interreg IIIA

2000: building Oresund bridge

2001: Calatrava´s turning torso, Malmo

2000-08: increasing amount of Danes move to Sweden and work in Denmark

"Fingerplan 2007"

2008 Establishing of 58 % Orestad in CPH

2008-09: Danish housing bubble collapsed

official approve (likely 2013-14) development of Femern tunnel (between Denmark and Germany)

2011: Bella Sky in CPH, 3xN

'Fingerplan' Copenhagen 1947 source: ministry of Evironment

Regional plan Denmark 1973. Source: MInistry of Environment

1939: beachroad implementation

1938: first social housing in Helsingør

1930's: Establishing of garden city projects: small detached houses

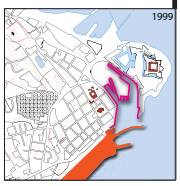
1958: museum Lousiana

1952: increase of crossings

1950-80: Several housing projects were developed

1978: modern housing 'Sjølund' by Lundgaard architects

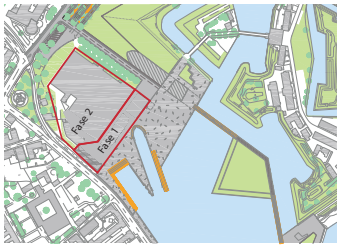
1990: Toldkammeret building becomes a cultural place



2000: Kronborg castle on UNESCO list

2001: restoration Olai cathedral

2011: Toldkammeret becomes Culture Yard in Helsingør by AART Architects



1892 The train ferry between Helsingor and Helsingborg was put in service

sources: Orestid (http://www.oresundstid.dk); the Guardian (http://www.guardian.co.uk/world/interactive/2011/jul/28/europe-politics-interactive-map-left-right); Helsingor municipality (https://helsingorkommune.dk/ | Kommuneatlas (2000) | Kommuneplan (2009)); EU (http://europa.eu/about-eu/eu-history/index_nl.htm); Derry, T. K. A History of Scandinavia: Norway, Sweden, Denmark, Finland and Iceland. Minneapolis: University of Minnesota Press, 1979; AART Architects; Helsingor Leksion (http://www.helsingorleksikon.dk/index.php/Forside); toldkammeret (http://www.toldkammeret.dk/)

Literature Review

"PUSH AND PULL IN A CROSS-BORDER REGION"

Inquiries into push and pull factors of cross border regional integration

13 January 2012

Abstract – This literature review explorers (potential) push and pull factors, respectively driving or inhibiting regional cross border integration. It first inquirer into general push factors in a broader European context and then discuss these findings with an emphasis on the Øresund Region between Denmark and Sweden. The literature and research revolving around conditions that foster integration, generally note that asymmetries and differences in labor and housing market creates strong incentives for integration, along with other differences of economic character. Moreover does it inquirer into the discussion about identity and cultural difference and what role it plays in integration – theoretically and in practice. The research on this field do point towards that culture and identity matters, but as some authors propose is identity formation and cultural convergence difficult to obtain in practice and from top down and additionally it is found to be a long term process.

Key words – cross-border; regionalization; integration; push-factors; labour market; housing market; identity

1 Introduction

As a result of the globalization process, on one hand the competition between many western European cities has increased vastly. At the other hand regions and cities are becoming gradually interlinked with numerous people living and working in more than one country. This trend has led to cooperating of cities and the rise of growing regions. These growing regions often transcend national or administrative boundaries. This is a complex process and in order to benefit from the various gains arising from cooperation and to enhance the process and the trajectories, the push factors driving this kind of integration and the barriers inhibiting it must be understood. This review revolves around the particular cooperation scheme and context of cross border regions with a special emphasis on the Øresund Region evolving between Copenhagen in Denmark and Malmø in Sweden.

Cross-border regional integration has been supported and encourage by the European Commission in its *European Spatial Development Perspective from 1999*, national governments and municipalities, and economic gains arising from increasing integration have been widely acknowledge and documented (EC 1999).

Various cross border regions in Europe have been studied in order to identify the "push" factors of cross border commuting and integration (Decoville et al., 2010). Furthermore have models capturing the different dynamics been established (ibid) and the literature revolving around this subject have elaborated on the barriers, pitfalls and general dynamic in cross border situations. This is not only from a strict economic perspective, but some are also taking a more sociological or psychological approach to this matter (Hospers 2006:3). Initially this essay explores the documented push factors, barriers and general dynamics shaping regional cross border integration. The first section of this article will therefore describe the background of the emergence of the cross-border regional development in Europe, followed by a broader perspective in regards to the pull and push factors. The review will use the cross-border region the Øresund, with emphasize on the bi-national cities of Copenhagen-Malmo between respectively Denmark and Sweden as a case study.

2 Why cross-border integration and development?

As described by Duhr, et al. (2010) cross-border development can be seen as cooperation between geographically contiguous border regions. Cross-border regionalization is a multi-faceted and complex phenomenon. It takes shape along nation state boundaries and requires foreign contacts and partnership between public and private actors on the regional scale. The process is localized in what could be labelled as a "grey zone" between civil and public law in combination with the emergence of informal and formal networks between a wide spectrum of actors, ranging from the single citizen and firm, universities, industrial organizations, trade unions, political parties, institutions to cultural organizations. The overall concern of the importance of increased cross-border integration and the different ways to achieve is assumable varying among the actors, reflecting conflicting

goals and asymmetry in power relations(Nelson and Winter, 1982, Nelson, 1995).

In many respects these routines and path dependence will also frame the actor's "potential cross-border behaviour". Meijers (2003:8) also underpins that not only actors in general reorient their focus and collaborate on new levels, but also before 1980 merely nation states competed, the last 25 years, however, slowly a trend has been established. Since the last 10 years a new type of competitiveness between sub-national regions or cities can be observed. So the administrative units that once only competed inwards with other sub-national actors, now orient themselves also towards the international or global arena. Reading the Øresund Committee's publications, this narrative about competition is apparent numerous places (Øresund, 2011). There is furthermore a growing belief that polycentric urban regions rather than the individual cities within them are facing the challenge to turn globalisation to their benefit. In this respect, Scott *et al.* notes that the 'individual city in the narrow sense is less an appropriate or viable entity of social organisation than regional networks of cities'4, with its wider set of assets and broader spatial scope to meet the demands of firms and households in the post-Fordist network society (Scott et al., 2001).

3 European regional cross border integration

Globalization of economic and cultural transactions and exchange, the relative decline of the power of the nation state and the increased dynamic of regional integration have led to rather significant economic and political territorial reorganization, and to a high degree within Europe (Brenner, 2003). Due to strong regionalization tendencies in many parts of the world, the political collapse in Central and Eastern Europe and the continuing enlargement of the European Union cross- border regions have grown considerably in number and importance in the last years. As Lundkvist and Trippl (2009:1) notes regarding innovation and growth as an example of the benefits: "*There is a widespread agreement in the academic literature that in the emerging globalized knowledge economy the long term competitive strength of these areas, like in "normal" regions, increasingly rests on their capacity to create an integrated innovation space."*

As it is indeed apparent in the popular globalization narrative about the intensification of trade, culture and people this has often been interpreted in a narrow economic sense in cross border studies leading to a functional approach. But integration is not necessarily confined to economic exchange and peoples commuting it can also potentially lead to political and administrative integration. Brunet-Jailly (2006:7), Lambregts (2000:5) and Meijers (2003:7) suggest that: "*Just like everywhere around the globe cities have emerged from monocentric urban areas into polycentric ones. In regions, composed of a collection of distinct cities of various sizes located in more or less close proximity without a clear 'primate city,' it is this entire configuration rather than its individual cities that has become the new locus of political, economic and cultural activity".*

What can be said to be true is that some developments can clearly be described in these widespread, but also very general and sometimes trivial conclusions about integration, that it is almost an automatic process that just happens in globalised world. They do hold merit on certain general levels, but as Decoville et al. (2010) analysis suggest, cross border integration and push factors needs to be described more elaborately and specifically. That is obviously a tendency in Europe that regions and city merges into each other, cluster together, and that the new constellation becomes the emergent "locus", but cross border regional development can be different in nature than regions within a nation state. Some emergent regions can actually be described as being monocentric areas with a "primate city". As discussed later in the review this is indeed true for the Øresund region that basically is revolving around Copenhagen in many respects. The motor of integration in cross border regions must be assessed in more detail. Elaborating on such factors in these specific areas can also lead to a better understanding of the character of the integration and how urban planners should develop, understand and assist the regional integration process.

Decoville et al. (2010) have found that the engines of integration in regional cross border areas are disparities and differences in the structural conditions such as the labour and housing market. This implies that regions (people) are exploiting the functional differences that the cross border regions give them. This is also noted by Knowles and Matthiesen (2009:158) emphases that international borders also create artificial opportunities for travel by taking advantage of cheaper cross-border prices which are due to different tax levels and currency rates. This is further underpinned by Lundquist and Trippl (2009:9) who emphasizes that the driving forces for cross-border integration processes, e.g. the differences in economic structure, innovation capabilities and cost giving rise to

new complementarities and synergies, often generate the barriers that exist between the different parts of a cross-border region. As they state: "*Consequently, this tension and interplay between differences working as driving force on the one hand and as barriers on the other hand add further complexity to the understanding of cross-border integration processes*".

Decoville et al. (2010) present three different ideal types/models that represent the different dynamics that are apparent in cross border regions within Europe.

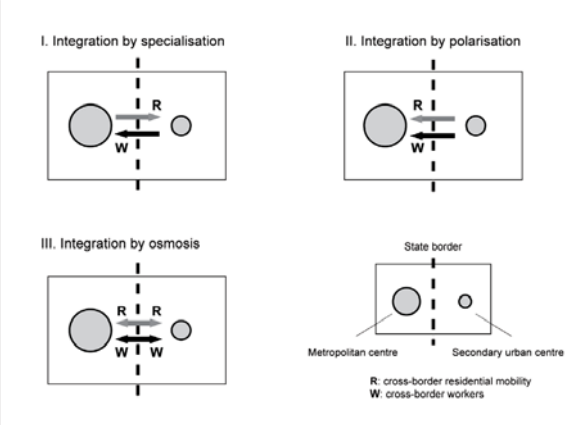


Fig. 3 Source: ibid

Same analysis also suggests that the amount of cross-border residents has a linear connection with the amount of commuters. So activity leads to residential integration where there is a centre - peripheral relationship, as captured by A. Decoville et al. (2010): "*…primarily from the periphery towards the metropolitan centre, is combined with an opposing residential flow towards the periphery. This dynamic, which leads to a process of cross-border suburbanization, involves a process of functional specialisation of space, with the centre concentrating economic activity and jobs while the periphery, which is attractive in residential terms, is relegated to the role of a dormitory area.*"

This relationship varies and is also influenced by others factors such as language and cultural barriers (Knowles and Matthiessen, 2009:158). But despite that cross border regions and metropolitan areas experience increased interaction; it does not necessarily entail any convergence in many respects (De Boe et al., 1999). It could potentially strength these differences as the regional system adapt and divide the space in functions rather than more polycentric structures. This is in contrast to one of the central aim of the European Spatial Planning (EC, 1999) and it also contradict the basic causal relation that the Commission suggest, namely that activity itself should lead to convergence, but it rather fair to say that cross border activity is spawned by rational actor interest and then lead to integration and activity on the housing and labour market, as people exploit differences on these two markets. Seen from an economic logic this, could be beneficial as the region and the economies are benefitting from each other's functions or in other words: their *competitive advantages*.

Actor interest and differences creates activity, but this does not necessarily lead to more convergence on other areas such culture, identity and feeling of belongings. Neither does a narrow focus on bidirectional activity in this case lead to a sustained integration process or multidimensional one in terms of cooperation. This also raises question in terms of social and cultural cohesion due to this functional split. As it is noted by geographer T. Hansen, regions do not develop in any linear fashion so one development can lead to another entirely different. In this sense is it still relevant also to grasp and support the integration process from different angles as different trajectories mutually can support each other (Hansen and Voldgade, 2009).

4 The Øresund cross border region

Presently the Øresund has 3.7 million inhabitants living in an area of almost 21,000 square kilometres. This makes this region the most densely populated agglomeration in Scandinavia. There is a majority of Danes living in the Øresund: two thirds of the region's inhabitants live in the Danish part (Sjælland and some islands), while one third of the population is located in Skåne at the Swedish side (TendensØresund, 2008).

Fig. 4 A map of the Øresund Region. Source: Danish Ministry of Foreign Affairs (DMFA, 2012)

The Øresund Region therefore represent a region where commuting is increasing and where the

existing solid connection exceeds it capacity. Hence integration has been a success, but the region and the integration is nonetheless still lightly structured and under development. Nonetheless, it has potential and is still in an early phase of its development course.

The process leading to the present strong economic position of the Øresund Region took off in the 1980's, where several supranational bodies were lobbying for a fixed link and the idea of the Øresund Region as a major metropolis on the European map. The implementation of the fixed link was decided by the Danish and Swedish government in 1991 and was supplemented by a common vision for the region in 1999. The fixed link opened in June 2000.

"Birds-eye-view" on the Øresund Bridge (and tunnel) from Malmø to Copenhagen. (Source: TendensØresund, 2008)

5 The character of cross border integration

Based on Decoville et al. (2010) ideal types/ models, the Øresund region fits into model 1 where residential cross border mobility from Denmark goes to Malmø due to low house prices, but where cross border workers from Sweden takes advantage of the Copenhagen labor market! That push factors of cross border integration are determined by functional/ structural differences is an important finding, because it raises the question about what kind of integration that is desirable. Evidence points toward that this dynamic to a large extend dominate the integration process in the Øresund area as a spokesperson Ole Schmidt (Ritzau, 2008) from Danish Chamber of Commerce states: *"The number of Swedes, who are working in the Copenhagen area, is almost exploded – especially after 2006. The integration is mainly driven by the many thousands Swedes, that each day are crossing the strait for working in the retail, consumption and healthcare sector*[1]*."*

1 Translated from Danish into English: Antallet af svenskere, der arbejder i Københavnsområdet, er nærmest eksploderet - særligt efter 2006. Integrationen drives i høj grad frem af de tusindvis af svenskere, der hver dag tager over sundet for at arbejde inden for detailhandel, restaurationer og ikke mindst sundhedssektoren"

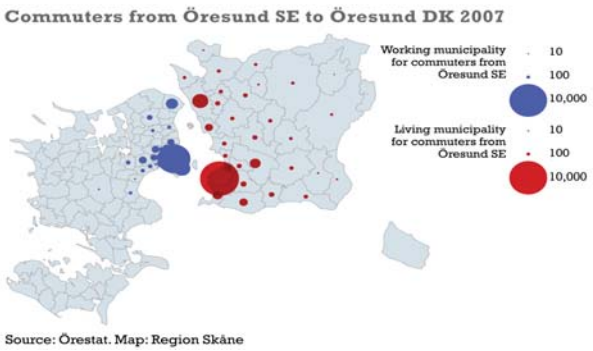


Fig. 5 Øresund commuters from Sweden to Denmark (Orestat, 2007)

That the differences in the labor and housing market matters and push forward integration in the Øresund Region is apparent. Despite that there is a positive correlation between these two conditions, this however does not reveal any insight of the potential level of integration, because it only indicates who is doing it, not why the rest is not. Therefore it would be relevant to inquirer further into the qualitative dimension of cross border integration and the academic contribution that exist on this field. A significant part of the focus on integration is confined to commuters, housing and economic gains very narrowly. In order to enhance these already existing trajectories it would be fruitful to know more about other barriers. It is furthermore relevant to investigate other perspectives in order to make integration more multidimensional to avoid that the integration process is not coming to a halt if the differences between the two areas change or converge.

In this respect cultural differences and identity dimensions would be necessary to focus on as suggested by Finnish geographer Paasi (2002:139) arguing that territories in fact are not "real" in the sense of being visible and tangible; instead, they are rather social constructs that are forged in political, economic, cultural and administrative practices and discourses According to Paasi territories emerge, develop and exist through a process of "institutionalization" that he conceptualize as the result of the simultaneous and interconnected working of four different forces, as he notes: "*a territorial shape, a symbolic shape, an institutional shape as well as a shape that has to do with socio-cultural identity. Jointly, these forces determine whether an area does exist (or not) and its chances for future development.*

Meijers et al. (2003:202) adds to this notion with similar argument and note how recent thinking on urban and regional development places much emphasis on the cultural dimension. Here, the cultural dimension is concerned with the feeling of togetherness and the creation of cultural symbols that help in perceiving the urban region

as an entity.

It is particular interesting that the number of people feeling a "sense" of belonging to the Øresund Region is higher on the Swedish site of the Øresund Region than in the Copenhagen area (O'Dell, 2011). As the Copenhagen area is the primary centre in the region the feeling of belonging to Copenhagen could be stronger due to this position and where Malmø and the southern part of Sweden do not have a particular strong centre anywhere? Gert J. Hospers (2006) emphasise the importance of identity on cross border regions drawing on conclusion from a number of studies noting that a binational city requires social ties and a shared identity. Building cross-border social ties and a cross-border identity is a challenge in the presence of strong urban structures with each their nationally defined hinterlands and adjoin social dynamics. This point could be relevant as it underpins the fact that people from the Copenhagen area seen themselves less, as part of the regions, as the Swedes, due to a stronger hinterland.

But is the discussion about culture and identity irrelevant outside academia. It is possible to create identities top- down or should experts, politicians, planners or other actors dealing with the overall development of the region, give up the effort to actively pursue that goal. As Docent Torben D. Schmidt (2005) from Syddansk University points toward, is it impossible to actively create identity. It comes from a more agency driven process. Furthermore does he states that migration and working on the "other" side could in the long term create something similar to an Øresund identity or feeling of "belonging". (Ringman 2011) He is being backed up by Orvar Löfgren, professor in Etnologi at Lunds University that states that it would be more precise to talked about "Øresund's competence", meaning that people get use to the differences and gradually internalize them rather than they have a specific Øresund identity (ibid).

National identities and culture is potentially a barrier and the discussion about this is on-going. On the one hand belonging, identity and culture constitutes barriers to integration, but the degree and how much it matters is an open question. It is furthermore important also to note that the discussion id maybe less relevant outside academia (in this context) as the formation is a long term process.

6 Concluding remarks and recommendations

The discussion about regional cross-border integration is complex and multifaceted. This review seeks to inquire into push and pull factors of integration and parts of the body of literature revolving around this subject. There seems to be widespread believe in most of the literature that differences create integration – especially functional and structural differences in the labor and housing market and other disparities of economic character that people exploit. From rational incentives the review advances into a discussion about identity formation culture that is claimed to potentially constitute some barriers, at least theoretically, but other researchers takes a more practically stance and denotes that it is in anyway impossible and unfruitful to put resources into "artificially" forging an identity from top-down as it is, or claim, a long term agency driven project. As this is a review it does not seek to comprehend or establish causal links in terms of what "kind" of integration is most desirable or beneficial or what works and what does not, but does however problematize certain kinds of integration which trajectory id one dimensional. The review will hopefully shed light upon literature and dynamics that will add further to the understanding for urban planners and designers working with cross border regional integration.

Erika Kauffmann

The bibliography can be found in the general part.

The cases of push & pull

MALMO
COPENHAGEN

Fig. 6 Distance from city centre to city centre by car and absolute sitance between city edges (google maps, modified by author)

CASE OF MALMO- COPENHAGEN

Region Oresund
Inhabitants: 3,7 million
Distance from centre to centre: 45 km

Malmo
Capital of peripherial region Skane, Sweden
Population: 300,515
Population Greater Malmo: 658,704
Size: 335.14 km² | Size metro: 2,535.76 km²
Language: Danish
GDP per capita* SE: 40,613
inhabitants SE: 9,482,855

Copenhagen
Capital of Denmark
Population: 548,443
Population Greater Copenhagen: 1,930,260
Size: 88.25 km² | Size metro: 3,030 km²
Language: Swedish
GDP per capita* DK: 37,741
inhabitants DK: 5,579,204

* international monetary fund rating 2011

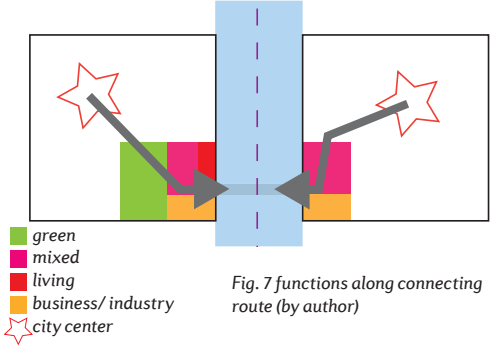


Fig. 7 functions along connecting route (by author)

Housing: The housing demand is higher on the Malmo side, almost 10.000 Danes moved to the Swedish side since 2000. Danish housing bubble create high prices, this has changed after the crises. Prices becoming more similar now.

Labor market and commuting: 95% of commuters go from Skåne to G.Copenhagen. 20.000 vehicles, 30.000 train passengers p. Commuting not as high as expected after building bridge. But because of the collapsed housing market in Denmark and a growing amount of people working on the Swedish side, this situation is changing.

Crossing: To cross the bridge a fee is demanded. For a one way trip by train 9 euro (higher then regular costs for same distance), standard car 40 euro toll (75% discount for regular users)

Integration policy: Is pretty extensive on a binational level (oresund commission, Øresund bron, common statistics and trends) EU supports integration with the INTERREG program

Functions: Malmo is a large medium size city and has as the capital of its region all the necessary fuctions present, incl university, small airport, harbor and industry. Copenhagen is the capital and biggest city of Denmark and has therefore gouvermental functions, an interantional airport and several

The cities have a long history together as opponents. The region Skane was once Danish territory

for several centuries. In 1678 it was reconquered by Sweden. Language is very much alike. Swedish and Danish are smililair, but the Skanish dialect is very close to that of the Danish capital region. (OECD, 2009)

Economic integration model

According to Decoville et.al. (2010): "The first model, integration by specialisation, represents the implementation of a cross-border territorial system with crossed flows, in which cross-border commuting, which takes place primarily from the periphery towards the metropolitan centre, is combined with an opposing residential flow towards the periphery. This dynamic, which leads to a process of cross-border suburbanization, involves a process of functional specialisation of space, with the centre concentrating economic activity and jobs while the periphery, which is attractive in residential terms, is relegated to the role of a dormitory area. To the extent that cross-border residential displacements contribute to increasing the flow of cross-border commuters, this type of territorial organisation is

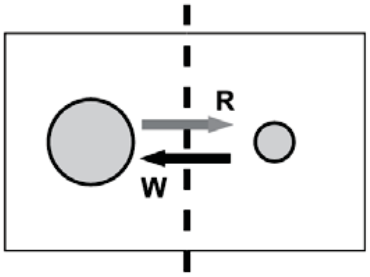


Fig. 8
1. Integration by specialisation
(source: Decoville et.al. 2010)

based on a cumulative logic which requires strong and coordinated institutional responses, especially in relation to the management of mobility. Supporting a functional division of space and an increase in home-work mobility, cross-border metropolitan integration by specialisation is not accompanied by a process of territorial convergence, which raises **the question of the social and territorial cohesion of the regions**. However, this type of integration can prove to be **especially competitive in economic terms, as it is based on the complementarity of territories and their respective competitive advantages**. Copenhagen-Malmo is the best study which best illustrate this first model."

VIENNA
BRATISLAVA

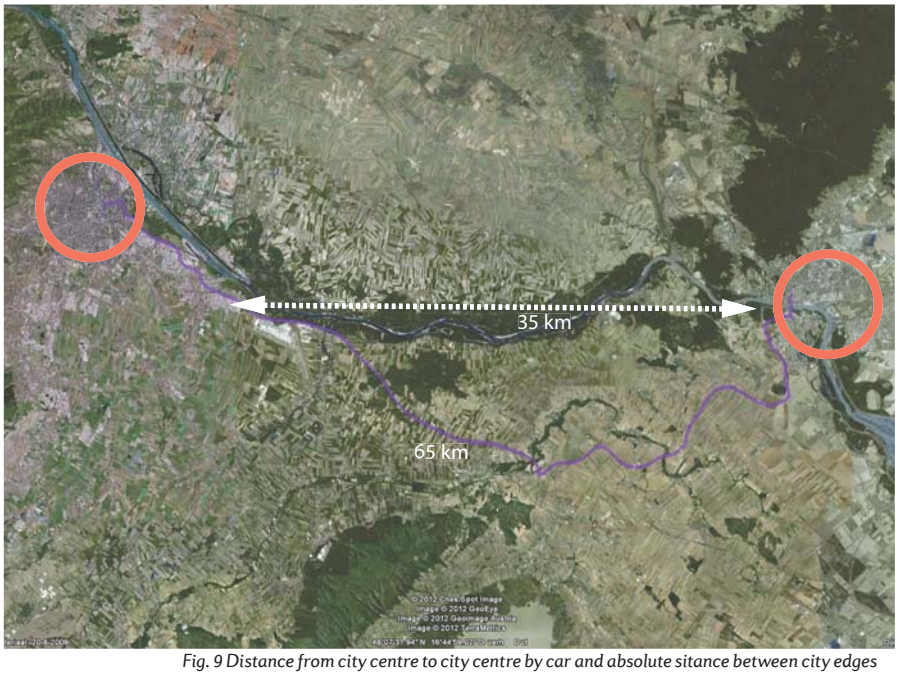


Fig. 9 Distance from city centre to city centre by car and absolute sitance between city edges

Bratislava
Capital of Slovakia
Population: 586.000
(metro): 659.600
Area: 853.15 km2 metro: 2,053 km2
Language: Slovak 84%
GDP per capita* SK: 23,384
inhabitants SK: 5,445,324

Vienna
Capital of Austria
Population: 1,983.836
Metro: ca. 2,419.000
Area: 367,58 km²
Language: German
GDP per capita* AT: 40,836
inhabitants AT: 8,419,776

* international monetary fund rating 2011

CASE OF VIENNA- BRATISLAVA

Region: "Twin city" metropolitan area
Inhabitants: 4.5 million
Distance from centre to centre: 65 km

Only 55 km located from each other, the two cities are the closest located capitals in the world, resulting in potentially easy commuting between them. This makes it an unique case, because both centres function as prime centres within their own borders. The specific location as a hub of the Centrope European region links Vienna and Bratislava closely together, and the two cities have a lot in common as regards culture and history. The separation and independent development of the regions as a consequence of the First World War and the Iron Curtain was followed by the creation of a new common basis as an economic area including shared cultural aspects after the opening up of the Eastern Bloc.

Cultural: Historicly the cities were located in the same country and fully integrated. Since 1989, separated for more than 40 years, both parts of the area have started a process of fast-paced regional integration. The removal of obstacles boosted trade and foreign direct investment, increased international ties, profoundly restructured both regional economies and placed the cross-border region on a slow path of convergence. However, other obstacles – particularly on the labour market – remain, and they may slow down further convergence. Suburbanisation leads economic and fiscal imbalances within the metropolitan area to increase, and urban sprawl puts growing pressure on the environment. (OECD, 2003b)

Economic disparities: Not only do the national borders separate two countries, they also make a distinction between two levels of prosperity: nominal Austrian GDP per capita amounts to roughly six times that of the Slovak Republic in 2002, but due to the higher Slovak growth the gap is constantly shrinking. These differences manifest themselves in the Vienna-Bratislava Metropolitan Region and are likely to influence the creation of an integrated region. At the other hand, prosperity indicators in wester parts of the Slovak Republic around the Bratislava region are high above the Slovak average and higher then certain Austrian parts. (ibid)

Functions: Because we are dealing with two capital cities, several functions can be found here, like gouvermental institutions two universities and two international airports. One of several challenges lays in increasing cooperation of these "double funcitons" within such a small distance.

Towards Bratislava, Vienna consist mainly of industrial and business parks, not an inviting entrance of the city, but open for economic cooperation. Cooperating **business** development is the biggest aim. The cities exchange information about **tourism, the natural environment and transport infrastructure.** Their cooperation is mostly being promoted by the Twin City liner, a ferry line to connect the two cities regulary around the day.

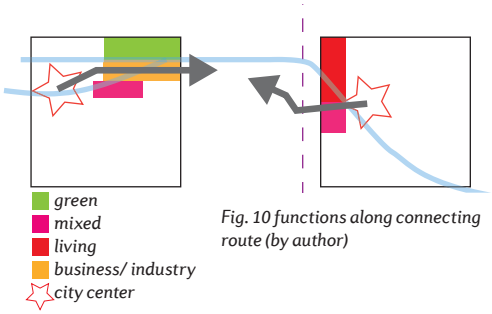


Fig. 10 functions along connecting route (by author)

Policies: Regional and national policy makers are increasingly challenged to foster integration and convergence and to promote policies that could boost development in this potential Central European hub.

Economic integration model

According to Decoville et.al. (2010): "The second model of cross-border metropolitan integration is based on a highly attractive metropolitan centre, both in economic and residential terms. In this process of integration by polarisation, the flows of labour and the residential displacements both primarily converge on the dominant urban centre. Given the significance of the differentials of property prices between the centre and the periphery, the centripetal residential movements involve primarily wealthy households. Functional specialisation of space which tends to separate economic activity from residential areas is combined with a mechanism of social selection driven by market logic. This model, which is beneficial for the urban centre in economic terms, is however in egalitarian and raises the question of its durability within a larger process of European integration, of which the very idea cannot be dissociated from greater territorial cohesion, a factor promoting stability. The case of Luxembourg would have best described this model, which best corresponds to this territorial configuration, marked by the domination by the urban centre of its periphery (Sohn and Walther 2009; Sohn forthcoming). To a lesser degree, Vienna-Bratislava also exhibits these features."

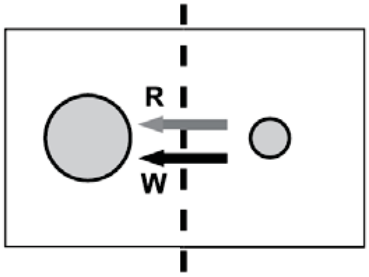


Fig. 11
3. Integration by osmosis (source: Decoville et.al. 2010)

MAASTRICHT AACHEN LIEGE

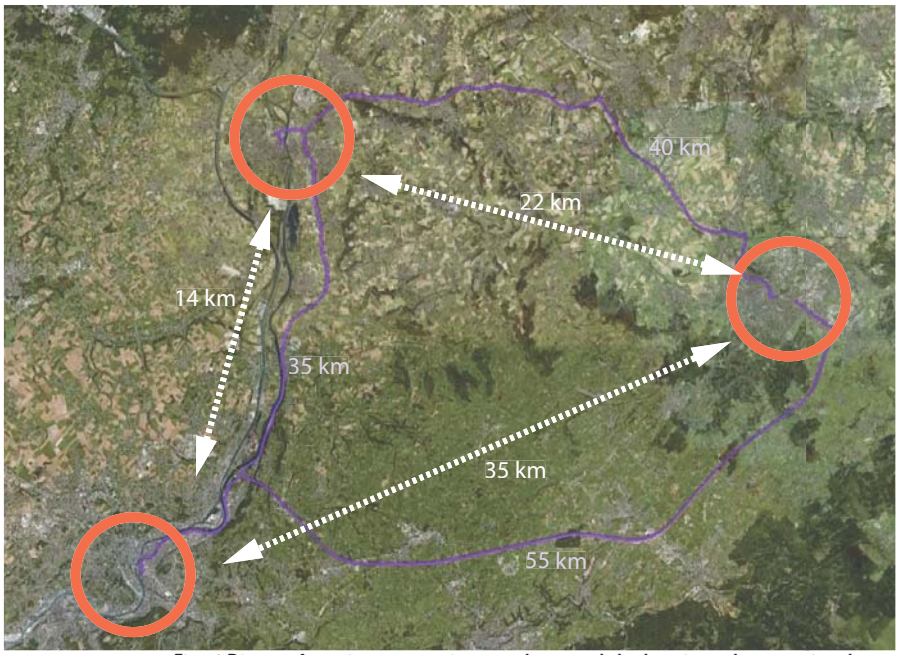


Fig. 12 Distance from city centre to city centre by car and absolute sitance between city edges

CASE OF MAASTRICHT- AACHEN- LIEGE

Region: Meuse-Rhine Euroregion
Inhabitants: 3,9 million
Distance from centre to centre: 14 -35 - 22 km
EU policy programs: INTERREG

Maastricht
Capital of Limburg province, Netherlands
Population : 119.623
Size: 60,06 km²
Language: Dutch
GDP per capita* NL: 42,330
inhabitants NL: 16,727,255

Aken
Middle size city, Germany
Population: 258.664
Size: 160,82 km
Language: German
GDP per capita* DE: 37,935
inhabitnats DE: 81,796,000

Liege/Luik
MIddle size city, Belgium
Population: 192.504
Size: 69,39 km²
Language: French (/Dutch)
GDP per capita* BE: 37,677
inhabitants BE: 11.007.020

* international monetary fund rating 2011

The German city of Aachen, the Dutch towns Maastricht and Heerlen and the Belgian towns Liège and Hasselt are important urban nodes of the cross-border Euregio Meuse-Rhine.
The economic performance of the Euregio Meuse-Rhine has been higher than the European average over the last two decades.

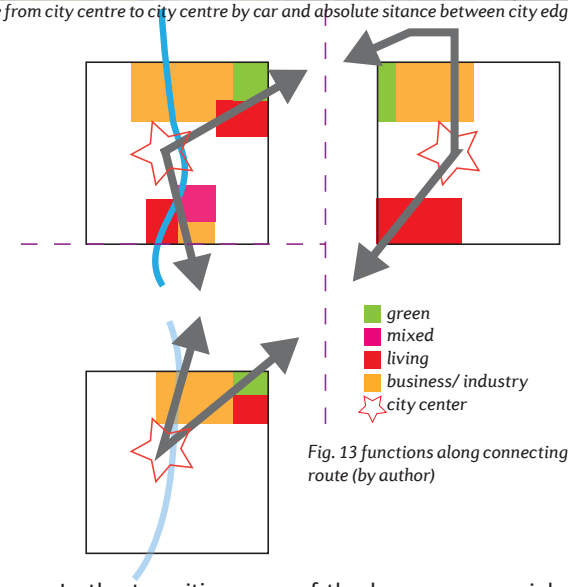


Fig. 13 functions along connecting route (by author)

In the transition area of the large commercial and industrial centers in Northwest Europe (Paris, Luxembourg, Brussels, the Ruhr in Germany, Dutch Randstad and the Flemish cities), the Meuse-Rhine has an extremely favorable geographical position. The major seaports of Antwerp and Rotterdam are not far away and in the immediate vicinity there are the airports of Liège and Maastricht-Aachen and the international airports of Düsseldorf, Cologne, Amsterdam and Brussels. The European TGV stops at Liège and Aachen.

This exceptional position of great advantage to businesses. One study showed that two thirds of the industrial areas in the Meuse-Rhine good to very easily accessible. In recent years, over 16,000 hectares for commercial purposes. The Meuse-Rhine has two research parks, two industrial and innovation parks and 26 business centers mainly for technological developments and for services.
Nearly 100,000 students attend the five universities, numerous craft schoolw, research centers and

university clinics. The Meuse - Rhine regional development took off in 1974. Since 1991, the Meuse-Rhine, has a legal basis in the form of a foundation according to Dutch law. This “Foundation” based in Maastricht coordinates the transnational cooperation of the five partner regions.

The Meuse-Rhine is active in eleven areas: economic cooperation, cultural events, language projects, tourist all-inclusive deals and sporting events, disaster relief, youth, educational projects, technology transfer, health and environment

Commuting: There are significant modality flows in both directions.

Economic disparities: Rates and regulation of taxation vary strongly. Many cross-border workers pay income taxes in both countries. They have to fill in forms in both countries and require help which is difficult to obtain” (MKW Wirtschaftsforschung and Empirica Kft 2009: 46). As a result, many Dutch cross-border commuters elect to live in Germany in order to pay less tax, and the same applies to German cross-border commuters.
(OECD, 2003a)

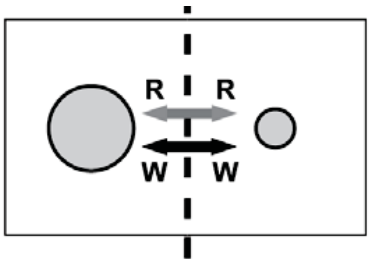


Fig. 14
3. Integration by osmosis
(source: Decoville et.al. 2010)

Economic integration model
According to Decoville et.al. (2010): “The third and last model, integration by osmosis, has bi-directional flows both of cross-border commuting and residential movements. In this model, the integration of labour and housing markets appears to be better balanced and a certain convergence of the border territories interacting appears to be occurring. The fact that the economic differentials across the border are limited can contribute to explaining this situation. It is a type of integration for which the attractiveness of the metropolitan centre is relatively low, or is contested by the peripheral border areas. Thus, it involves cities with lower metropolitan profiles than those involved in the processes of integration by specialisation or polarisation. Aachen-Liege-Maastricht is a cross-border metropolitan region in Europe which approximate to this model.”

KERKRADE HERZOGERATH

Fig. 15 Distance from city centre to city centre by car and absolute sitance between city edges

Kerkrade
Small city, Netharlands
Population: 47.303
Area: 22,17 km²
Language: Dutch + dialect
GDP per capita* NL: 42,330
inhabitants NL: 16,727,255

Herzogorath
Small city, Germany
Population : 47.199
Area: 33,401 km²
Language: German + dialect
GDP per capita* DE: 37,935
inhabitants DE: 81,796,000

* international monetary fund rating 2011

CASE OF KERKRADE AND HERZOGERATH

Cooperation: Eurode
Distance from centre to centre: 2,4 km

The last case revolves around "Eurode," the combination of the Dutch city Kerkrade and the German city Herzogorath. Historically the cities were very much intertwined until mid 1830. They share e.g. a same dialect. The cities were historically connected until 1830, but because of political circumstances, separated when the national borders were drawn. Still they will physically always be connected. There are no physical barriers. 1 street is even in its length split in 2 countries. Connections are everywhere.
Even though the cities are adjacent they have there own centres. Since it's separation the cities have been orientating to there own nations and turned their back to each other. New common functions have brought back some integration. (Eurode, 2011, Kerkrade, 2012)

Housing: houses are built on both sides for the neighbours (even housing typologies are adjusted) Housing prices were lower on German side, but recently it has become more attractive for Dutch to live on the German side

Integration policy: Informal and formal (incl. council) cooperative policy making. Eurode business centre is established to help companies that want to focus on both countries. Striving for becoming a European city.

Functions: On a local level all small size city* functios are present: e.g hospital and high schools
The city cooperates in some public institutions (fire prevention, language education)
The cooperation of the two cities as Eurode is an important promotion tool for EU cooperation. The cities are very small and rely on bigger cities (in own countries)
Common function are still being developed to increase the interaction.

Commuting: Several infrastructural connections and the short distance make it very easy to commute. BUt of the relatively small size of the cities, inhabitants would rather work and live in their own city and country and commute to bigger centres in the region that have more to offer. But because of some shared institutions a limited exchange occurs. Also the different in housing prices and tax pushes people to move and commute.

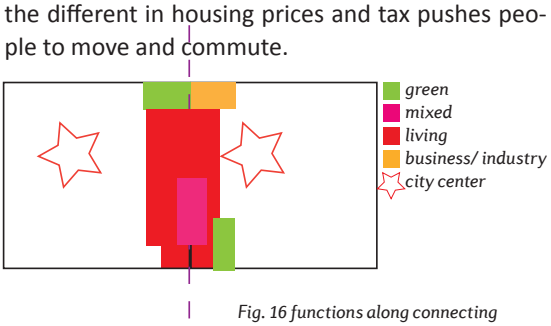


Fig. 16 functions along connecting route (by author)

Retrospect
This section gave back only a part of the various cases. The main points have been appointed. The indicators are in the table on the next page converted to percentages of "push and pull". Subsequently, the percentages of merged indicators, which can be related to each other, compared with other indicators in order to study their relation. The relationship between Helsingør and Helsingborg is also processed. They may be considered in relation with Copenhagen and Malmo, but also to other cases. After all, Helsingør and Helsingborg are also a measurable cooperating combination wih a long shared history.

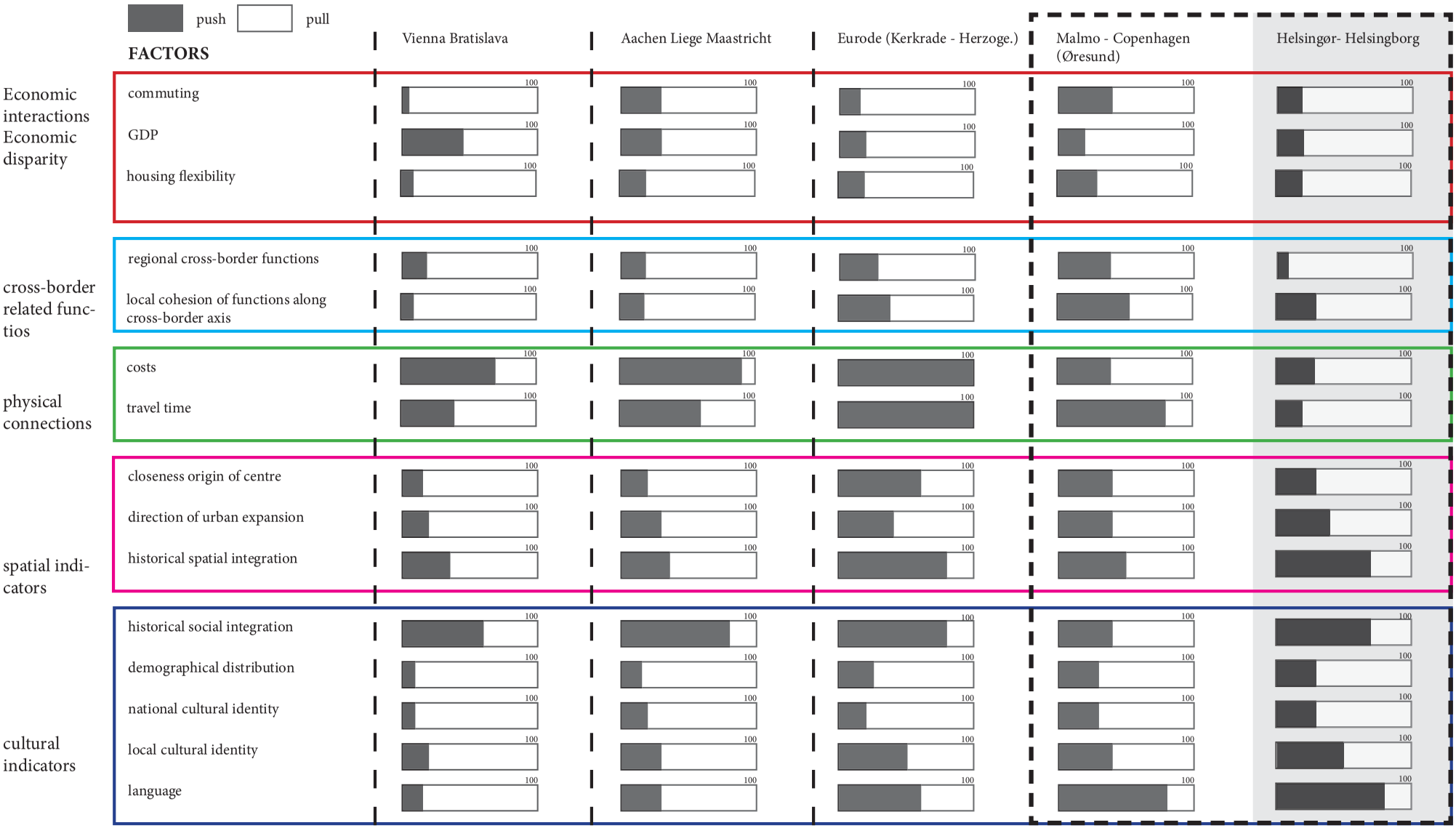


Fig. 17 Measured push & pull factors based on analysis and assumptions (by author)

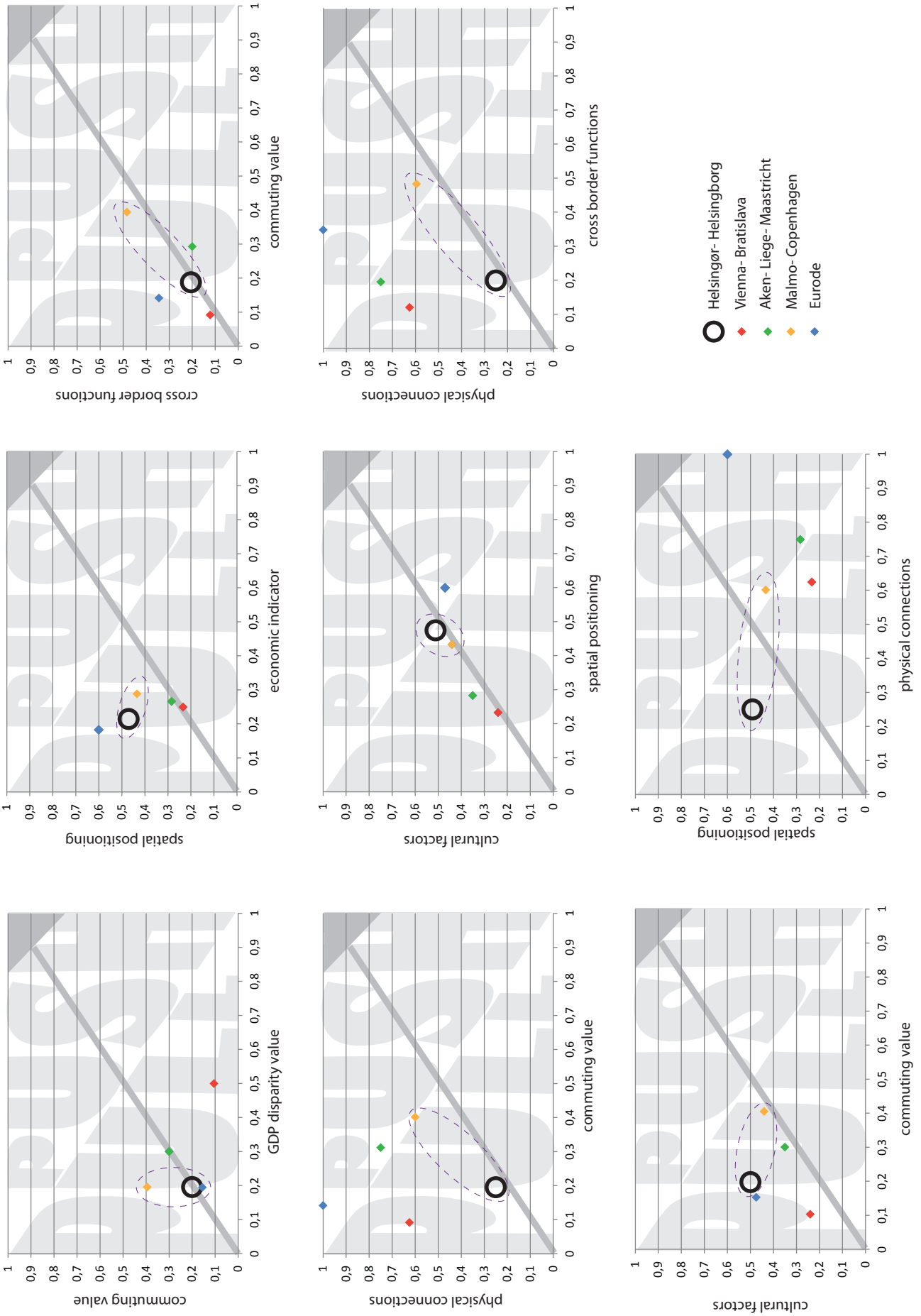


Fig. 18 Relation push & pull factors of cases (by author)

Design variants

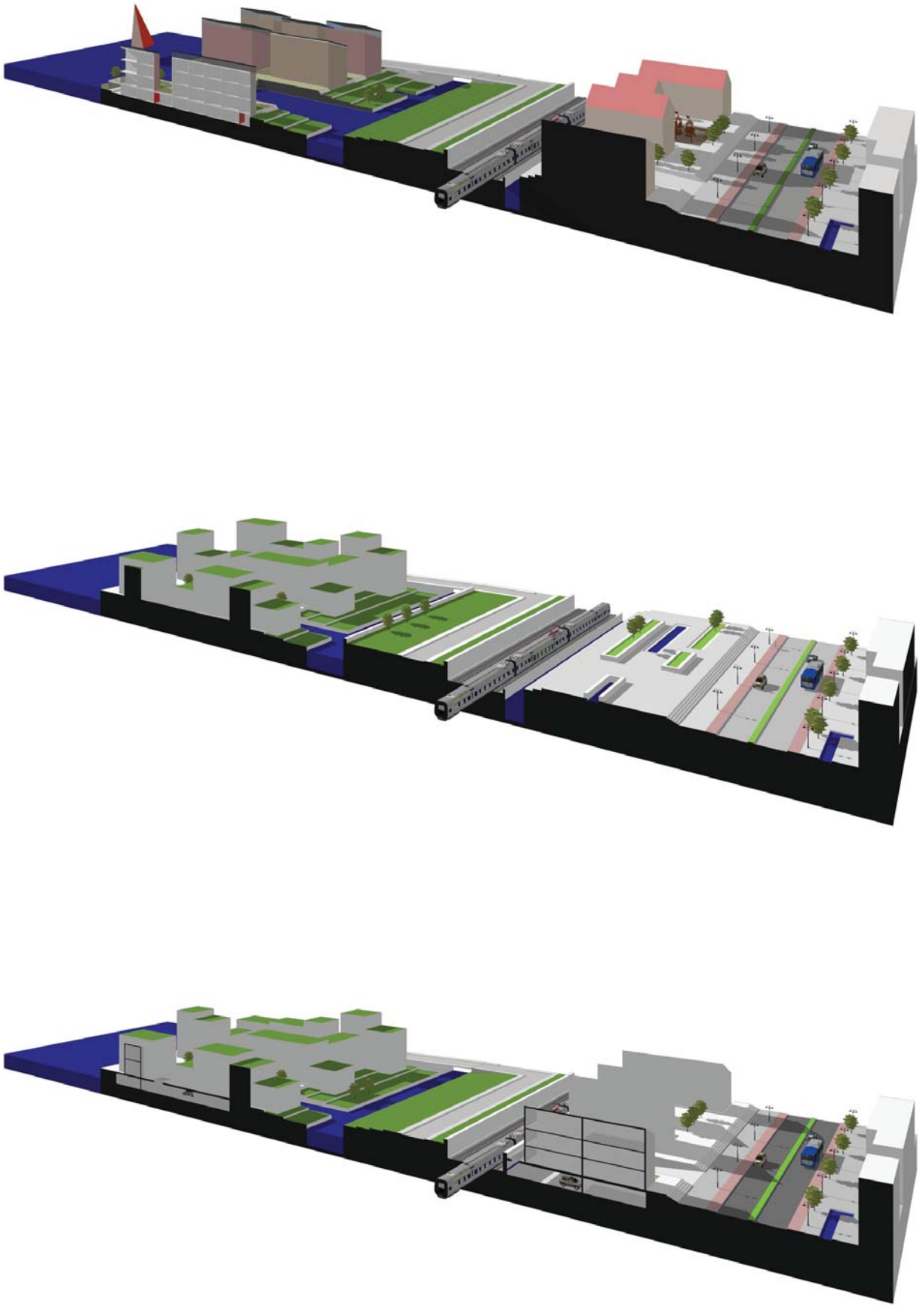


Fig. 19 A selection of variants of the implementation of the plan area (sections) (by author)

Urban plan: References

Java-eiland, Amsterdam
area: 200.635 m²
program: housing, offices and parking garage

Soeters

Sluseholmen, Copenhagen
area: 135.000 m²
program: housing, commercial functions, offices and parking garage

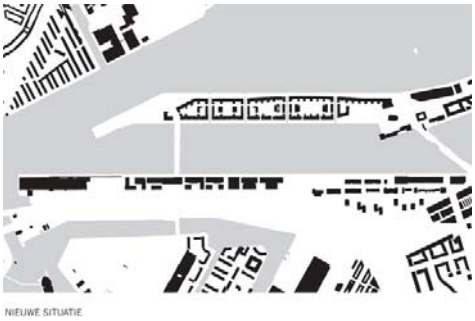
Soeters

Waalfront, Nijmegen
area: 280.000 m²
program: housing (2600), facilities (30.000m²) BVO: 330.000 m²

Gemeente Nijmegen; Lodewijk Baljon landschapsarchitecten; Atelier Zeinstra van der Pol

Bo01,Västra Hamnen, Malmo
area: 220.000 m²
housing (2,558)

Fig. 20 A few references of urban plans, for the design ofarea


NIEUWE SITUATIE


Västra Hamnen 2011
The Western Harbour in Malmö, Sweden

Study by Gehl architects

The next section describes a study from Gehl architects (Bundesen Svarre et.al., 2008) about the Copenhagen courtyards. Examples that are used are renewed closed blocks from the 70s and the new blocks from the past decade.

This study is used as an inspiration and guideline for the building typology used in the plan for Helsingør.

For the study from Geyl architects, five courtyards were examined. Three of them are shown here. The first two, Emaljehaven and Fyrholmen are new developments; the third block is typical one that is established in the 70s.

RESULTS FROM THE STUDY

Residence and their movement: Most stay and move in open courtyards

According to the statistics the open courtyard are most widely used, even when the number of stays is only calculated by the number of outsiders, and the outcome is calculated per household.
One-fourth of the users come from the outside. On weekdays 20% comes from outside, while the weekend 28% visits. This gives an average of 24%.

Playgrounds: Playgrounds attracts

According to the types of activities that unfold, it is primarily the playground, which acts as a magnet to outsiders. The playgrounds are often used by neighbours. But there are differences in the way the playgrounds are used by the outsiders and residents. Residents know each other's children and watch them: Children from 4 - year-old play alone, while there is always a neighbour watching out. The relationship between outsiders and residents are therefore characterized by a lower sense of community and security, and one can only speculate what it will happen when there is no longer a balance between the outsiders and the residents.

Pictures and figures on page 164 and 165 are taken from the study "Open Courtyards" by Gehl Architects. Source: Bundesen Svarre et.al., 2008

Fig. 21 Upper map shows point of views (pictures) from courtyard "Bremersgade" with daily users in the graph (icons refer to user kind) and daily circulation (pink line) by residents within the courtyard . by Gehl Architects. Source: Bundesen Svarre et.al., 2008

Fig. 22 Upper map shows point of views (pictures) from courtyard "Emaljehaven" with daily users in the graph (icons refer to user kind) and daily circulation (pink line) by residents within the courtyard . by Gehl Architects. Source: Bundesen Svarre et.al., 2008

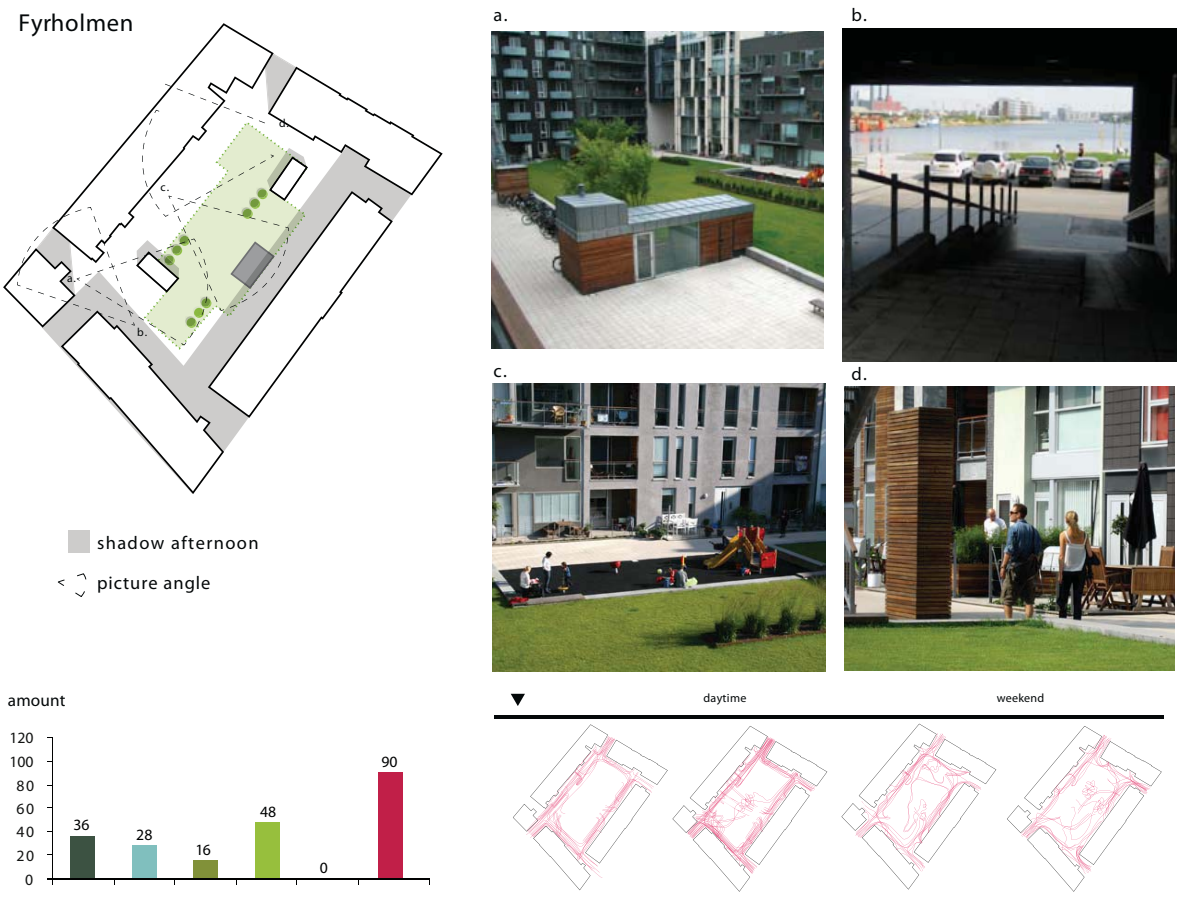


Fig. 23 Upper map shows point of views (pictures) from courtyard "Fyrholmen" with daily users in the graph (icons refer to user kind) and daily circulation (pink line) by residents within the courtyard . by Gehl Architects. Source: Bundesen Svarre et.al., 2008

Open & closed courtyards
Closed courtyards share often several functions. You can find bike shelters, garbage disposal sheds, laundry rooms, pram shelters, etc. This encourages the degree of community life.
Open courtyards attract, depending on the available functions neighbours and other outsiders.

In closed courtyards resident know each other often and know which children are belonging to whom. Parents can more easily let the children play by themselves without staying in their sight all the time. This is different from half open courtyards where, according to the study, the adults move much often from inside to outside to check upon the children. But it also leads to having more adults in the courtyard in general, as they find thinks for themselves to do here, while they watch the children.

External user: encourage the use
The external users can help to create life in a courtyard and encourage residents to also use it. It is comparable to the situation of a restaurant where there are people; an absence of life has a cumulative effect.
The semi-private spaces Emaljehaven and Fyrholmen are characterized by having
ingested transition zones between the public courtyards and private residential zone in the form of terraces. In Emaljehaven the lower floors further marked architecturally the building façade.

Movement: Most movement along the edges
In all courtyards most movement take place along the sides of the courtyards. The centers are more a place to stay especially in the summer. When there is grass, the center is used less. All courtyards have some sort of paths alon the edge of the courtyard.

Semi- private use
As the citizens living in Fyrholmen point out themselves, is the shape of these half private rooms in the open courtyards. New Toyhus is the open gardens that come in the shape of terraces, they appear the least used. It can partially be a question of time, before vegetation grows up. In Emaljehaven the edge between public and semi-private is more apparent, because of elevated balconies. For outsiders it is therefore clear that they can't enter these spaces.

The resident on the ground floor are often the one with children. The children and parent go in and out on summer days. Children to play, and the parents to keep an eye on them, something that is easiest done from the ground floor where they have a clear sight over the courtyard and from where they can move fast.

Semi private space as a reason for usage
The study can't answer the question if the transition between public and private space or the design of it determines the use of the courtyards. According to another study (Deurs, 2005) of housing use, people living at the ground floor, use the courtyards the most. Even though one fourth of the people live on this floor, half of the people using the courtyard are ground floor residents.
See Camilla van Deurs, "Med udkig fra altanen: livet i bolig-bebyggelsernes uderum anno 2005" ("With looking from the balcony: life in outdoor residential housing estates anno 2005") Arkitekten No. 7 2006 p 73-80.

Indirect life from semi open spaces
The study shows that the indirect presence of people, when their doors are open from their semi private balconies, contributes to the life on the courtyards. The newer buildings have 7-17% more activity at the semi-private balconies then at the public areas. But the open doors and windows give a feeling of life.

The conclusions and the recommendations from this study for Helsingor can be find in the project on the pages 106-107.

Fig. 24 Sluseholmen, Copenhagen. source: Bing maps