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Historical perspectives on landscape and contemporary planning challenges

- How landscape dynamics and the landscape's past can contribute to current landscape planning

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Historical perspectives on landscape and contemporary planning challenges - How landscape dynamics and the landscape's past can contribute to current landscape planning

Historiska perspektiv på landskap och nutida planeringsutmaningar – Hur landskapsdynamik och landskapets förflutna kan bidra till samtida landskapsplanering

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Abstract

This thesis seeks to explore how landscape dynamics and past landscape developments can contribute to current landscape planning. Through a literature review and a case study of the landscape's historical development on the Bjäre peninsula, approaches for investigating and understanding past landscape developments and landscape dynamics are presented. Contemporary landscape planning challenges, such as the European Landscape Convention and the Swedish environmental objectives, are reviewed to outline the context in which landscape planning is practiced today, as well as to discuss how an analysis of historical landscapes can be used in current landscape planning. In the case study, changes in land use, landscape functions and driving forces are investigated, and furthermore discussed with the terminology of time-geography and the landscape as a budget frame. Some of the conclusions are that knowledge about landscape dynamics and the landscape's past can contribute to the search for landscape identity, and the understanding of the landscape's dependence on history, as well as its significance for the future. Identifying driving forces of landscape change can furthermore facilitate the task of reaching the goals in the European Landscape Convention and the Swedish environmental objectives. The landscape as a budget frame approach can by revealing the power struggle linked to landscape development, be used to discuss priorities in landscape planning, as well as their consequences.

Preface

Something that has fascinated me during my landscape architecture study is the fact that the landscape is dynamic and changing. After being introduced to historical maps and the method *Historic Landscape Characterisation* through projects during my study, I started to think more about how an analysis of the landscape's past could help me as a landscape architect or planner to make decisions about the future. When I got the opportunity to make a historical map study in a research project on SLU, The Nordic Genetic Resource Center and the Swedish biodiversity Centre, these thoughts, together with my gained knowledge about the historical landscape on the Bjäre peninsula, started to form the base for this master thesis.

As a landscape architect you are supposed to be versatile, having some knowledge within many different fields. This can be seen a strength with the profession, but can also lead to landscape architects perceiving they know too little about the subjects they are supposed to master. The landscape's past development, as well as driving forces of landscape change, is a broad subject, why this thesis has forced me to handle subjects that I, as a landscape architect, was not familiar with before. With my best abilities I have tried to find my way through these quite complex subjects, trying to keep focus on the landscape. Because the thesis, furthermore, seeks to investigate different approaches, many similar notions or concept are being discussed. Here again I have made my best to make the definitions and discussions as clear as possible.

Since Swedish literature has been used, some trouble translating expressions to English has also occurred. All translations have been done by my best abilities, but when an expression or word was particularly difficult to translate, the Swedish expression, or word, is written in brackets next to the English. Writing in English has been a learning process, and I would like to thank Karen Schröder for helping me correct some of my mistakes.

Finally, I would like to thank my supervisor Jenny Nord for comments, critique and rewarding discussions during the writing process. I would also like to thank Erik Persson and Urban Emanuelsson for feedback and interesting discussions.

Contents

Introduction

The landscape's dynamic character is often written about (Antrop 2005; Marcucci 2000; Fairclough 2006). Some people even argue that time is the very essence of landscape and that change is one of its most important characteristics (Fairclough 2006; Hägerstrand 1993). The concept of "landscape" is furthermore frequently debated within the landscape field, and a dynamic view on landscape has gradually become more established, especially after the introduction of the European Landscape Convention.

As a landscape architect or planner you have to make decisions that will affect the landscape far into an unknown future. In order to know what is worth preserving, or on the other hand what to change, profound knowledge about the emerging and development of the landscape throughout time is utterly important. The prerequisites for planning in a more sustainable, integrated and well-founded way are most likely better the deeper the understanding of the dynamics and the development of the landscape is, which can be improved by an analysis of the landscape's past.

We know that the landscape has changed throughout history, and that it is still changing today. However, what is not the same are the driving forces behind the changes. With an increasing population, and higher competition for every piece of land, many wills are struggling about how the landscape shall be formed. In this seemingly competitive world there are common visions and goals for the landscape, formulated for example in the European Landscape Convention and the Swedish environmental objectives. But how can we reach these goals in a landscape that is under pressure and where the prerequisites are constantly changing?

A way to look at the power struggle for space is presented by Hägerstrand (1993) in his theories about landscape as a budget frame. Since everything exists next to each other on the surface of the earth, Hägerstrand believes that landscape change is dependent on the willingness or resistance of the neighbourhood to open up. The view that something has to decrease for something else to increase is useful for understanding the development of the landscape, and to reveal the power struggle it implies. By analysing how the landscape has developed throughout history, it is possible to get a better understanding of why the landscape looks the way it does today, and which forces that have been driving the development. It would also be possible to reach a deeper understanding of the fact that the landscape is dynamic and ever-changing, and which forces that are driving the development today. Understanding the history of the landscape could clarify what types of changes that would stop us from achieving the visions and goals set for the landscape, and also which forces that could facilitate achieving the goals.

Objective and aims

The overall objective of this thesis is to reach a deeper understanding of the contributions that knowledge of past landscape developments and landscape dynamics may give current planning, especially in relation to planning challenges on a landscape scale such as the European Landscape Convention and environmental objectives.

The aims for the thesis are:

- Through a literature review and a case study, investigate methodological approaches for understanding past landscape developments and landscape dynamics
- To discuss the historical changes in the landscape seen in the case study through the terminology of time-geography (the landscape as a budget frame)
- To discuss and connect current planning challenges with the result of the case study

Research questions:

- How may knowledge of past landscape developments and landscape dynamics be useful for understanding the present landscape and its dynamism?
- Is historic landscape analysis a useful method for current landscape planning?
- What can the theory about the landscape as a budget frame contribute to a historic landscape analysis?

Definitions

Historic landscape analysis in this thesis is defined as a study of historical landscape changes, or a landscape analysis made with the landscape's past and historical development as the main interest. This means that historic landscape analysis in this thesis does not refer to the established methods of for example *Historic Landscape Characterisation* (HLC). HLC is a method for dividing the present landscape is into historic character types, described for example in Clark *et al.* (2004). The historic landscape analysis in this case study is influenced by the HLC and other approaches discussed in the literature review, but do not follow a previously established method. The historic landscape analysis in this thesis is process-oriented and consists of a historical land use analysis, an analysis of functions and driving forces in the landscape and a test of the landscape as a budget frame approach on the Bjäre peninsula.

Since the objective of the thesis implies discussing how the historical landscape can contribute to planning challenges on a landscape scale, the focus of landscape planning in this thesis will be on regional and comprehensive planning. Furthermore is a theoretical perspective on planning taken, why the prerequisites of the Planning and Building Act will not be studied further.

Method and material

The method used is a combination of a literature review and a case study of the historical development of a landscape. In the case study a historic landscape analysis will be made to

explore methodological approaches for understanding the historical landscape and its development. Since the aim is to investigate different approaches, the case study will be developed through understandings from the literature review and by the increased knowledge about the past landscape revealed during the case study process. The historic landscape analysis in the case study can be seen as a process where the increased knowledge about past landscape developments leads to new understandings and conclusions. The discussion part of the thesis has the research questions as a base, and can be seen as a comparative study of the results from the literature review and the case study.

Literature review

Literature about landscape dynamics and driving forces of landscape change will be reviewed to investigate different approaches to the study of historical landscapes and provide a base for the case study. Antrop´s (2005) theories about historical landscape periods and driving forces of landscape change as well as Hägerstrand´s (2009; 2000; 1993) theories about time geography and the landscape as a budget frame are especially important. A review of current planning challenges, such the European Landscape Convention and the Swedish environmental objectives will be used to discuss how landscape dynamics and past landscape developments can contribute to landscape planning. The European Landscape Convention because of its importance for shaping the landscape planning context in an overall theoretical perspective, but also on a local scale, and the Swedish environmental objectives because of its more concrete character on regional and local scale.

Case study

The point of departure in the case study is a historical land use analysis of the historical map *Skånska rekognosceringskartan* on the Bjäre peninsula, Scania, Sweden. A part of this work is made in connection with a research project about genetic diversity as cultural heritage in the landscape.[1] An additional reason to why the Bjäre peninsula was chosen as case study area, is the extensive work on the historical landscape that has been done by Nord (2009) and Gustafsson (2006).

The knowledge about the historical landscape and its development, gained from the map study and literature about the historical landscape on Bjäre, will be connected to the literature review to analyse the development of landscape functions and driving forces of change in the landscape. Hägerstrand´s theories about the landscape as a budget frame will also be tested by comparing the spreading of different types of land use in the past and the present landscape. The case study method will be presented in more detail at the beginning of PART 2, the case study.

[1] The research project is carried out on the department of landscape architecture on SLU, Alnarp, The Nordic Genetic Resource Center, SLU, Alnarp and the Swedish biodiversity center, and is led by Jenny Nord, Erik Persson and Urban Emanuelsson.

PART 1: LITERATURE REVIEW

In this part of the thesis, the literature review will be presented. It starts with a survey of some of the challenges related to contemporary planning and continues with an exploration of a number of approaches to the study of landscape and its past developments. The theories and the approaches that will be used in the case study are summarized at the end of the literature review.

Contemporary planning challenges

This chapter of the literature review seeks to outline the context in which landscape planning is practiced today. What are the contemporary prerequisites for landscape planning, and what are the main challenges? Landscape planning can imply a wide range of activities such as management, transportation and traffic planning as well as urban planning. Further it involves working in different scales from a single neighbourhood to a whole municipality. The focus in this thesis is as previously mentioned on regional and comprehensive planning, with the corresponding landscape scale. Sustainable development, multifunctional landscapes, the European Landscape Convention, and the Swedish environmental objectives are studied as contemporary planning challenges as well as for discussing how the landscape´s past can contribute to current landscape planning.

Planning can be seen as an activity trying to control the inevitable change of the landscape. Since the landscape is affected by many forces and processes, and the land is divided between many different landowners, landscape change often happens in an uncoordinated way. Planning can be seen as a way to manage this seemingly chaotic situation, and steer the development in a certain direction (Antrop 2005). Landscape planning has over the years increasingly detached itself from territorial organization, which was practiced when agriculture and other place-bound production were the main industries, and instead become dominated by functional organization (Hägestrand 1993). Functional organization implies that commerce and functions are placed in regard to where knowledge, appropriate technique and administration is to be found, which in many cases means bigger cities.

Urbanization is a present, on-going process that affects not only urban areas, but the whole landscape, and the people populating it (Antrop 2004). The landscape is going towards a dichotomy of highly populated areas with very intensive land use, and neglected, abandoned areas with low population (Antrop 2005; Emanuelsson 2009: 335ff). Sweden has gone from being one of the least urbanized countries in Europe at the beginning of the 19th century, to having about 85 per cent of the population living in urban areas at the beginning of the 21st century (SCB 2007). This creates completely new challenges such as, urban sprawl, growth of infrastructure and the need for high quality recreation areas, which contemporary landscape planning seeks to solve. These new challenges or problems are sometimes explained by weak planning that for instance let cities expand uncontrolled into the rural landscape. In fact, the main problem could be embedded contradictions within planning concerning the need for new housing and restrictions of the city's expansion (Qviström 2012).

Sustainable development

The population is also increasing in many parts of the world, and many landscapes are under hard pressure to supply the growing population with all its needs. Intensive land use has created an increase of monocultures in Europe (Emanulesson 2009: 337), which has led to a loss of diversity in the landscape and hence has negative effects on biodiversity and possibly other values such as cultural heritage, recreation and aesthetic values.

Sustainable development has been a formulated goal since the Bruntland report 1987, (United Nations 1987) and the balance between social needs, economic activity and the environment has become a vital part in landscape planning since then. One of the most debated challenges for the future referring to sustainable development is the effect that climate change will have on our planet. Climate change could affect many aspects of the landscape, from biodiversity to economic prerequisites, but the full effects are still to be discovered. Very likely, nevertheless, is that landscape planning needs to adapt to be able to meet new needs in the future landscape (Sarlöv-Herlin 2012: 11).

Multifunctional landscapes

A way to balance different needs, and satisfy various interests at the same time, is to facilitate the creation of multifunctional landscapes. This has become increasingly important in the more densely populated world, and is becoming a more common demand from the rich and stable societies in Europe (Vos & Meekes 1999). Multifunctional landscapes are essentially about safeguarding and enhancing different interests and values, such as biodiversity, production, recreation, cultural heritage and aesthetic values, in one and the same area, not handling them as separate interests (Sarlöv-Herlin 2012: 14f). This is especially important in urban areas where land is scarce and landscapes often are under high pressure.

Multifunctionality is additionally a way to satisfy the various interests of different stakeholders. A democratic process and public participation is often an aim in landscape planning to secure the rights of involved parties and a balance between different interests. This is mentioned as crucial by the Swedish National Board of Housing, Building and Planning and in the European Landscape Convention, where people's individual perception of landscape is pointed out, as well as the importance of a democratic process when planning (Council of Europe 2000a).

The European Landscape Convention

The European Landscape Convention (ELC), was developed for setting landscape on the agenda, and can be seen as a tool or guideline to cope with contemporary challenges in landscape planning. The ELC is influencing the development of European landscapes by being a guideline for how professionals working with landscape planning could relate to, and work with landscape. Additionally, countries that have ratified the ELC, including Sweden, have signed an acknowledgement of landscape as an important part of people's lives, as well as many other aspects of society. According to the ELC the countries are also obliged to map their landscapes

and identify characters and forces of change as a way to recognize the quality of their landscapes, and improve their management of them (Council of Europe 2000a).

One of the most cited parts of the ELC is its definition of landscape:

> "Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors" (Council of Europe 2000a: Article 1).

This definition implies that landscape is not a collection of physical objects, but something created by people's perceptions, affected by their culture and identity. The landscape is not just the things you can see on a map such as land use and topography, but an expression of people's perception of it. The same landscape might be interpreted very different depending on who is observing it. Through the ELC, the everyday landscape is put on the agenda since the ELC does not advocate a hierarchy between beautiful, outstanding landscapes and plain or neglected ones (Council of Europe 2000a). Furthermore, the landscape is considered dynamic:

> "In seeking the right balance between protection, management and planning of a landscape, it should be remembered that the aim is not the preservation or "freezing" of the landscape at a particular point in its lengthy evolution. Landscapes have always changed and will continue to change, both through natural processes and through human action. In fact, the aim should be to manage future changes in a way which recognises the great diversity and the quality of the landscapes that we inherit and which seeks to preserve, or even enhance, that diversity and quality instead of allowing them to decline." (Council of Europe 2000b: paragraph 42)

This quote from the explanatory report of the ELC describes the conventions dynamic view on landscape. The aim is not to preserve landscapes by prevent them from developing, but to manage future changes so that the diversity and quality of landscapes can be secured. The landscape has additionally an important function as a carrier of natural and cultural heritage, stated in the preamble of the convention text:

> "(…) the landscape contributes to the formation of local cultures and (…) is a basic component of the European natural and cultural heritage, contributing to human well-being and consolidation of the European identity" (Council of Europe 2000a: Preamble)

This becomes especially important since cultural heritage is considered to be an asset in the work for a more sustainable development (Riksantikvarieämbetet 2011). The ELC has furthermore a relatively broad way of viewing protection of landscapes compared to legislations in different countries in Europe, where divisions often are made between natural and cultural areas (Antrop 2005). Protection of landscapes is also considered justified by its heritage, originated from natural configuration or human activity (Council of Europe 2000a).

The Swedish environmental objectives

The purpose of introducing the Swedish environmental objectives was to clarify the environmental aspect of sustainable development. The aims, and the measures to reach them, are be based on fundamental values connected to people's health, biodiversity, nature and culture values, functioning ecosystems and a defensible use of nature resources

(Miljömålsportalen [online] 2012). In 2010 the Swedish environmental objectives got its present form, consisting of a generation goal, environmental quality objectives and milestone targets. The environmental quality objectives shall be a guide for landscape planning and the application of the environmental code (Boverket & Naturvårdsverket 2000). They can furthermore be used to integrate environmental questions in landscape planning and to develop a more strategic environmental assessment.

The environmental quality objectives are goals for the future Swedish environment, but can also be seen as guidelines to the prerequisites of the landscape and to landscape values (Nord & Sarlöv-Herlin 2011). Hence, the environmental quality objectives are useful to take into consideration both as a guide to what is expected of the future landscape, and to define present-day values and conditions that should be managed.

The sixteen environmental quality objectives:

Reduced Climate Impact
Clean Air
Natural Acidification Only
A Non-Toxic Environment
A Protective Ozone Layer
A Safe Radiation Environment
Zero Eutrophication
Flourishing Lakes and Streams
Good-Quality Groundwater
A Balanced Marine Environment, Flourishing Coastal Areas and Archipelagos
Thriving Wetlands
Sustainable Forests
A Varied Agricultural Landscape
A Magnificent Mountain Landscape
A Good Built Environment
A Rich Diversity of Plant and Animal Life

A common way of assessing environmental impact is through Environmental Impact Assessment (EIA), which is often performed in a limited area for a certain project. A way to improve the application of the environmental quality objectives in practice is to connect them to strategic, overall planning, in for example the development of municipalities' comprehensive plans. This is being developed today, with the aim of integrating environmental issues in planning and by this supporting a sustainability development (Boverket 2006).

Visions and scenarios are mentioned by the Swedish National Board of Housing, Building and Planning and the Swedish environmental protection agency as effective ways to stimulate the discussion about environmental issues and planning, and to provide a long term perspective (Boverket & Naturvårdsverket 2000: 13). Working with visions and scenarios, as well as aims and assessment, could be helpful defining key environmental issues at an early state.

The dynamic landscape

The dynamic and changing character of the landscape, which is put forward in the ELC and by many landscape researchers, will be investigated in this chapter. The chapter starts with a study of dynamic aspects of the landscape and continues with a presentation of time geography and the theory about landscape as a budget frame. At the end, some conclusions from the chapter are presented.

The concept of landscape

The view on landscape has changed throughout time from being seen as scenery or a sum of objects, to an on-going process (Saltzman 2000). In Germanic languages the term "landscape" has meant either a territorial unit, or scenery, which is also the meaning in Anglo-Saxon languages (Olwig 1996). The use of the word landscape has varied historically, but today the concept is generally used in a broader and more inclusive sense. An example of this is the ELC´s definition of landscape that emphasizes the individual perception and dynamic character of the landscape, being shaped by interaction of man and nature (Council of Europe 2000a). The landscape definition according to the time geography approach, which will be discussed later (pp. 19), also emphasizes the landscape's dynamic and changing character. In a text about landscape management and protection in relation to the changing landscape, Saltzman (2000) writes about how landscape can be defined:

> "The landscape is often described as shaped and reshaped in interplay between man and nature, it is described as a link between the past, the present and the future, and as pedagogical panorama of how man through history has learned how to make use of nature in a more effective way." (Saltzman 2000: 63) [2]

This description of landscape goes in line with the ELC´s definition of landscape as ever-changing and shaped by interplay between man and nature. It also stresses the historical and pedagogical aspect of landscape, being evidence of the past, giving clues for the future and reminding us as human beings of our own history and our relationship to our surroundings.

According to Fairclough (2006), most landscape definitions have been quite narrow and mono-disciplinary, despite the landscape´s multidisciplinary character. Fairclough advocates a landscape definition that is about perception, and additionally states that the most useful way of describing landscape is through narratives. If a definition should be made it should be broad and inclusive to reflect the landscape´s infinitive diversity (Fairclough 2006).

The landscape as an arena

The landscape is also the arena where many professions' different perspectives meet, such as geologists, geographers, landscape ecologists, historians, archaeologists, biologists, sociologists,

[2] Authors translation. Original text: "Landskapet beskrivs ofta som format och omformat i ett samspel mellan människa och natur, det beskrivs som en länk mellan gångna tider, nutid och framtid, och som ett pedagogiskt panorama över hur människan genom historien lärt sig nyttja naturen på allt effektivare sätt."

planners, landscape architects etc. (Scazzosi 2004). This results in a tendency of dividing the landscape into different fields. But the importance of seeing the landscape as a unity or a whole has also been pointed out by many landscape researchers, as well as in the ELC. In a paper about how a number of European countries implement landscape policies, Scazzosi (2004) sees a trend towards a holistic view and nature/culture integration:

> "…in spite of the differences in the cultural approaches characterizing the history of the landscape issue and still characterizing it in the various national contexts (…), there is a significant mainstream convergence towards a global and unitary vision of landscape, i.e. a tendency to integrate nature and culture, a shift in interest from outstanding places of excellence (natural or anthropic) to the whole territory…" (Scazzosi 2004: 336)

Aims of handling landscape as a whole can be to discover larger structures and systems, and recognizing the landscape's presence everywhere. The latter is pointed out in the ELC, together with the importance of people's perception of landscape. According to the ELC the landscape is "an area, as perceived by people" (Council of Europe 2000a: Article 1) which implies that a landscape can be perceived differently by every person, and therefore also changing with every observer (Herring 2009; Turner 2006). The same landscape could be perceived as a stunning view, a possible area for housing development or a valuable biotope.

Dynamic landscapes, can by this, both imply landscapes that are developed and constantly transformed in interplay between man and nature, as well as landscapes transforming with changed individual perceptions of them. As a unity or a whole, a landscape can furthermore be seen as a dynamic and complex system, where all the parts affect each other.

Landscape and time

Another aspect of landscape dynamics (that relates to the above mentioned aspects as well) is the change that is caused, or forced, by time. Time may be considered implicit when discussing process and dynamism, but still deserves some further investigation. The landscape does not only stretch out in space, but also in time, since it existed in the past and will continue to exist in the future. This means that everything in the landscape can be seen as "moving" or "drifting" (*i rörelse*); a part of a landscape that is not moving or spreading geographically, is always drifting in time (Hägerstrand 1993).

Another way of expressing this is that landscape is both spatial and temporal, or geographical and historical, and can be seen as being built up by layers from different times (Marcucci 2000). Time can reveal itself in a landscape as a layering of partly surviving landscape periods (Fairclough 2006). This is illustrated in figure 1 and 2. In figure 1 elements or layers from different times can be detected in the landscape. Buildings, field structure, vegetation structure etc. can be traced back until a recent past or far back in history. In figure 2 previous layers or elements have been erased or hidden and no clear trace of history remains in the new landscape.

Figure 1: (upper) Dejarp, Bjäre (Photo by: Anna Brånhult 2012)
Figure 2: (lower) Ørestad, Copenhagen, Denmark (Photo by: Anna Brånhult 2009)

Time also gives identity, local variations and is a living part of the landscape. People in the UK (and possibly in other parts of Europe as well) prefer landscapes with high time depth and clear evidences of the past, whereas modern landscapes more often are perceived as monotonous and plain, since they are the result of one historical period with weak connections to the past (Fairclough 2006).

Time geography and the processual landscape

According to Hägerstrand (2000) space is more mysterious to us than time. Time is something we can feel inside us, which affect us, whereas space is always perceived as something external, being outside of us. Because of this, there is a tendency to separate time from space, which is unfortunate since they are deeply involved with one another. Hägerstrand called his theories about the relationship between space and time "time geography", and in his theories, he was trying to get away from investigating different states or situations, and instead clarifying the processes that leads to landscape change and transformation (Hägerstrand 1993).

Hägerstrand (1993) promotes a view on landscape that he calls the processual landscape (förloppslandskapet), which is defined as:

> "…everything that exists within the defined geographical border and everything that is moving in and out of that border during the time limit you choose." [3] (Hägestrand 1993: 26)

The landscape is seen as an area, a spatial delimitation, but also as a period of time, and the processes that are going on during this time. As in the landscape definition in the ELC, the processual landscape is seen as dynamic whole; the landscape is not divided into different fields and its changing character is recognized. Natural and cultural processes are additionally seen as shaping the landscape according to both the processual landscape approach and the ELC (Hägerstrand 1993; Council of Europe 2000a). The greatest difference between processual landscape definition and the landscape definition in the ELC is that man is not in focus in the processual landscape approach. The ELC defines landscape as "an area, as perceived by people" (Council of Europe 2000a: Article 1) which implies that landscape comes into existence through people's perception of it, which is not the case in the processual landscape definition. Additionally, the processual landscape definition gives a greater importance to time and movement in the landscape than the definition in the ELC.

When studying historical landscapes, it is common to end up with maps or images showing what the landscape looked like in different times, without knowing how these changes occurred. This is a harsh simplification of the landscape that makes its active processes invisible (Hägerstrand 1993). This means that someone who is investigating the history of a landscape, may not explain the development of the landscape, but only investigates different states in that landscape´s development (for example the landscape in the end of 17th century). By this, one is missing the ever-changing aspect of the landscape (Nilsson 2010). Landscape change shall according to Hägerstrand (1993) not be seen as an assembly of frozen layers, but as events, or procedures, in an existence. By doing this, it is possible to realize the dynamics of the landscape and also to detect forces of change.

To clarify the moving or drifting aspect of the landscape, illustrations of trajectories (an objects path through space and time) be can used (see figure 3). Individual objects, such as humans, plants or stones are always moving, if not in space, in time. One can picture it as the landscape having a third scale; you can move west, east, south and north, and simultaneously you are constantly moving in time, just by the fact that time is passing. Individual objects move in trajectories that cannot be divided (a person or an object can only exist at one place at the same time), while masses (myckenheter), such as water and soil, move in flows (Hägestrand 1993).

The processual landscape approach is furthermore concerned with the interplay and power struggle between these processes and the forces that drive them (Hägerstrand 1993). The outcomes and the consequences of these battles are what make the landscape take new forms. The landscape can in this context be seen as the filled surface of the earth (jordytans fyllda rum). Everything exists beside each other on the surface of the earth in the meaning that there are no material gaps or holes between anything in the world (Hägerstrand 2009: 57ff). This makes areal

[3] Authors translation. Original text: "allt som är närvarande inom den lagda geografiska gränsen, inklusive allt som rör sig in och ut över gränsen under den tidsperiod man väljer."

budgeting (areell budgetering) highly necessary. Areal budgeting is something that is done every day by authorities as well as private persons; examples could be deciding the land use in a municipality, distributing functions in a garden or arranging the furniture in a room (Hägerstrand 2000).

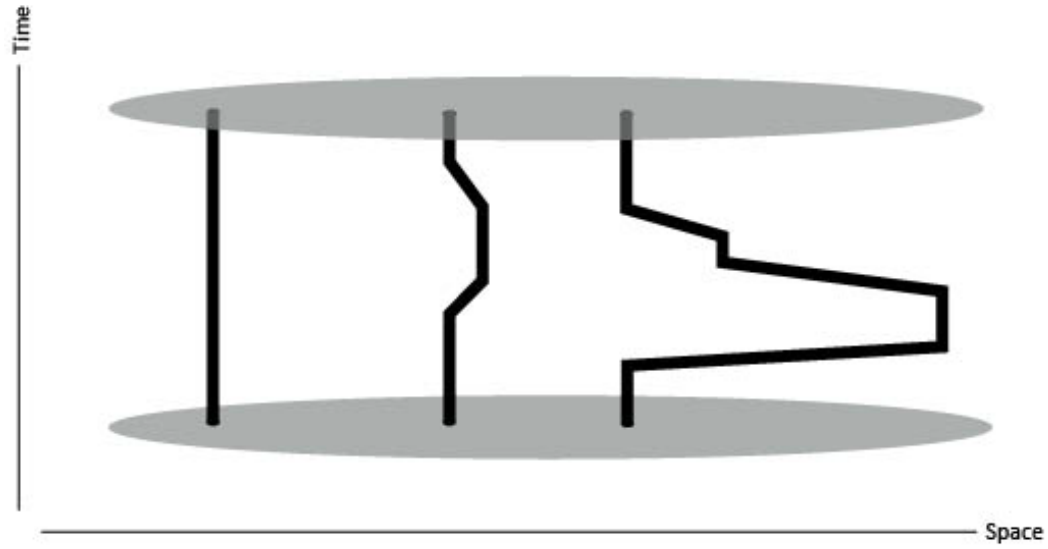


Figure 3: Illustration of trajectories of individual objects. (Made by: Anna Brånhult 2012)

The trajectory to the left is during the chosen period of time not moving in space, which causes the line to be only vertical. The middle one moves to one other place and then back, the one to the right visits two places and is also moving in a higher speed between the places than the middle object.

The landscape as a budget frame and the importance of the neighbourhood

In relation to areal budgeting, the landscape can be seen as a budget frame with a limited amount of space and time. The landscape as a budget frame refers to the fact that everything is there; nothing can disappear, and nothing can be added. Shapes can be renewed, but the material is always the same (Hägerstrand 2000). It´s all about redistribution, or as Hägerstrand expresses it:

> "Nature´s and society's characters are competing for space in a limited budget frame of room, time and energy." [4] (Hägerstrand 1993: 27)

A consequence of referring to the landscape as a budget frame is that if one phenomenon is increasing, another one must decrease. This might sound trivial, but it clearly points out the need to see the landscape as a whole. The budget frame approach is, however, not only about what is decreasing or disappearing for something else to increase or emerge, but also about which forces make this happen. It raises, for instance, the question of what makes some areas become more intensively used and others abandoned?

[4] Authors translation. Original text: "Naturens och samhällets gestalter tävlar om plats i ett begränsat budgetutrymme av rum, tid och energi."

If everything exists beside each other on the filled surface of the earth, the power struggle between neighbouring phenomena could be seen as deciding the accessibility within the budget frame. In other words: what allows what to emerge? and what stops what from emerging? (Hägerstrand 2000) Hägerstrand (1993) discusses the struggle between neighbouring phenomena in terms of the willingness or resistance of a neighbourhood to open up. An example of weak neighbourhood resistance could be cultivated land close to expanding cities that often fail to resist the pressure from their stronger neighbours and is transformed to housing or other urban functions.

The idea about the willingness or resistance of the neighbourhood to open up is similar to the more recent theory about resilience. Resilience is a way of implementing sustainability, and can be defined as: "the capacity of systems to reorganize and recover from change and disturbance without changing to other states" (Ahern 2011: 341). This could be compared to the resistance of a neighbourhood to allow itself to change. To build resilience in a landscape, essential processes and disturbances must be defined, and actions must be made to make the landscape able to respond to these disturbances. The capacity to adapt to unexpected changes: resilience capacity, can be strengthen by for example biodiversity (ibid.), which also is an important part of the Swedish environmental objectives as a way of working towards a sustainable development. Mulitfunctionality can furthermore be a strategy for building resilience in urban areas (ibid.).

The dynamic landscape - conclusions

The contemporary view on landscape is that it is dynamic and changing. Time and change can furthermore be considered to be essential characteristics of landscapes. Since the landscape is constantly changing, it is another, new landscape that takes the consequences of the decisions that are made in the present. This is relevant for landscape architects and planners since the decisions that are made today affect landscapes far into the future. One aim in long term planning could be to give future generations a wide range of options and possibilities to form their world in a way that meets their needs. If decisions that are made today allow a wide range of possibilities to appear in the future, one could argue that a better basis for sustainability is created.

The questions "what allows what to emerge?" and "what stops what from emerging?" is of valuable help concerning this, since it seeks to reveal forces behind landscape change and additionally accentuates the power struggle in the landscape. When the landscape is changing, it often opens up for a struggle where different phenomena must defend their existence in space and time; the weaker neighbourhood or phenomena will disappear if the adjacent neighbourhood or phenomena is stronger (Hägerstrand 2000). This way of seeing landscape could give explanations to past, as well as on-going, landscape development.

Summary of conclusions – the dynamic landscape:

- The contemporary view on landscape is dynamic and holistic
- Time and change are an essential characteristic of landscapes
- Forces behind landscape change could be important for understanding past landscape development and landscape dynamics
- The view on landscape as a limited budget frame could reveal power struggle in the landscape and explain past, as well as on-going, landscape development

The landscape's past and landscape planning

With the landscape ´s temporal aspects and dynamic character as point of departure, an analysis of the landscape's past seems like a useful method to manage present landscape planning challenges. Understanding the development of the landscape, and its driving forces, could be a base for handling current planning challenges such as the Swedish environmental objectives and the ELC. In this chapter, analysis of historical landscapes is examined as a method for landscape planning. Approaches to the study of the landscape's past, as well as and benefits of using them in landscape planning, is furthermore investigated. Special attention is given to Antrop's (2005) driving forces of change and landscape periods as well as Hägerstrand's (1993) material regimes.

Approaches to the study of historical landscapes

With the ELC, and the line of thoughts that led to the creation of the convention, the cultural landscape and its heritage, has become widely recognized in Europe. Methods for analysing landscapes have existed for long, but in later years the English method *Landscape Character Assessment* (LCA) has become a popular way to analyse landscapes. This method derives from the view of the landscape as a whole, in contrast to the emphasis of evaluation of "better" or "worse" landscapes (The Countryside Agency & Scottish Natural Heritage 2002). LCA is a method for identifying the most important elements in the landscape, and divides the landscape into generic character types, and unique character areas. Driving forces of change shall be included, however the method has been criticized for focusing too much on visual aspects and not enough bringing forward the historical processes in the landscape (Nord & Sarlöv-Herlin 2011).

Alongside LCA, the method *Historic Landscape Characterisation* (HLC) was developed by English Heritage, which focuses on time-depth and historical patterns in the landscape (Aldred & Fairclough 2002). An important reason for developing the method was to get away from a point based way of working, and the hierarchy of values that previous methods focusing on cultural heritage resulted in (Clark *et al* 2004). In a HLC, the landscape is divided into historic landscape character types that are based on traces of history in the present landscape. HLC uses, as well as LCA, characterisation and GIS as tools, but is more focused on landscape processes and change. HLC is a well-defined method that was developed with landscape architects and planners as target group (Nord & Sarlöv-Herlin 2011; Fairclough *et al* 2002), but it is not the only method or theory for investigating a landscape´s past.

Within the field of landscape history, the temporal context of a landscape is investigated though the methods are not as visual and defined as HLC. According to Marcucci (2000), a good landscape history describes a holistic system and the keystone processes of change that has shaped the landscape throughout time. Landscape history and HLC generally aim at the same goal but some differences can be observed. HLC can be interpreted as focusing more on identifying and representing different character types in the landscape, whereas landscape history is aiming to describe the development of the landscape and finding driving forces and processes of change, possibly in a more theoretical way.

Within the field of cultural heritage and geography, historical maps are often used; archaeologists and cultural geographers have for long used historical maps to make so called "historical map overlays" (*historiska kartöverlägg*) to get information that can serve as a base of knowledge for further investigation. In Sweden, the county administration board, municipalities, the Swedish environmental protection agency and the Swedish transport administration, are examples of users of historical maps for varied purposes related to landscape planning (Riksantikvarieämbetet 1999).

Driving forces of landscape change

The study of a landscape's past often aim to discover driving forces of change, which can illuminate past, as well as on-going, developments in the landscape. Driving forces of landscape change are essential to detect in order to be able to forecast future landscape development, and to define actions to retain or prevent future landscape development (Marcucci 2000).

There are several theories about driving forces of landscape change, two of them are Marcucci's (2000) keystone processes and Antrop's (2005) four main driving forces of landscape change. Marcucci's keystone processes are defined as processes that influence the evolutionary trajectory of a landscape, and can be both recent processes and processes that started for several thousand years ago. Antrop (2005) defines urbanization, globalization, accessibility and calamities as the main driving forces of landscape change in Europe the last centuries, and furthermore states that all of these driving forces are linked to population growth. Considering that the material available for the case study in this thesis is mainly from the 19th century and forward, Antrop´s driving forces are the ones that will be investigated further.

Urbanization, globalization, accessibility and calamities

The accessibility of an area has always had a large effect on how interesting it has been for humans to settle, and the growth of a settlement or city today is still linked to accessibility (Antrop 2005). Areas less accessible for people are more likely to remain stable, in contrast to highly accessible areas connected with effective transportation infrastructure. The railroad is an example of infrastructure that improved the accessibility when it came, and lead to increased development in its surroundings.

Urbanization is not a new phenomenon, but is something that has increased in speed and scale since the industrial revolution, especially after world war two (Antrop 2005). Urbanization can be defined as the process of people moving from rural to urban areas, entailing growing cities and a more urban orientated society. Already before the industrial revolution urbanization affected the rural landscape around the towns with the request for food, raw material, etc. (Antrop 2004). Today, issues such as urban sprawl and the request for recreation are becoming increasingly important when planning in the urban fringe (Qviström 2012).

Additional effects of urbanization are the peri-urban areas that appear in the urban fringe. These new landscapes are often settled fast with the possible result of an identity crisis, resulted by a loss of the area's previous identity and the lack of a new one (Antrop 2004). When people with

urban lifestyles live on the countryside, the division between the urban and the rural also becomes more diffuse (ibid.).

In the context of landscape change, Antrop (2005) refers to globalization as all general initiatives and processes affecting local decisions and actions. Economic globalization implies a neutralization of place and distance, increased mobility and global communication (Antrop 2005; see also Hägerstrand 1993).

Calamities as driving forces are more or less unpredictable and can both be direct and indirect forces of landscape change. In case of a disaster, decisions are often forced to be made quickly, and a lot of energy is put into reducing the impact of the catastrophe. Calamities can also open up for entirely new landscapes that would never have been planned intentionally (Antrop 2005).

Landscape periods and material regimes

In addition to the four main driving forces of landscape change, Antrop (2005) describes three main periods in historical landscapes: traditional landscapes, landscapes of the revolutionary age and post-modern new landscapes. These landscape periods are mainly based on speed and scale of landscape changes, which are connected to the driving forces behind them. In relation to time geography and the processual landscape, Hägerstrand (1993) discusses the circulation of material linked to different periods in a landscape's history, and outlines a classic and a modern material regime that can be linked to Antrop's landscape periods.

Antrop´s first landscape period includes the pre 18th century landscapes, which are characterized by holding remnants and structures from a far past. The economy in the traditional landscape period was strongly influenced by the prerequisites of the landscape, which steered the consumption and how people worked (Hägerstrand 1993). Generations worked and lived in the same landscape, which most likely meant that they valued the landscape and took care of it. Traditional landscapes also hold information about past management traditions, and contains local variations and visible evidence of the past. Because of this, traditional landscapes are important carriers of cultural heritage (Antrop 2005).

In the traditional landscape the classic material regime dominates, which implies that the circulation of material is bound to a specific place (Hägerstrand 1993). Agriculture production, which often is a vital part of the traditional landscape, is naturally bound to a geographical place, and the products are mostly consumed locally. This type of local economy is however vulnerable, and the classic material regime can only last as long as the population stays stable (ibid.).

The second landscape period consists of landscapes from the industrial revolution era, mainly from the 19th century until the Second World War. In this landscape period many large, irreversible changes took place and totally new landscapes were created (Antrop 2005). The landscapes of the revolutionary age made a break with the past, and the speed of change increased dramatically. Decisions were also centralized to a greater extent, sometimes made far away from the affected area. The changing economy, demographic changes and the intensification of land use, were driving forces at this time, creating entirely new landscapes that today often have disappeared again (ibid.).

With the industrial landscape period, the modern material regime developed, which implies a geographically wider, sometimes even global, circulation of material. The wider circulation of material made the wealth grow, and enabled people to travel and exchange experiences as well as knowledge with people from other parts of the world (Hägerstrand 1993). The disadvantages with the more global economy, such as energy and space consuming transports, pollution, and exploitation of nature, can be seen in both industrial landscapes and the post-modern new landscapes (ibid.).

The last period, which is characterized by globalization and urbanization, is the post-modern landscape period. The largest differences between this period and the traditional and revolutionary landscape period, is the increase of speed and scale of changes, together with the transformation of the users concerning perception, values and behaviour (Antrop 2005). The post-modern new landscapes are strongly affected by globalization, resulting in the fact that local autonomy sometimes is less important than the connection with other parts of the world. New landscapes are also often replacing old ones, rather than being integrated (ibid.).

In the post-modern new landscapes the modern material regime is still dominating, but the circulation of material is varying. Modern agriculture is an example of mixed material regimes where the production still is bound to a geographically defined place, but the tools used in the production can come from places far away and, the products can be consumed all over the world (Hägerstrand 1993).

The landscape periods presented above are strongly connected to driving forces of landscape change, and can be seen as examples of epochs where different driving forces were the most influential. In most landscapes, these periods are probably difficult to separate completely since they, as the driving forces, can exist simultaneously. Parts of traditional landscapes still exist in present landscapes, even though the most influential driving forces in the landscape have changed. Despite this, an attempt of outlining the relations between the landscape periods, the material regimes and their main driving forces is presented in table 1.

Table 1: The relations between the landscape periods, material regimes and the main driving forces. (Made by: Anna Brånhult)

Landscape periods	Material regimes	Main driving forces
Traditional landscape period	Classic material regime	Accessibility and urbanization
Revolutionary landscape period	Classic material regime and the beginning of the modern material regime	Urbanization and the beginning of globalization
Post-modern landscape period	Modern material regime with elements of classic material regime	Urbanization and globalization

Planning with consideration to the landscape's past

Since landscape, and landscape planning as activity, is imbued with time, the landscape´s past can be considered vital when planning the future (Marcucci 2000; Fairclough 2006). Because of the fact that today´s landscape was created yesterday, investigating the past could facilitate a greater understanding of the present, as well as the future, landscape. This section of the thesis will review and discuss some current planning challenges, and the advantages consideration to the landscape's past might have when handling them.

Long term thinking

In order to plan for the long term, which usually is the aim in comprehensive planning, it is vital to try to envision future needs and desires. With an examination of long-term history it is possible to envision changes in the future landscape that otherwise could be ignored (Marcucci 2000). This is additionally important if sustainable development is the goal since it implies taking future generations into consideration (United Nations 1987). According to Antrop (2005), traditional landscapes are often examples of sustainable landscapes with a clear identity connected to a place or a region. This is why historical landscapes can teach us about sustainable management techniques, and inspire to future landscapes (ibid.). Historical landscapes could also inspire to maintain and make visible cultural heritage values in the landscape. Investigating the landscape's past can reveal changes in the landscape over time, and show structures that remain from the past, which adds to the understanding of the landscape's temporal aspect. Furthermore, it can be argued that by looking far back in history, long-term thinking is automatically generated, since it encourages doing the same into the future.

Cultural heritage and landscape identity

Cultural heritage is an important part of people's environment, and protecting cultural heritage is an important issue when brining the landscape into the future (Council of Europe 2000a; Riksantikvarieämbetet 2011). Cultural heritage can be considered to be closely connected to a landscape's identity since it can be a large part of its character and distinctiveness. By examining the landscape's past, it is possible to find phenomena and structures that are meaningful for the identity of a landscape (Antrop 2005; Clark *et al* 2004). When these structures, phenomena and processes are identified, it is possible to make an evaluation of which ones that are vital for the landscape to keep its identity. Antrop (2005) uses a metaphor of an aging person, whose physical appearance transforms throughout life, while the persons personality is still recognizable. Large enough changes can nevertheless transform a person (or landscape) in a way that their personality (or identity) is altered.

Strategic and holistic planning

According to Marcucci (2000), investigating the landscape's past can contribute to several phases of landscape planning such as inventory, issue identification and the plan making phase. By using history and describing the nature/culture interplay throughout time, a temporal aspect is added, which results in a more complete inventory. The interaction between nature and culture can furthermore be useful for understanding the landscape as a whole (Marcucci 2000). A holistic way

of investigating and presenting the landscape's past could also give people the chance to create their own narrative of their landscape (Dobson 2011). When specific sites are not pointed out and explained, people get the chance to appreciate everyday heritage values in a greater extent.

Historic landscape analysis as an instrument for communicating and engaging the public in the planning process has also been pointed out (Marcucci 2000; Clark *et al* 2004; Turner 2006). It may create a context for identifying problems and desired outcomes, and the result can be a base for a discussion about the future landscape (Clark *et al* 2004; Turner 2006).

When it comes to the plan making phase, investigating the past can make it possible to identify driving forces of landscape change (Marcucci 2000; Antrop 2005). By supporting or preventing these, the future landscape can be shaped. If, for instance, the present situation of high biodiversity in a certain area is desirable, history about land use and management procedures can contribute to retain that situation.

Essentially, knowledge about the landscape's past can be used in planning to improve the connection between the past, the present and the future, and by this be a tool to handle challenges in contemporary landscape planning. Fairclough *et. al* (2002) describes the essence of *Historic Landscape Characterisation*, and its applicability, which provides a suitable ending of this section:

> "The core premise of HLC and its application in planning and conservation is that relationships between people and their environment are dynamic and changing. The key policy issue is how society can influence direction and pace of future change whilst still maintaining links with the past in a way that enriches the present" (Fairclough *et al* 2002: 69)

Summary and conclusions of the literature review

With a dynamic view on landscape, landscape architects and planners plan in change, for change. The landscape is in constant transformation, and so are the prerequisites for landscape planning. An overall challenge in landscape planning is how to prepare for future changes and the changed prerequisites they will bring. The ELC and the Swedish environmental objectives can be seen as challenges, and tools, created to support this preparation and steer the landscape development in a sustainable direction. In order to reach the aims of both the ELC and the Swedish environmental objectives, the study of the landscape's past is meaningful since many of the values declared in the convention and in the environmental objectives have been created in the past. A historic landscape analysis seems like a useful method for investigating the landscape's past and understanding the dynamics of the landscape, but could it also provide a method to reach the aims of the ELC and the Swedish environmental objectives?

A dynamic landscape view does, as previously mentioned, not only imply recognizing the landscape's transformation, but also identifying the driving forces of this transformation. Driving forces of landscape change could be explanations to why and how the landscape transforms, and they could highlight the power struggle associated with it. Identifying driving forces of change could be a key to affect the development of the landscape in a more strategic and effective way, as well as emphasizing the temporal aspect of the landscape, and clarify the prerequisites of landscape planning. Planners can identify challenges in landscape planning such as climate change, loss of diversity in the landscape, population increase and polarization of the landscape, but without knowing what is controlling them, steering the development is difficult.

By investigating the landscape's past and its development throughout time, a historic landscape analysis can contribute to detect driving forces and possibly be a tool for a more strategic and sustainable planning. A historic landscape analysis and the theory about the landscape as a budget frame could provide instruments for understanding the landscape's dynamism and detecting driving forces of landscape change, and by this clarify where resources needs to be concentrated to navigate the landscape development in the desired direction.

In order to investigate the potential of a historic landscape analysis as method for landscape planning, next part of the thesis will present a case study. In the case study, the theories about landscape dynamics, time geography and the approaches to the study the landscape's past, presented in the thesis so far, will be tested. Special focus is on Hägerstrand´s theories about the landscape as a budget frame and the material regimes as well as Antrop´s driving forces of change and landscape periods.

The case study is based on the following conclusions and approaches from the literature review:

- The landscape is dynamic and changing and characterized by its temporal aspects
- Urbanization, globalization, accessibility and calamities are the four main driving forces of landscape change
- The landscape's past can be divided into landscape periods and material regimes
- The theory about the landscape as a budget frame could clarify power struggle in the landscape and forces of landscape development

PART 2: CASE STUDY

In this part the case study of the Bjäre peninsula is presented. The point of departure is the theories presented and discussed in the thesis so far. Initially a more detailed description of the methods and the material used will be presented, followed by a description of Bjäre and its historical context. After that, the analysis of the case study and its results will be presented. The results are divided into four parts, which are discussed separately: historical land use, landscape functions, driving forces of change and the Bjäre peninsula landscape as a budget frame. The four parts are based on each other and together constitutes the historic landscape analysis developed in the case study. In PART 3, the discussion, the results and methods used will be discussed further together with the previously presented contemporary planning challenges.

The case study will help the thesis to reach the first two aims described initially in the objectives, by providing an example to the theory studied. Hence, the case study will investigate methodological approaches for understanding past landscape developments and landscape dynamics, and discuss the changes observed in the historical landscape through the concept of the landscape as a budget frame. The third aim will be reached in the final discussion in PART 3.

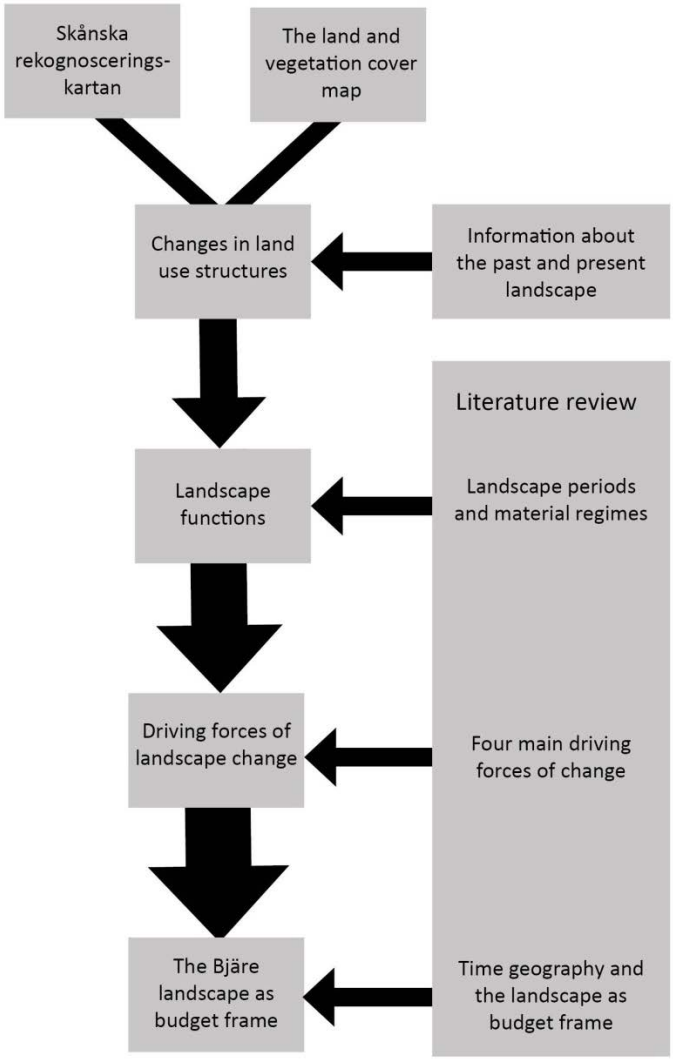


Figure 4: Graph of case study method. (Made by: Anna Brånhult)

Case study method

The case study method can be described in four stages. The first stage, a historical land use analysis, is the base for the next three stages, where the gained knowledge from the map study is used, together with the approaches and theories from the literature review, to analyze landscape functions, driving forces of landscape change and the Bjäre landscape as a budget frame (see figure 4). The different stages, and the material used, are described below.

Material

The historical map used in the case study is the military survey map *Skånska rekognosceringskartan* from 1812-1820 (Fältmäteribrigaden 1986). It covers a large part of Scania and shows topography, land use and settlements in quite a detailed manner. The border between infields and outfields is furthermore marked. The interpretation of it, used in this thesis, is made by Nord (2009). In addition to the map sheets, descriptions of vegetation, streams, soil, infrastructure and settlements were made for every parish in Scania.

The map has got critique for exaggerating wetlands (Emanuelsson & Bergendorff 1983; Lewan 1982), which could be a result of the map being made for military purposes; obstacles in the landscape such as topography and wetlands were mapped carefully because of their importance for the landscape's accessibility. The quality of the different map sheets and the completeness of the descriptions can also vary, which makes the map quite uneven. The great advantage with the map is the coherent and detailed picture it gives of the landscape at the time before the agricultural reforms (*skiftena*), and together with other information about the landscape at that time, it provides a good foundation for exploring the historical landscape.

Literature about the historical landscape on the Bjäre peninsula, Scania and Europe is used to reach a deeper understanding of the landscape at the beginning of the 19th century and to make the interpretation of the historical map easier. Gustafsson (2006), Emanuelsson *et al*. (2002) and Emanuelsson (2009) have been especially useful.

Information about the present landscape is gained mainly from the *Land and vegetation cover map* made by the Swedish mapping, cadastral and land registration authority (Lantmäteriet 2000), and the rural development program report *Skånska landsbygdsprogrammet* (Länsstyrelsen 2007). The land use categories on the *Land and vegetation cover map* were with help from the map´s metadata combined into fewer categories that would match the categories on the historical map (see Appendix). In this way it is possible to compare the land use on the historical and the present map in a better way.

Interpreting *Skånska rekognosceringskartan* and analysing changes in land use

To be able to digitalize the land use on the historical map, three map sheets covering the northern and central parts of the Bjäre peninsula were scanned and imported into the Geographical

Information System (GIS) program ArcMap 10. In ArcMap the sheets of the map was georeferenced with a modern map as a guideline, which means that the historical map was modified so it would overlap with the modern one. Since historical maps are not as geographically exact as modern ones, they have to be scaled and stretched to fit as well as possible.

After georeferencing the historical map the land use was digitalized in ArcMap. The different land use types were drawn as adjacent polygons covering the entire area. A great help with interpreting the land use from the map was Emanuelsson´s and Bergendorff´s (1983) article on *Skånska rekognosceringskartan* as source of information about nature at the beginning of the 19th century in Scania. More details about the interpretation of land use from *Skånska rekognosceringskartan* can be found in Brånhult *et al*. (forthcoming).

After this, the historical land use was compared with the land use from the present *Land and vegetation cover map*, to discover changes over time. Even if the land use types on the *Land and vegetation cover map* were adapted to correspond with the types from the historical map, it shall be pointed out that comparing land use types from two maps that are made for different purposes, is always a possible source of error.

Identifying landscape functions and driving forces of change

Since a map study does not reveal all aspects of a landscape´s transformation, an attempt to identify functions in the landscape is also made. Through using the material about the landscape on Bjäre presented above, an interpretation of landscape periods (Antrop 2005) and material regimes (Hägertrand 1993), as discussed in PART 1, could be made. With these landscape periods as a base, main functions in both the past and the present landscape of Bjäre is defined. Antrop´s defined driving forces are then connected to the map study, and the defined landscape periods on the Bjäre peninsula, to identify which driving forces of change that both have been, and at present are, influencing the landscape on the Bjäre peninsula.

Applying the landscape as a budget frame theory

A smaller section of the Bjäre landscape is chosen for analyzing the landscape as a budget frame approach, as described previously in PART 2. The aim is to analyze which types of land use that has increased and decreased and which driving forces of change that was, and is, at work. In order to see which land use types that have increased and decreased, calculations of the land use types' area are made. The land use in 1812-1820 is calculated from the land use analysis of *Skånska rekognosceringskartan,* and the land use of today from the *Land and vegetation cover map* with merged categories. The area of the land use types on both maps are calculated in per cent and after that compared with corresponding land use to see if, or how much, the land use type had increased or decreased.

Since the interpretation of land use on the historical map cannot be considered exact, precise numbers or ratios of land use change cannot be presented, but overall trends are possible to discover. The analyses of land use, landscape functions and driving forces of change made in the

case study is furthermore used to draw conclusions and interpret the land use types' increase or decrease.

Limitations

Since the map study consists of one map from before the agricultural reforms on Bjäre, and one after, the revolutionary landscape period will not be investigated as thoroughly as the traditional and post-modern landscape periods. The agricultural reforms had large impact on the landscape on Bjäre and is an important part of the landscape's history, but because of the limitation of time this thesis implies, it is left out in the case study. What shall also be pointed out is that the landscape periods are simplifications of the actual development of a landscape, and that present landscapes contain traces and elements of previous landscape periods.

The Bjäre peninsula

The present landscape

The Bjäre peninsula is located in southern Sweden in the north-western part of the county Scania. The area has an undulating, small scale, mosaic landscape with a lot of cultivated land and grasslands with high time depth (Länsstyrelsen 2007). The agriculture production is intensive and the most common products are potatoes, vegetables and fruits. On the higher grounds in the northern part of the peninsula the agriculture is characterized by dairy farming (ibid.). The landscape contains many nature and culture values, which are enhanced by the area´s rich history and its traces in the landscape.

Historical context

The Bjäre peninsula landscape was, as with the rest of Scandinavia, formed during the Ice Ages. This has created the spectacular topography on Bjäre, including the steep cliffs of Hovs hallar and the valleys of Sinarp and Drängstorp (Nord 2009: 14). The area was settled early, and during the early Bronze Age (1800-500 BC), Bjäre was a central area. The area has also has an unusual landowning history with a relatively low influence of the aristocracy and the church, and instead a high proportion of freehold farmers (Nord 2009: 18).

The city of Båstad was founded in the 15th century and was at that time an important trading partner with Copenhagen. Throughout history, the people on Bjäre generally have had a harder situation than the people in their surroundings. The soil is not as fertile here as in the plains of south-western Scania, and Bjäre was located at the historical border between Denmark and Sweden that fought many wars in the 17th century (Gustafsson 2006).

At the beginning of the 19th century the agricultural reforms started to influence the landscape on the Bjäre peninsula. The reforms resulted great changes such as larger fields, shattering of villages and a higher amount of cultivated land (Emanuelsson *et al* 2002: 133ff). During the 20th century

and up until today the Bjäre peninsula has become an important area for recreation, which has resulted in the building of new holiday housing and golf courses (Länsstyrelsen 2007).

Future plans and challenges

Despite that Bjäre peninsula is located within a (with Swedish measures) relatively dense populated region, the population on Bjäre has stagnated the last years. The ratio of older people is high and is furthermore expected to rise in the future (Länsstyrelsen 2007; Båstad kommun [online] 2012). The area has a high pressure from pesticides and fertilizers from the agriculture production, and many pastures in the area are also in danger of succession due to a low grazing pressure, which could lead to a loss of cultural and natural values. There is furthermore a high pressure of exploitation in the settlements by the coast and there is a high amount of holiday housing compared to permanent homes in the area (Länsstyrelsen 2007).

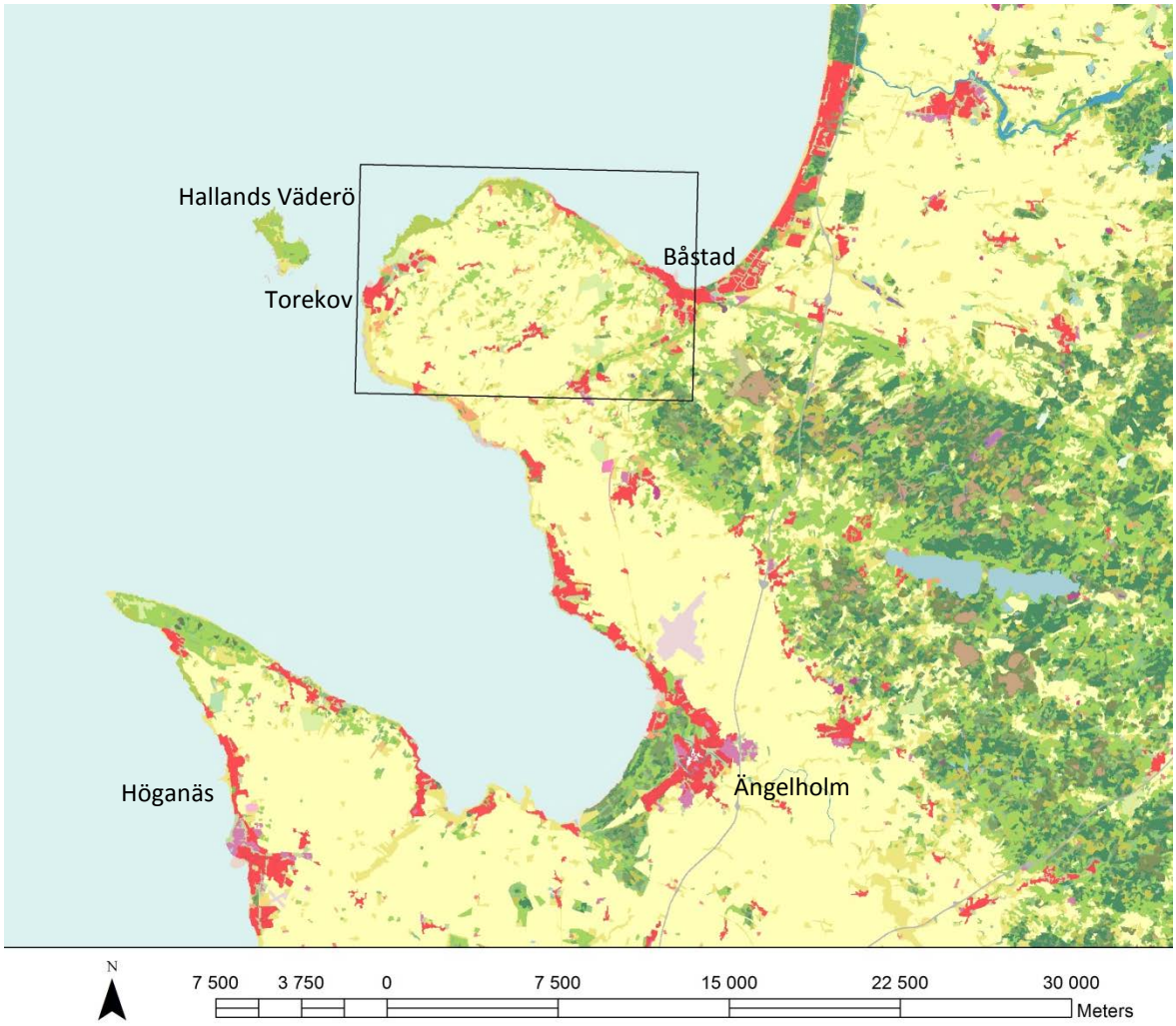


Figure 5: The Bjäre peninsula area with the case study area marked out. (Land and vegetation cover map: © Lantmäteriet, i2012/901)

One of the largest development plans in the area is the railway tunnel through the ridge *Hallandsåsen* that is planned to be finished in 2015. The tunnel will improve the accessibility in the area by increasing the capacity for passenger and goods traffic, and shorten the travel time for commuters (Båstad kommun [online] 2012).

Result

The historical land use

At the beginning of the 19th century the land on the Bjäre peninsula was divided into infields and outfields (Emanuelsson *et al* 2002: 65). The infields and the outfields could look quite similar, both could for example include forests and wetlands. There were however big differences between them concerning the use and the owner structure, and the fact that the infields were valued higher than the outfields (Kristofferson 1924). The infields were used mainly as arable fields and meadows for producing cereals, livestock fodder and timber. The outfields were common land, divided between the villages, and were mainly used as pasture, but also served as a source of smallwood, timber and peat (Emanuelsson *et al* 2002: 85).

When looking at the land use map over the Bjäre peninsula in 1812-1820 (see figure 6) one can see that the central parts of the peninsula were dominated by infields, that can be defined into the general land use categories: open land, meadows, forest and wetlands. Open land, which could imply both cultivated land and meadow on infields (Emanuelsson & Bergendorff 1983), and the meadows, served as a place for cultivation and production of hay. The largest areas of permanent fields on Bjäre were located on the lowlands on the west side of the peninsula close to Slättared and Torekov. The forested areas on infields were most likely a sort of coppice forest or meadows with tree-cover used for gathering smallwood and leaf fodder (Emanuelsson *et al* 2002: 75ff; Emanuelsson 2009: 199ff). The wetlands on the Bjäre peninsula were mostly located in low-lying areas or in connection with streams.

The largest part of the outfields on Bjäre was pasture. The common grazing lands were important to feed the livestock whose manure was used as fertilizer in the fields and the meadows. Seaweed was harvested by the coast of Bjäre as an additional fertilizer (Emanuelsson *et al* 2002: 57). Some forested areas, perhaps used as a source for smallwood, timber and peat could also be found on the outfields together with some wetlands. The sandy soils along the shores were probably used for grazing (Emanuelsson & Bergendorff 1983). Settlements were not a spacious land use at the beginning of the 19th century, but consisted mainly of the two larger settlements Båstad and Torekov, some smaller villages and farms.

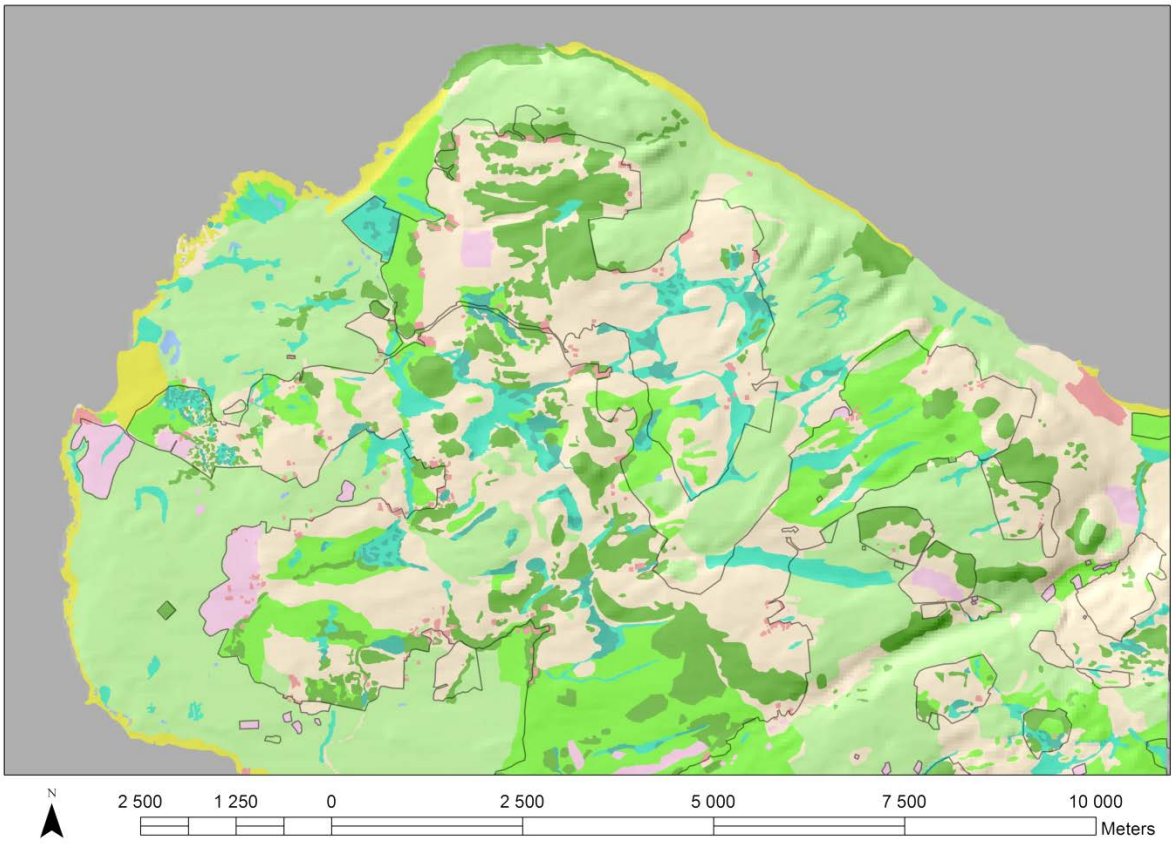


Figure 6: *Land use in 1812-1820. (Interpretation of Skånska rekognosceringskartan made by: Anna Brånhult. Elevation data: © Lantmäteriet, i2012/901)*

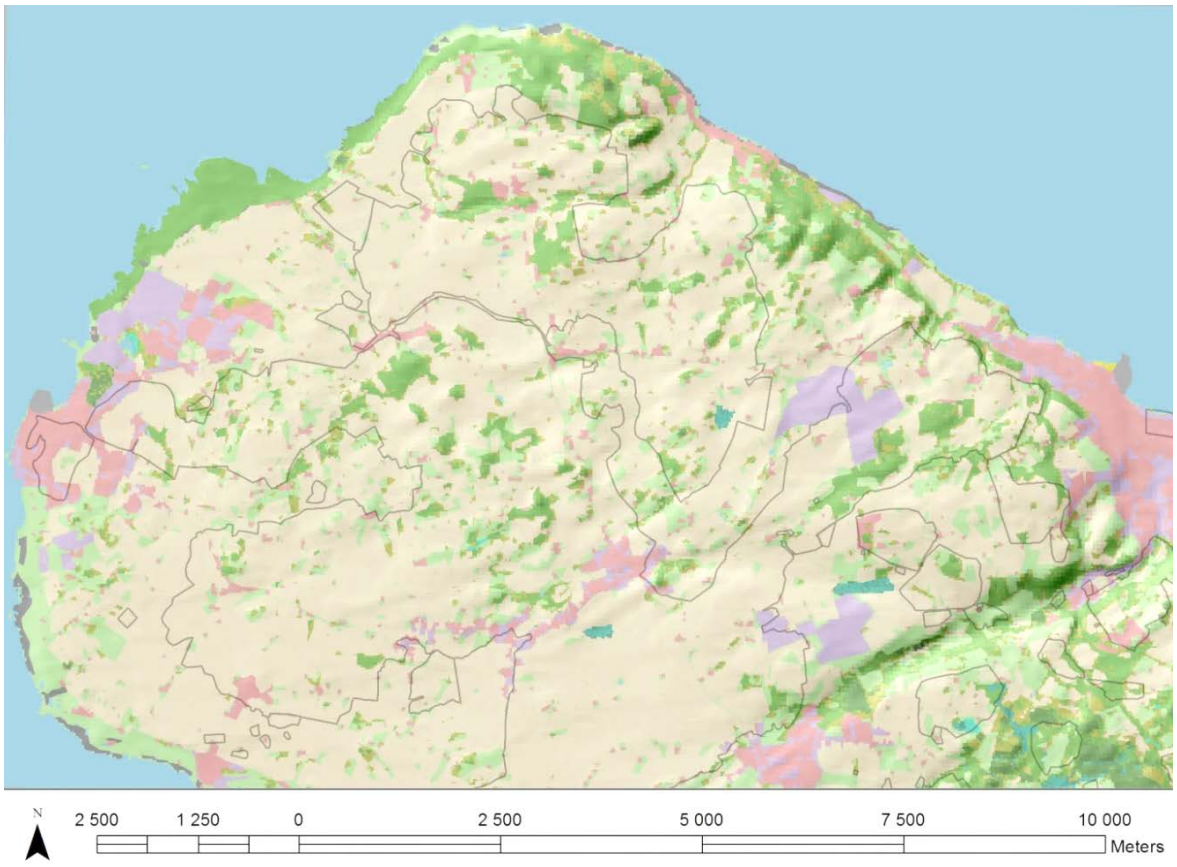


Figure 7: Present land use. (Land and vegetation cover map with merged categories: © Lantmäteriet, i2012/901)

Changes in land use structures

When examining the past land use a difference between infields and the outfields can be seen. The land use in the infields can be described as a mosaic of land use types including, settlements, fields, meadows, forests and wetlands. The outfields, on the other hand, are almost exclusively pasture. When comparing this land use structure with the present situation, a transformation becomes visible.

Today, the main land use has shifted from pasture to cultivated land, and the difference between land use on the two sides of the border between the infields and the outfields is no longer clear (see figure 7). Mosaic land use still exists, but is now located mainly in the northern and central parts of the peninsula. Larger areas of cultivated land, which could not be found in 1812-1820, are today dominating the southern parts. The amount of pastures has decreased and can now mostly be found in a larger area in the south-west, and in the northern parts of the peninsula on the stonier, higher grounds (Länsstyrelsen 2007). Forests are located along the coast and on higher grounds, which also is a change from the land use at the beginning of the 19th century.

A comparison of land use structures in 1812-1820 and today reveals two different arrangements (see figure 8). The land use structures at the beginning of the 19th century coincides roughly with the border between the infields and the outfields, whereas the present the land use structures seems to be affected by other aspects. When turning to the past some explanations can be suggested.

The inhabitants of Bjäre at the beginning of the 19th century had to be flexible in their work, practicing many professions, because of the scarce resources in the area (Gustafsson 2006). The farms had to produce what the families needed to survive, which could have been a contributing factor to the mosaic land use. Throughout history, cultivated fields on Bjäre have been located mainly on southern slopes where the conditions were favourable (Nord 2009: 15), which is also a contributing factor to the land use structures.

Nowadays, substantial farming is very unusual in Sweden, and in the rest of Europe, and the agriculture on Bjäre is more specialized to produce monetary income instead of producing the variation of goods needed throughout the year. Cultivated fields are generally located on the lower more fertile grounds in the south, whereas the dairy production is located on the stonier, higher grounds (Länsstyrelsen 2007), which could explain the present land use structures. Forest together with settlement covers much of the land close to the sea; the forests perhaps to prevent soil erosion and the settlements probably because of the attractive setting for housing development.

When investigating past land use on Bjäre and comparing it with the present situation, the change of structures gives an impression of different forces deciding the land use at the beginning of the 19th century and today. The change of lands use structures could also suggest that other aspects and functions were considered important in the landscape at the beginning of the 19th century, compared with today.

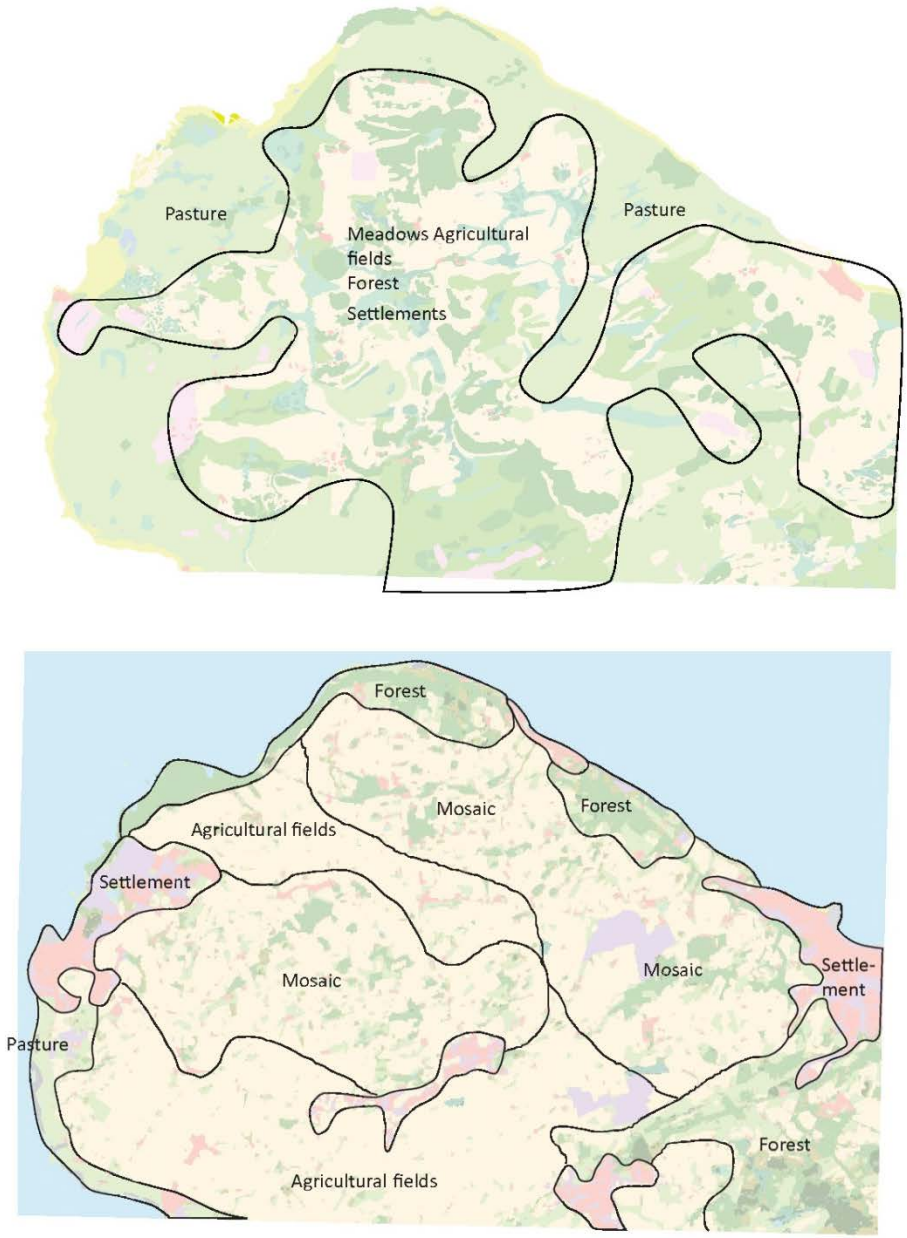


Figure 8: General land use analysis of the Bjäre peninsula at the beginning of the 19th century and today. (Made by: Anna Brånhult. Background map: © Lantmäteriet, i2012/901)

The land use structure 1812-1820 is created mainly by the division between infields and outfields. Today, the land use structure has changed, resulting in that most of the forested areas are located along the coast or in the south-east corner of the case study area, and cultivated land on what was outfields and pasture before.

Landscape functions

The landscape has, as previously mentioned, not only the functions an analysis of land use reveals. The landscape is also a carrier of nature and cultural values, biodiversity, cultural heritage, local identity, etc. that can be found in different types of land use. Landscape functions can additionally, unlike the land use analysed, overlap in numerous layers and combinations, why an additional investigation of them can be of interest. Landscape functions are also closely related

to driving forces of change since the driving forces decide which functions that are present in the landscape. Landscape functions can be difficult to define though, because of the landscape's multidisciplinary and all-embracing character, as well as the fact that it shifts character with different people's perceptions (Herring 2009; Turner 2006).

Functions in the traditional landscape

Traditional landscapes, Antrop (2005) defines as pre 18th century landscapes that still contain evident traces from a far past. In a Swedish context, the landscape of the Bjäre peninsula in 1812-1820 would be included in this period since it is a pre-industrial landscape with no major breaks with the far past.

Agriculture, including cultivation and livestock farming, together with fishing and timber production were the main functions in the landscape, which can be seen when investigating the historical land use on the Bjäre peninsula. The whole landscape had to be used to make life possible, and people needed to be creative in the use of their surroundings (Gustafsson 2006: 27). The entire landscape was also incorporated in a system of nutrient circulation that regulated the amount of food available (Emanuelsson 2009: 24-33). The nutrients went with the cattle's manure from the pastures on the outfields to the fields and meadows in the infields, where it was transformed to food and fodder.

Landscape changes went slow at the beginning of the 19th century, and people usually did not travel any larger distances because of the less developed infrastructure. Calamities such as war and failure of crops resulted in disastrous consequences for the population (Gustafsson 2006: 69), but at the same time people probably had a close relationship with their local landscape, as they often lived and worked in the same place their entire lives (Antrop 2005).

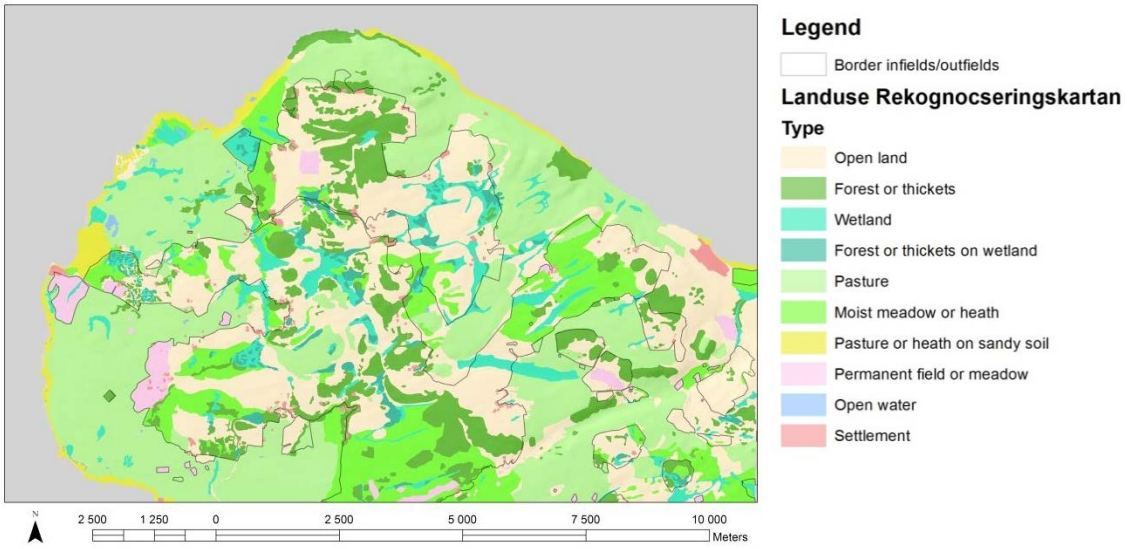


Figure 9: Functions characteristic for traditional landscapes, such as a large amount of pastures, can be seen in the land use map of the Bjäre peninsula in 1812-1820. (Interpretation of Skånska rekognosceringskartan made by: Anna Brånhult. Elevation data: © Lantmäteriet, i2012/901)

Functions in the post-modern landscape

In the post-modern landscape the speed of change is faster and mankind has learnt to use the resources in the landscape in a more effective way, which has led to greater wealth (Antrop 2005; Hägerstrand 1993). With more effective agriculture the landscape can be used for additional purposes, such as recreation, which is represented in the Bjäre peninsula mainly in the form of holiday homes and golf courses. More productive agriculture and greater wealth has also led to population growth that can be seen in the form of larger settlements.

The post-modern landscape is mainly used to meet the needs of population living in urban areas, in contrast to the traditional landscape on Bjäre, where the urban areas were very small. The landscape is no longer mainly a local concern, but also affected by global factors. The farmers on the Bjäre peninsula are for example affected by regulations decided by the European Union, which can be seen in the agricultural landscape.

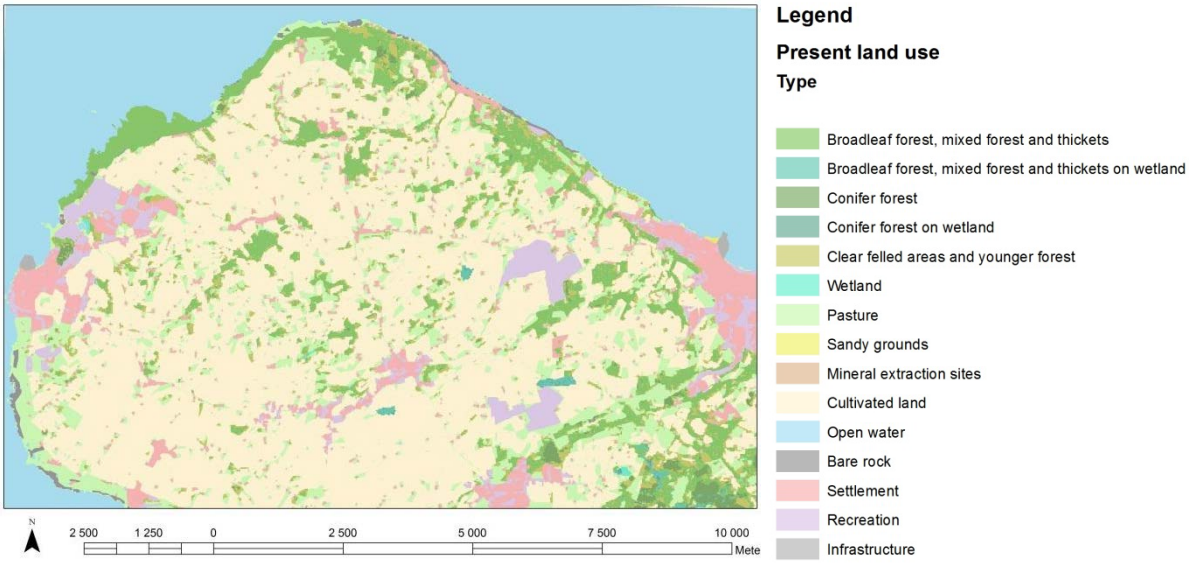


Figure 10: In the post-modern landscape other functions, such as recreation areas and more cultivated land, can be seen. (Land and vegetation cover map with merged categories: © Lantmäteriet, i2012/901)

Shifting of functions in the Bjäre peninsula landscape

Summarizing the most fundamental landscape functions connected to the traditional landscape period and the post-modern landscape period on the Bjäre peninsula, three categories can be sorted out:

- Landscape as means of production
- Landscape values not linked to production of commodities
- Power and influence

By landscape as means of production I mean the landscape as prerequisite for agriculture production and production of raw materials, which are used by man to make a living. These functions can usually be seen in a land use analysis. Landscape values not linked to the production of commodities implies functions such as nature and cultural values, which in most cases are not presented as land use types on a map, but often are included in land use types, such as forest or

pasture. These functions can be profitable, but not always in a direct way. Examples are biodiversity, beautiful views or recreation areas. By power and influence I mean the power relationships between natural forces (such as climate, geological processes, plants, animals) and man.

Out of the three main categories defined above, four functions in the traditional landscape and five functions in the post-modern landscape on the Bjäre peninsula have been singled out. These functions are not claimed to be the only important landscape functions on Bjäre, but are chosen as being relevant with reference to both the previous literature study and land use analysis. The division of the functions between the landscape periods is a simplification of reality and is meant to clarify the shifting importance of the functions in the different landscape periods. In reality many of the functions can exist in both landscape periods.

Landscape functions in the traditional landscape:

Landscape as means of production

1. Local commodity production
2. Landscape as means of living

Landscape values not linked to production of commodities

3. Landscape as identity creator

Power and influence

4. Home for non-human organisms

Landscape functions in the post-modern landscape period:

Landscape as means of production

1. Global commodity production

Landscape values not linked to production of commodities

2. Recreation and tourism
3. Landscape as identity creator
4. Transportation and infrastructure

Power and influence

5. Home for human beings

In figure 11 the identified landscape functions in the traditional landscape and the post-modern landscape are paired together to illustrate the transformation of functions in the different landscape periods. The landscape functions are, as previously mentioned, placed under only one landscape period to simplify the analysis and clarify the shifting of the landscape functions. In reality, many of the functions, such as the landscape as home for non-human organisms and landscape as means of living, still exists today.

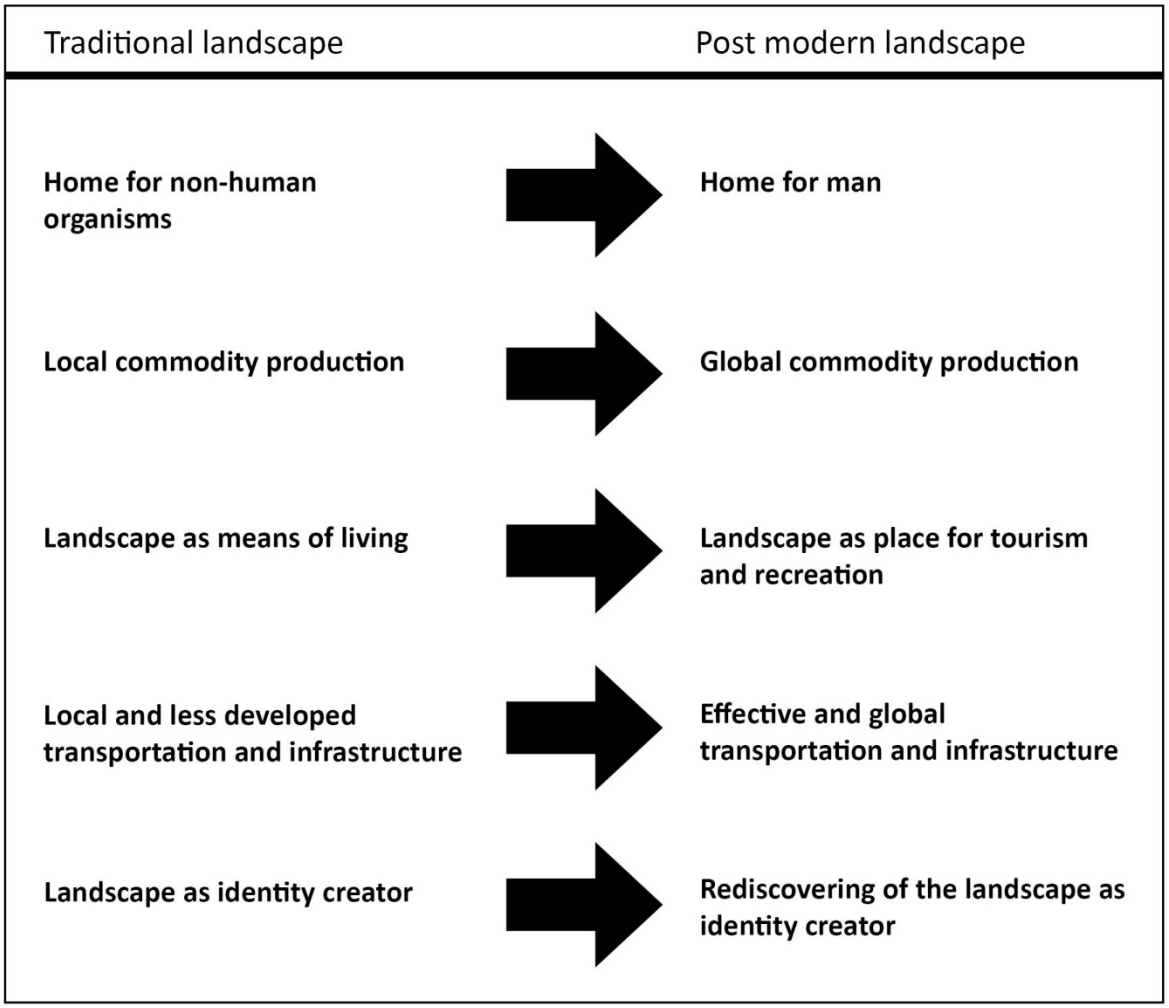


Figure 11: Shifting of functions in the traditional landscape period to the post-modern landscape period. (Made by: Anna Brånhult)

Because of the lower population and lesser power of humans to control their surrounding it is likely that the landscape on the Bjäre peninsula in 1812-1820 had a larger function as **home for non-human organisms**. The biodiversity was often higher in the traditional landscape (Emanuelsson 2009: 335-342) and mankind had not yet learned to effect plants and animals to the great extent that is done today, through for example the usage of artificial fertilizers, fossil fuels and GMO techniques. As the industrial revolution, and all the developments and possibilities it brought along, gave more power to humans to control their surroundings, the function of the landscape increasingly became a **home for man**.

A very important landscape function of the 19th century Bjäre was the substantial farming, providing the inhabitants what was needed to survive. Trading with commodities and materials was practiced at the beginning of the 19th century, but in comparison with today, more **products** were made and **used locally.** Today, the possibility of buying and selling products from other parts of the world has included the Bjäre peninsula landscape in a more **global** circulation of material (Hägerstrand 1993).

The more efficient the agriculture became, the more products were produced, and thus also the amount of products that could be sold. As a result of a more efficient agriculture, less people had to work to produce the same amount of food. This made more people available for other labour such as factory work during the industrial revolution area, and for work in service or other information related sectors today (Nilsson 1989:16). This has further led to people living in cities to a greater extent, which has created both need and time for recreation. This development can be seen as a shifting of the perception of the landscape for a majority of people, from being their **means of living** to a **place for tourism and recreation**.

Something that has increased in the post-modern landscape period is the function of the landscape as an area for **transportation and infrastructure**. The higher population and the demands of fast transportation and more extended accessibility result in more roads, railways, airports, etc. Energy supply to industries and households furthermore contribute with power plants, electric cables, etc. Figure 12 shows the development of the road network on Bjäre, and illustrates the importance of transport and infrastructure in the traditional landscape period and the post-modern landscape period.

Traditional landscapes are, according to Antrop (2005), often examples of sustainable landscapes with a clear identity connected to a region. A reason for this could be the relationship that people develop to a landscape they work and live in. In later years, after the industrial revolution when the treatment of the landscape was rather unsentimental at times and a possible long lasting identity was lost (ibid.), the **landscape as identity creator** has made a recovery and is now emphasized through the ELC. This landscape function cannot be investigated only using map studies though, since it is affected by people's perception of the landscape. Complementary literature studies, similar to the one made in this thesis, can contribute to this, but to be able to reach a deeper understanding of this function a dialog with the users of the landscape must be engaged.

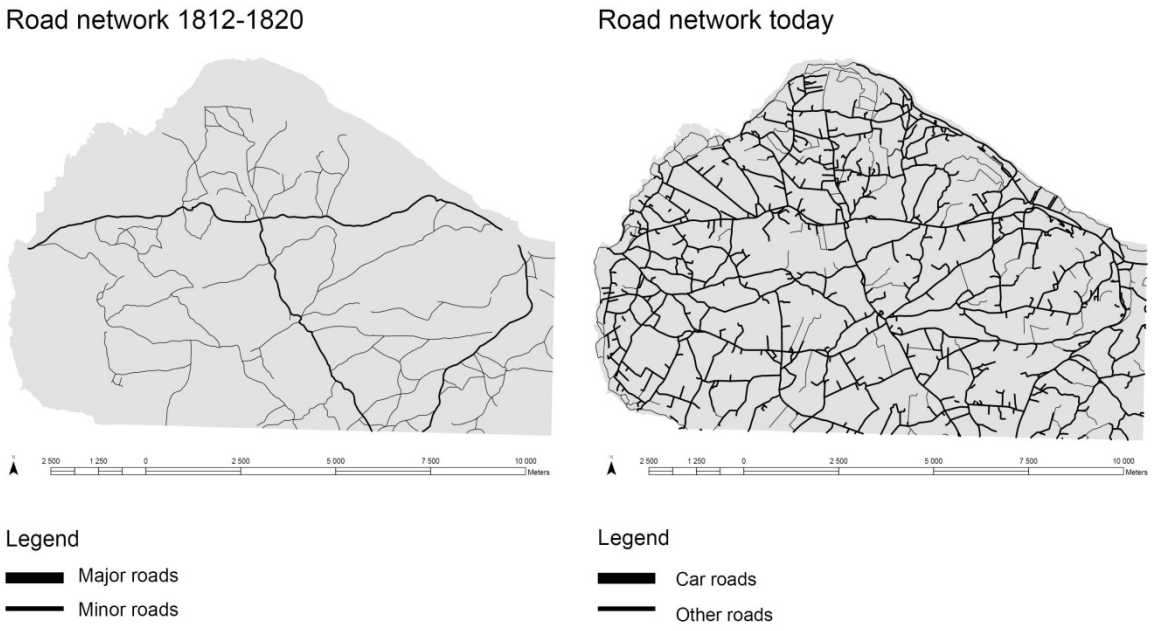


Figure 12: The road network on Bjäre 1812-1820 and today. Roads within settlements are excluded in both maps. (Souce: Skånska rekognosceringskartan & the Topographic map: © Lantmäteriet, i2012/901)

Driving forces

This section of the case study will focus on driving forces of historical landscape development on the Bjäre peninsula from the beginning of the 19th century until today. The relation between the previously identified shifting of landscape functions (see figure 11) and Antrop´s driving forces will now be outlined, attempting to identify driving forces that have contributed to the change from the traditional landscape period, to the post-modern landscape period on the Bjäre peninsula.

According to Antrop (2005) the four main driving forces of landscape change are accessibility, globalization, urbanization and calamities. Since it is in the nature of calamities that they are unpredictable and it is hard to foresee their effects, they will not be discussed further as driving forces of the landscape transformation on Bjäre. Population growth, is included in the discussion as affecting all of the main driving forces (ibid.).

From traditional landscape to post-modern landscape

Home for non-human organisms –> Home for man

Urbanization together with globalization and accessibility can be considered to have caused the development of technology that made it possible for humans to take control over other organisms in a greater extent. In the post-modern landscape, changes caused by man sometimes have led to a loss of diversity in the rural landscape (Emanuelsson 2009: 335-342) and by this, the landscape is becoming more a home for man. An example of this development on Bjäre is the succession and disappearance of old pastures with high biodiversity (Länsstyrelsen 2007).

- Example of landscape effect: loss of biodiversity in the rural landscape
- Contributing driving forces: Urbanization, globalization and accessibility through: modern food production

Local commodity production –> Global commodity production

Globalization and urbanization can be considered to be the strongest driving forces in the shifting of the landscape as a local commodity producer to global a commodity producer. Urbanization was together with the need for a higher food production the driving forces behind the agricultural reforms and rationalizations that caused large changes in land use structures on the Bjäre peninsula (Emanuelsson *el at* 2002: 133-143). These reforms and rationalizations additionally started the change towards the modern agriculture production that is practiced today. Globalization has included the commodity production on Bjäre in a global context where products circulate all over the world. This transformation can be seen in the landscape throughout for example modern farming and infrastructure to transport commodities to and from the area.

- Example of landscape effect: modern farming and increased infrastructure
- Contributing driving forces: Urbanization, globalization and accessibility through: modern food production, global economy and global accessibility

Landscape as means of living – > Landscape as place for tourism and recreation

Urbanization is probably the strongest driving force of the change from the landscape being considered a means of living, to the view of the landscape as a place for recreation and tourism. The change of lifestyle that urbanization and globalization brought along have most likely resulted in a change of most people's perception of the landscape. The change from agrarian to information society has resulted in people working and spending their time in very different ways. The golf courses and holiday homes on Bjäre are examples of that.

- Example of landscape effect: Golf courses and holiday homes
- Contributing driving forces: Urbanization and globalization through: modern food production and the information society

Local and less developed infrastructure –> Effective and global infrastructure

The striving for better accessibility has probably contributed to the increase of infrastructure on the Bjäre peninsula. Urbanization has caused the need for more infrastructure since many people on Bjäre now does not work in the same place as they live (Länsstyrelsen 2007) and globalization has created the need, and facilitated ways, to reach places far away. The increased road network is an example affecting the present landscape on the Bjäre peninsula.

- Example of landscape effect: Increased and improved road network
- Contributing driving forces: Urbanization, globalization and accessibility through: the information society and global accessibility

Landscape as identity creator –> Rediscovery of the landscape as identity creator

Urbanization could be a contributing factor to a possible loss of importance of the landscape as identity creator after the traditional landscape period, because of the decreasing amount of people living and working at the same place for generations. Globalization could be a force behind rediscovering this function, as a reaction to a more globalized world with less local variations. The ELC is an example of this trend.

- Example of landscape effect: The implementation of the ELC
- Contributing driving forces: Urbanization and globalization through: the information society and global accessibility

The study above of how urbanization, globalization and accessibiliy have contributed in transforming the traditional landscape to the post-modern landscape on the Bjäre peninsula, provided with some examples of local driving forces and their effects on the landscape. These are shown in figure 13 to illustrate the shifting of driving forces on Bjäre from the traditional landscape period to the post-modern period.

Due to urbanization, globalization and accessibiliy, the traditional food production has been replaced by modern food production and the agrarian society at the beginning of the 19th century with the information society today. The local economy in the traditional landscape period has been replaced by a more global one, same is the situation with the accessibility, which today reaches far beyond the distances most people living in the year 1820 could travel. The consequences of these driving forces, and their effect on the Bjäre peninsula landscape will be analysed and discussed in the next section, in terms of the landscape as a budget frame.

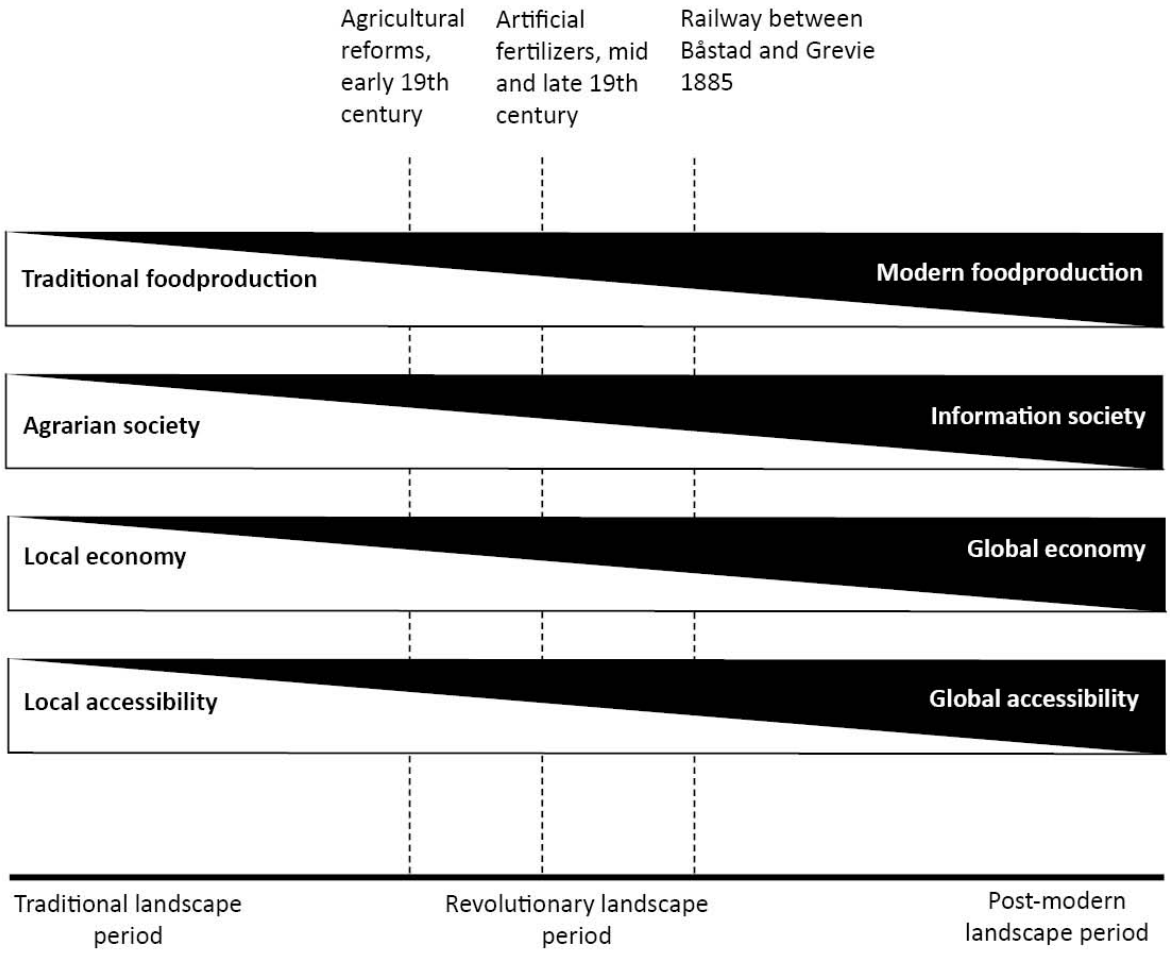


Figure 13: Shifting of driving forces in the Bjäre peninsula landscape from the traditional landscape to the post-modern landscape. Important events in the landscape development are marked out. (Made by: Anna Brånhult 2012)

Figure 14 & 15: Salomonshög, Bjäre 2012. The impact of modern agriculture with new types of crops (corn) and recreation in the form of golf courses is visible in the landscape around Salomonshög on the Bjäre peninsula. (Photos by: Anna Brånhult 1012)

The Bjäre peninsula landscape as a budget frame

In this section Hägerstrand's (2000; 1993) budget frame theory will be tested on a selected area of the Bjäre peninsula landscape. Land use is calculated to reveal increasing and decreasing land use types, which could increase the understanding of the actual consequences of the previously identified driving forces.

In table 2 the land use types on *Skånska rekognosceringskartan* and the corresponding land use types on the *Land and vegetation cover map* from present day can be seen. The percentages of the total land use according to the different maps are written in brackets. The land use types cannot always be directly translated between the maps, for example "open land" on *Skånska rekognosceringskartan* could imply both cultivated land and pasture on the present *Land and*

vegetation cover map. Furthermore did the open land in 1812-1820 include meadows, which hardly exist on the Bjäre peninsula today, and is therefore not present in the right column of the table. Likewise, new land use types that previously did not exist, or were not noted of *Skånska rekognosceringskartan*, are only present in the right column.

Table 2: Corresponding land use types on Skånska rekognosceringskartan and the present Land and vegetation cover map. The percentages of the total land use according to the different maps are written in brackets. (Source: Interpretation of Skånska rekognosceringskartan made by: Anna Brånhult & the Land and vegetation cover map with merged categories: © Lantmäteriet, i2012/901)

Land use types: *Skånska rekognosceringskartan*	**Land use types: *Land and vegetation cover map***
Pasture (34, 06 %)	Pasture (14, 26 %)
Open land (28, 85 %)	Cultivated land (56, 63 %) & Pasture (14, 26 %)
Moist meadow or heath (12, 44 %)	Pasture (14, 26 %)
Forest or thickets (11, 49 %)	Broadleaf forest, mixed forest and thickets (9, 71%)
Wetland (5, 80 %)	Wetland (0, 08 %)
Pasture or heath sandy grounds (2, 25 %)	Sandy grounds (00, 02%)
Permanent field or meadow (2, 15 %)	Cultivated land (56, 63%)
Wetland with trees or thickets (1, 76 %)	Broadleaf forest, mixed forest and thickets on wetland (0, 32 %)
Settlement (1, 08 %)	Settlement (7, 41 %)
Open water (0, 15 %)	Open water (0, 42 %)
-	Clear felled areas and younger forest (4, 98 %)
-	Recreation (4, 28 %)
-	Conifer forest (1, 14 %)
-	Bare rock (0, 49 %)
-	Infrastructure (0, 14 %)
-	Conifer forest on wetland (0, 11 %)

Increasing land use types

Even if it is impossible to say exactly how much of the open land that was cultivated on *Skånska rekognosceringskartan* it is clear that the amount of cultivated land has increased a lot. If all of the open land in 1812-1820 was cultivated, which it probably was not (Gustafsson 2006: 73 & 93), cultivated land would still have increased from being approximately 29 % of the land use to almost 57 %. The amount of the land used for settlement has also increased from about 1 % to over 7 %. This increase is probably also greater since single houses are drawn on *Skånska rekognosceringskartan*, which probably makes them occupy more space on the map than what they actually did in the landscape. Conifer forest, clear felled areas, young forest and conifer forest on wetland are all new types of land use connected to modern forestry that makes up about 6 % of the land use today.

Recreation areas, which include golf courses, green urban areas and camping sites, are also a new land use types that occupy just over 4 % of the total land use. Infrastructure is an additional increasing land use, even if the part of the total land use, 0, 14 %, is very small. In neither the *Land and vegetation cover map* nor the land use interpretation of *Skånska rekognosceringskartan,* roads are included as a land use type, which is a source of error in the analysis. The percentage of infrastructure as land use in 1812-1820 should not be zero, and the percentage today is probably higher than 0, 14 % of the total land use. With the previous analyses as a base, it is still justified to say that infrastructure is a land use that has increased (see figure 12).

Open water has increased, but only with about 0,3 % which is to small an amount to count as an actual increase with reference to the material used. Bare rock was not noted on *Skånska rekognosceringskartan* why a comparison is not possible.

Decreasing land use types

The land use types that have decreased the most are pasture and meadow. At the beginning of the 19th century they together occupied over 50 % of the land use and possibly even more, depending on how much of the open land that was cultivated. Today, the meadows on the Bjäre peninsula are almost completely gone, and pastures are just over 14 % of the land use. Separating pasture from meadow on *Skånska rekognosceringskartan* is not always possible, which makes the exact ratios of decrease difficult to calculate.

The amount of wetland, with and without vegetation, has also decreased from being over 7 % of the land use 1812-1820 to 0, 4 % today. Because of the discussion about a possible exaggeration of wetlands on *Skånska rekognosceringskartan* (Emanuelsson & Bergendorff 1983; Lewan 1982) these numbers should, in an even greater extent not be interpreted as exact figures, but could be seen as an example of a general development of an decrease of wetlands in Skåne from the 19th century and forward (Emanuelsson *et al* 2002: 151).

While the total amount of forested areas has increased on the Bjäre peninsula today, the forested areas that corresponds to the types of forest that could be found in 1812-1820 (in other words broadleaf forest, mixed forest and thickets) has decreased. The decrease is however not large, from approximately 13 % in 1812-1820 to about 10 % today. Sandy grounds, used as pasture or heath at the beginning of the 19th century, have also decreased from about 2 % to 0, 02 % of the land use today.

Strong and weak neighbours in the Bjäre peninsula landscape

In order to show how the terms of the budget frame could express themselves in the Bjäre peninsula landscape, a smaller example area will be studied. Strong neighbours in the budget frame (increasing land use types) will be identified, as well as weak neighbours (decreasing land use types). With help of previous analyses of transformation of landscape functions and driving forces on the Bjäre peninsula the terms of the budget frame will be discussed.

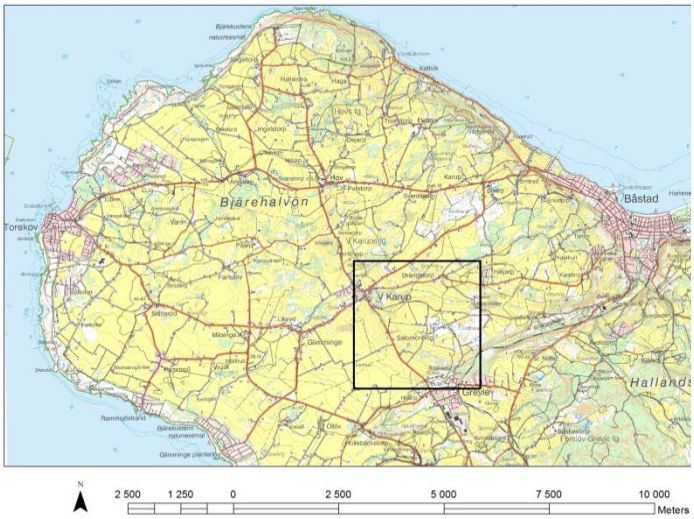
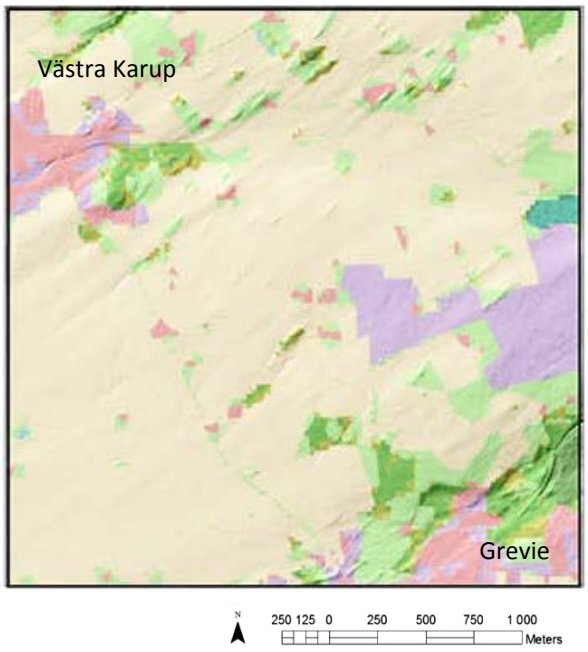
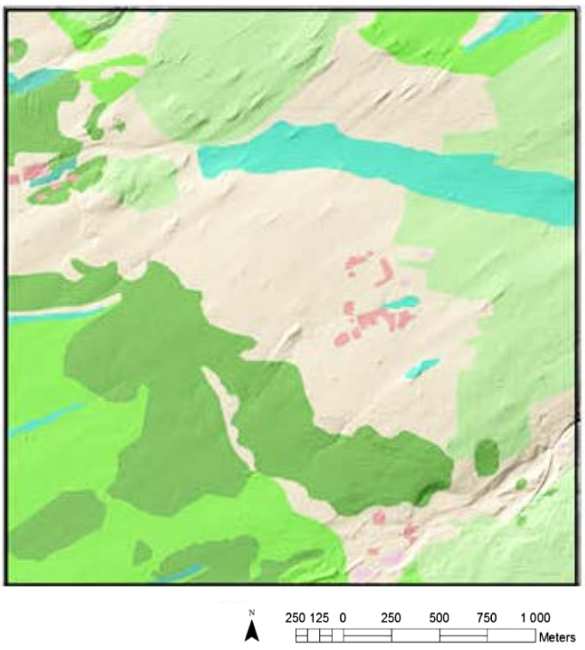


Figure 16: (left) Map over the Bjäre peninsula with the example are marked out (Topographic map: © Lantmäteriet, i2012/901)

Figure 17: (bottom left) The example area with the land use according to the Land and vegetation cover map (© Lantmäteriet, i2012/901)

Figure 18: (bottom right) The example area with the land use according to Skånska rekognosceringskartan (Interpretation of Skånska rekognosceringskartan made by: Anna Brånhult)





Land use today

Type

- Broadleaf forest, mixed forest and thickets
- Broadleaf forest, mixed forest and thickets on wetland
- Conifer forest
- Conifer forest on wetland
- Clear felled areas and younger forest
- Wetland
- Pasture
- Sandy grounds
- Mineral extraction sites
- Cultivated land
- Open water
- Bare rock
- Settlement
- Recreation
- Infrastructure

Landuse Rekognocseringskartan

Type

- Open land
- Forest or thickets
- Wetland
- Forest or thickets on wetland
- Pasture
- Moist meadow or heath
- Pasture or heath on sandy soil
- Permanent field or meadow
- Open water
- Settlement

When comparing the example area´s land use today with the land use in 1812-1820 it is possible to single out cultivated land, recreation areas and settlement as strong neighbours. Cultivated land is the dominant land use in the example area today and the spreading of settlements and recreation areas has also increased prominently. When looking at the land use in 1812-1820 it is apparent that forested areas, moist meadow or heath, wetland and pasture has decreased, and could therefore be considered the weak neighbours in the budget frame. Overlaying the present distribution of the land use types that have increased (the strong neighbours) with the land use 1812-1820, the land use that has been repressed, in other words the weak neighbour, can be seen (see figure 19).

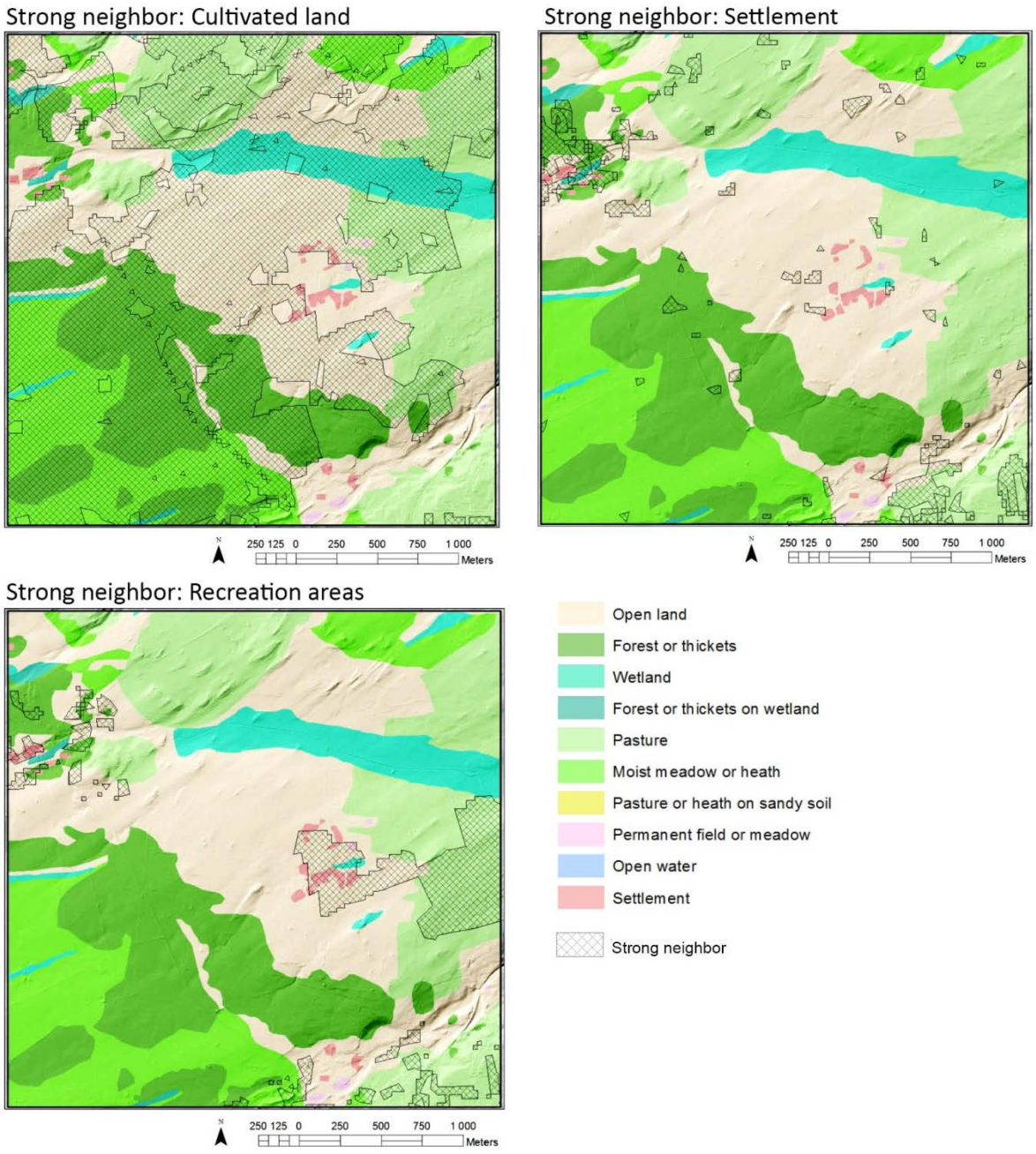


Figure 19: The increasing land use types cultivated land, settlement and recreation areas, are shown with the land use according to Skånska rekognosceringskartan as background to show which types of land use that have been repressed. The present land use is shown as grey hatched areas. (Made by: Anna Brånhult. Background map: Intepretation of Skånska rekognosceringskartan made by: Anna Brånhult)

When looking at figure 19, one can see that cultivated land has repressed almost all of the forested areas, the wetland, and the moist meadow or heath. Some parts of the pasture have also been transformed to cultivated land. When comparing this development with the identified driving forces on the Bjäre peninsula, the conclusion that the increase of cultivated land is connected to modern food production could be drawn. The increase of cultivated land is probably the result of improved farming methods that made the farmers abandon the pastures and meadows for producing livestock fodder (Emanulesson 2009: 293) and instead turn the previous outfields into arable fields. The repression of wetland to the advantage of cultivated land could be the result of the need for new land to cultivate and the land draining technique (Emanuelsson *et al* 2002: 151).

Although forested areas have increased on Bjäre in total, almost all of the land use type is gone in the example area. This could be connected to modern agriculture practices and the need for new land to cultivate. Since the area is relatively flat it is suitable for cultivation with modern machines and that could be a reason for the repression of the forest.

The increase of land used for settlements has repressed mainly forested areas, pasture and open land. The extent of the increase is not closely as large as the increase of cultivated land, but still makes settlements a strong neighbour in the budget frame. This could be explained by modern food production and the transformation from agrarian to information society. With the new techniques and artificial fertilizers that came with the modern food production it became possible to feed many more people per square kilometre (Emanuelsson 2009: 24-34), which allowed a higher population on The Bjäre peninsula, and larger gatherings of people in the towns not working with agriculture. Most of the people living on the Bjäre peninsula are not working within the agriculture sector, but in other industries, maybe in bigger towns in the area. The average distance between a person's home and their place of work for people living in the rural areas on Bjäre is 12 kilometres (Länsstyrelsen 2007), which shows that many people not work and live in the same place. This is connected to the transformation from agrarian to information society and possibly also the more global economy.

Recreation areas are also strong in the budget frame having repressed mainly pasture and open land. The increase of recreation areas in the example area is partly caused by an increase of green urban areas and partly of a golf course. The green urban areas are a result of the increase of land used for settlement, and in extension population growth and transformation to information society. The golf course can be seen as a result of the tourism and recreation industry being a driving force in the Bjäre peninsula landscape.

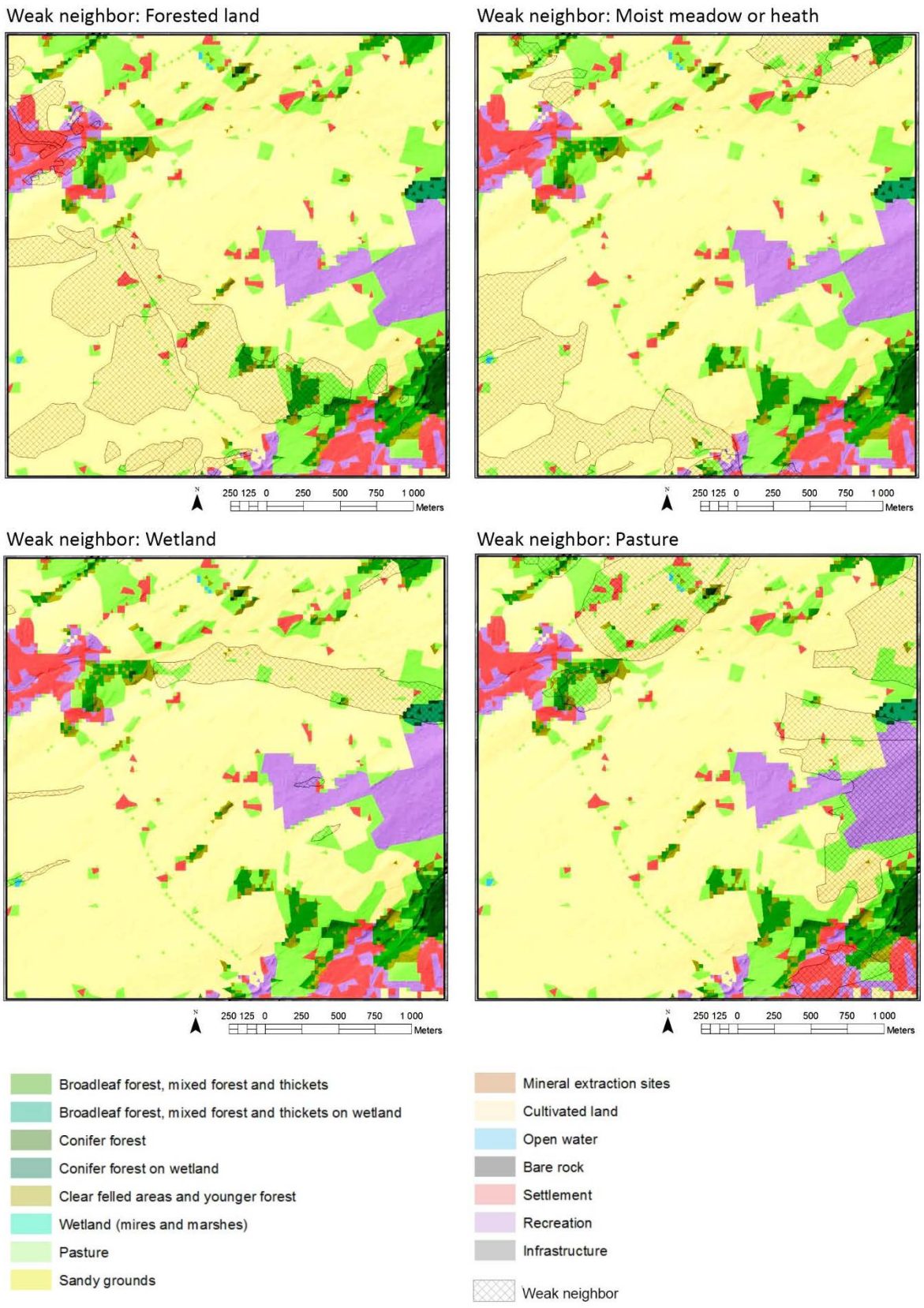


Figure 20: The decreasing and repressed land use types: forested land, moist meadow or heath, wetland and pasture with a modern map as background. The repressed land use are shown as grey hatched areas to reveal which type of land use that has taken over today. (Made by: Anna Brånhult. Background map: © Lantmäteriet, i2012/901)

The weak neighbours in the example area (see figure 20) are connected to the decreasing driving forces on Bjäre. Pastures and meadows, which are vital parts of traditional food production, have decreased since traditional food production as a driving force has been replaced by modern food production, which demands a different use of the landscape. Wetland has also decreased, possibly by draining to make room for more cultivated land. The forested areas in the example area was at the beginning of the 19th century probably used for coppice (Emanuelsson & Bergendorff 1983), which today no longer is a practiced land use.

Picture 1 in figure 21 is showing the view over an area that used to be forested but today also has been turned over to arable fields. The trees to the right in the picture could be remains of the old land use. Picture 2 in figure 21 shows an area that at the beginning of the 19th century was wetland but today is cultivated land, which could be an example of wetlands that were drained to make room for more arable fields.

Figure 21: Photos of the present landscape in the example area. The photographer´s position is marked on the maps over the example area with the land use from 1812-1820 (left) and a present map (right). (Photo by: Anna Brånhult 2012. Orientation maps: Interpretation of Skånska rekognosceringskartan made by: Anna Brånhult, Topographic map: © Lantmäteriet, i2012/901.)

The terms of the budget frame

The terms of the budget frame in the landscape in the example area are influenced by the driving forces of landscape change on the Bjäre peninsula. Cultivated land, settlement and recreation areas are land use types that have been strong neighbours and by this increased their spreading at the expense of other, weaker, land use types. This has changed the landscape from being a traditional, pre-industrial, landscape to a post-modern landscape with new prerequisites.

The terms of the budget frame can be seen as decided by the strong neighbours and their driving forces, but also the decrease of the weaker neighbours and their driving forces. The increase of cultivated land can be seen as the strength of modern food production as driving force, or the weakness of traditional food production and its effect on the landscape. This way of describing and conceptually picturing landscape change could be useful in discussions about future developments. If the desire, for instance, is to preserve disappearing wetlands, it could be interesting to know why the wetlands have become weak neighbours, and also what is driving the stronger neighbours that are repressing the wetlands.

All of the driving forces of landscape change on Bjäre are furthermore connected to each other, and sets the terms of the budget frame in interplay with each other. The development of the rural landscape, for example, is mostly connected to modern food production and modern forestry, which in extension is connected to the population growth, global economy, and the information society. The development of settlements and the infrastructure is also the result of a combination all of the previously mentioned driving forces. As the dynamic landscape, driving forces of landscape development shall not be separated into different fields, but understood as a whole.

Conclusions case study

The land use analysis on Bjäre was useful for discovering structural landscape changes, and to gain a better understanding of the landscape´s development. By knowing more about the origin of the land use types on the Bjäre peninsula, and discovering that they in beginning of the 19th century were parts of a complex system, it was possible to find out more about functions and driving forces in the landscape.

The analysis of landscape functions in the Bjäre peninsula landscape, at the beginning of the 19th century and today, showed the transformation from traditional landscape to post-modern landscape. The functions in the traditional landscape were more often related to landscape as means of production than in the post-modern landscape, where functions related to other landscape values is more common. The development from agrarian to information society is an example of a driving force behind this development. Even if land is still a highly valuable resource in the post-modern society, it is no longer a direct source of making a living for most individuals. For people living and working in urban areas, the landscape instead has become a place to recreate in. Hence, landscape values not linked to commodity production have become more important factors in the post-modern landscape development.

The attempt to adapt urbanization, globalization and accessibility to more specific driving forces, resulted in a number of driving forces related to the previously gained knowledge about the historical landscape on Bjäre. If other analyses would have been made, or other landscape functions would have been identified, other driving forces would possibly have been singled out.

The idea of the landscape as a budget frame is a useful way to understand the driving forces effect on the landscape. By comparing the increase or decrease of corresponding land use types, the power struggle between landscape functions and driving forces are clarified, and their effect on the land use can be studied. The increase of cultivated land in the budget frame analysis, for example, confirmed the modern food production as a driving force and showed an example of the effect of this driving force in the landscape.

A problem with the budget frame analysis in this case study could be that the land use was only studied at two occasions, quite far apart in time, which makes it uncertain when and why the land use changes occurred. A more extensive analysis could probably give a more certain definition of the budget frame terms. An aspect concerning the driving forces is that they all intermingle an affect each other, why it is difficult to define forces behind specific phenomena.

PART 3: DISCUSSION

This part seeks to discuss the results from the literature review and the case study by answering the questions stated in the introduction:

- What can the theory about the landscape as budget frame contribute to a historic landscape analysis?
- Is historic landscape analysis a useful method for landscape planning?
- How may knowledge of past landscape developments and landscape dynamics be useful for understanding the present landscape and its dynamism?

At the end of the discussion reflections over the case study and some concluding reflections will be presented.

Discussion of the research questions

The landscape as a budget frame and historic landscape analysis

The budget frame approach can be used in a historic landscape analysis to clarify the power struggle in the landscape by revealing different land use types´ exercise of power on each other. In the case study on the Bjäre peninsula, the budget frame theory was tested by investigating the change of land use since it could demonstrate the struggle for physical space in the landscape. When dividing the land use into corresponding categories it is possible to see how the use of the filled surface of the earth is changing.

The budgeting of time reveals itself in the landscape by the extension of the different land use types over time. When investigating the land use only at two occasions, not knowing how the land use changes between these occasions, it becomes harder to fully understand the budgeting of time. A land use that had about the same geographical spreading in 1812-1820 and today could theoretically have disappeared at some point in between.

The budget frame theory could also be tested with landscape functions. It would however be more difficult since multiple functions can be present in the same place. The budget frame approach implies that everything is there, nothing can be added and nothing can be taken away (Hägerstrand 2000), which becomes problematic when applying it to phenomena that can overlap.

Applicability in landscape planning

In relation to landscape planning, the landscape as a budget frame approach can be seen as a description of how the landscape is included in a system of actions and consequences. Every decision that introduces something new in the landscape, possibly also takes something else away. Actions in landscape planning can have intended and planned consequences, but might also

have unintended, or even unwanted or overlooked consequences. The budget frame terminology could be a way to discuss decisions in landscape planning and their consequences.

The budget frame approach relates to the view that landscape is everywhere, which has become a wide spread view on landscape and is an important aspect of a historic landscape analysis. By using the budget frame approach in a historic landscape analysis the view of landscape as a whole and all-embracing becomes necessary. This could be helpful if working in the spirit of the ELC, which shares this view of the landscape. The budget frame approach could furthermore be a method for discovering or clarifying driving forces of landscape transformation, which is also an aim in the ELC (Council of Europe 2000a: Article 6). By revealing the strong and weak phenomena in the landscape, it could be easier to discover the forces making them strong or weak.

The budget frame approach could also be used in relation to the Swedish environmental objectives, by clarifying that some landscape values stated as environmental quality objectives need to be defended against stronger neighbours to not disappear. The environmental objective "thriving wetlands" is an example of a landscape value that through the historic landscape analysis in the case study has been identified as a weak neighbour on the Bjäre peninsula. In order to reach the goal of preserving the biodiversity, cultural heritage and recreational values connected with the wetlands, they might have to be defended against stronger neighbours, in the example area in the case study, possibly cultivated land, settlement, or recreation areas.

The budget frame approach's connection with the concept of resilience, mentioned in the literature review (pp. 21), can partly be confirmed in the case study. If resilience is defined as "the capacity of systems to reorganize and recover from change and disturbance without changing to other states" (Ahern 2011: 341), the landscape at the beginning of the 19th century could be considered to have low resilience capacity since the weak neighbours on Bjäre, such as pastures and meadows, can be connected to the landscape at this time. Since the traditional landscape eventually changed into "another state", it could be considered less resilient. On the other hand is biodiversity and multifunctionality pointed out as building resilience capacity (Ahern 2011), why the traditional landscape on Bjäre could be considered to have a high resilience capacity. The budget frame approach could perhaps be used in discussions about both sustainability and resilience as a way to identify weak neighbors, that if they were lost, could lower the landscape resilience capacity at a whole and thereby cause a less sustainable landscape.

The landscape as a budget frame approach can be used in landscape planning to…

- …reveal the power struggle in the landscape
- ...show that the landscape is included in a system of actions and consequences
- …to discuss decisions and priorities as well as their consequences
- …to identify "weaker" phenomena in the landscape and the forces threatening them

Historic landscape analysis and landscape planning

Above all, an analysis of historical landscapes can contribute with a long term perspective in landscape planning. By providing knowledge about how the landscape developed and the forces influencing this development, a historic landscape analysis can contribute to handle contemporary planning challenges. In comprehensive planning, a long term perspective can be useful when envisioning future needs and challenges. Driving forces of change can be used to reveal in which direction the landscape development is going, and thereby help to visualize future landscape development.

Historic landscape analysis can contribute to the issue of sustainability in landscape planning by revealing driving forces in the landscape. If driving forces of change can be identified, they can also be examined and evaluated to determine if they support a sustainable development. The driving forces can be used in the same way when planning for multifunctionality or a diverse landscape. Forces that counteract with these phenomena can be identified and planning can be performed with consideration to them. If it for instance would be possible to draw the conclusion that modern food production has caused a decrease of diversity in a landscape, an action to increase diversity could be to give modern agriculture incentives to produce more diverse landscapes.

With this said, it shall again be mentioned that the driving forces in the landscape are intermingled, and it would be a simplification, and an incorrect conclusion, to say that only by changing the practices of modern food production, the problem with a polarized landscape would be solved. The point is that by identifying the source of, or force behind, a certain phenomenon, there is a greater chance to affect its future impact.

The European Landscape convention

Using a historic landscape analysis as a method for landscape planning in the spirit of the ELC has several advantages. In relation to identifying landscapes and their characteristics (Council of Europe 2000a: Article 6), a historic landscape analysis could be a base for founding identified landscapes and their characteristics in history. A historic landscape analysis can additionally, by its investigation of the landscape's past, identify natural and cultural heritage on a landscape scale, which also is mentioned as important in the convention (Council of Europe 2000a: Preamble).

A landscape´s characteristic can be seen as a part of a landscape´s identity, which a historic landscape analysis can contribute to identify (Antrop 2005; Clark *et al* 2004). The historic landscape analysis on Bjäre revealed the mosaic agriculture landscape as an important characteristic of the area. Attributes connected to that such as pastures, mosaic land use, the absence of larger forests, an open shore line and the border between the infields and the outfields can be considered valuable for the Bjäre peninsula landscape's characteristic and identity, and as parts of its natural and cultural heritage.

In connection with identifying landscapes and their characteristics, the ELC´s explanatory report also mentions identifying forces transforming landscapes as a specific measure (Council of Europe 2000a: Article 6). In this context, a historic landscape analysis is very relevant as landscape analysis since it can reveal driving forces of landscape change. On Bjäre, urbanization and

globalization through modern food production, contributed to the abandonment of infields and outfields, and initiated another land use structure. The increase of settlements and infrastructure can be seen as an effect of population growth, urbanization, globalization and accessibility through the information society and global accessibility as driving forces.

Since a study of the landscape's development encourages a dynamic view on landscape it could contribute to reach the aims of the ELC by preserving or enhancing landscape values without encouraging a stagnation of the landscape. The historic landscape analysis on Bjäre shows that many of the landscape values, such as the open character of the landscape and the mosaic land use have been shaped throughout time, why a freezing of the landscape would not benefit their preservation.

As a method for involving the public in landscape planning, a historic landscape analysis can be used to visualize the landscape´s development throughout time, which can be used as a base for discussing future plans. The historic landscape analysis on Bjäre could for example be used as a base for inhabitants and landscape planners to create scenarios for the future landscape and by this set the direction for desired future development.

The Swedish environmental objectives

A historic landscape analysis can be used as a method for working with the Swedish environmental objectives, as it can help to explain the origin of, or the practices that shaped, landscape values stated as environmental quality objectives. The nature and cultural values of the environmental quality objective: *A varied agricultural landscape,* are for example, according to the Swedish environmental objective's homepage, the result of thousands of years of cultivation of the landscape (Naturvårdsverket [online] 2012). Biotopes such as meadows, pastures, and wetlands are mentioned as valuable carriers of biodiversity and cultural heritage that also are results of historical processes.

The origin of natural and cultural values must be identified in the first place in order to preserve them in an agricultural landscape, and thus reach the environmental objective of a varied agricultural landscape. The case study on the Bjäre peninsula revealed historical land use practices that have contributed to make meadows, pastures and wetlands bio-diverse, and to be considered cultural heritage today. An identification of driving forces could additionally recognize possible threats against the values, which could be used to reach a more strategic environmental assessment, mentioned by the Swedish National Board of Housing, Building and Planning and the Swedish environmental protection agency (Boverket & Naturvårdsverket 2000: 10ff).

A historic landscape analysis is useful in landscape planning as it can…

- …identify driving forces that counteract with a sustainable development
- …facilitate the task of reaching the goals in the ELC through promoting a dynamic view on landscape, as well as identifying landscape characteristics and driving forces
- …facilitate the task of reaching the Swedish environmental objectives by explaining the origin of, and identifying forces threatening, the landscape values stated as environmental quality objectives

Past landscape developments, landscape dynamics and the present landscape

Knowledge about the landscape's past can increase the understanding of the landscape as a result of historical development. Decisions made today, important and trivial, will affect the landscape in the future. A landscape, or a place, that is very familiar can be hard to imagine ever being something different. What exists at the present can be so familiar that it is taken for granted, and it can be hard to imagine that the situation could have been something very different, if other decisions were made. Knowledge about the past landscape can remind us of the fact that the landscape we perceive and live in is shaped and reshaped constantly, and that the future landscape is shaped today.

Knowledge about the landscape's past can also encourage a cautious management of the landscape. By understanding that some parts of a landscape have been shaped by processes that have been maintained throughout history, the will to sustain these processes could be greater. With this said, it should be mentioned that a possible disadvantage with an analysis of a landscape's is that the result might romanticizes the past landscape, and thereby not serving its purpose to promote a dynamic landscape view. If a historic landscape analysis is used to find values in the past landscape, there is a risk that the past landscape is considered as a better one, which could encourage a "freezing" of the landscape.

Depending on the viewpoint taken, the driving forces identified in the case study can be considered to have transformed to the better or to the worse. With a sustainable development approach, some of the driving forces connected to the traditional landscape period could be considered to be preferred, but with knowledge about the present society and the prerequisites on Bjäre today, it is evident that the landscape cannot be the same. Knowledge about the landscape's past, could, in other words, provide a theoretical alternative to the present landscape, which can be used get perspective on the present landscape.

Time geography emphasizes the dynamic aspect of landscape by giving time an important role, which sets the present landscape in relation with the past and the future. The landscape as a budget frame approach exposes the changing aspect of landscape, but at the same time

emphasizes the limitation or restriction in the landscape by the fact that nothing can be taken away or added. This can be useful for understanding the landscape's dynamism, as it provides with an explanation of the relation between its changeableness and its persistency.

Knowledge of past landscape developments and landscape dynamics can be useful for understanding the present landscape and its dynamism since it…

- …reminds us of the fact that the present landscape is a result of historical development, and that the future landscape is shaped today
- …can help getting perspectives on the present landscape by providing a theoretical, alternative landscape
- …can provide an explanation of the relation between the landscape's changeableness and persistency

Reflections

The case study

An advantage of the process-oriented method used in the case study was the way it allowed the case study to develop with the increased knowledge that was gained along the way. A difficulty though, was to present the method in a clear way, which could be considered a weakness. It is possible that the conclusions in the discussion above could be drawn without performing all the analyses that are presented in the case study, but they have nevertheless contributed to the knowledge about the historical landscape on the Bjäre peninsula and about approaches to investigate the landscape's past.

In the case study, Antrop's (2005) driving forces of landscape change were used, but other driving forces, for example Marcucci's (2000), could also have been chosen. This would probably influence the driving forces that were identified in the case study, and that is why the driving forces, as mentioned before, are not stated to be the only, or the "right", driving forces. The situation is similar with the landscape functions. Because of the landscape´s multidisciplinary character, an analysis of landscape functions is naturally problematic when trying to analyse them in a holistic approach. If landscape is something different with every person´s perception, there are an infinitive amount of landscape functions and values, which make a complete analysis impossible.

Concerning the landscape as a budget frame analysis, it should be mentioned again that the landscape as a budget frame approach is not designed as a method for analysing landscape change in a historic landscape analysis. The metaphor is perhaps meant to facilitate the understanding of the view on landscape that Hägerstrand promoted. The trial to apply the theory in the case study in this thesis was a test, and improvement of the application could be developed. Analysing strong and weak neighbours in the landscape within a shorter span of time could be interesting for further studies, as well as using the analysis as a base for making scenarios for the future.

Because the landscape in the case study was seen as a whole, and not divided into different fields, the driving forces of landscape change were hard to separate. The landscape is complex and so are the driving forces influencing its development. Urbanization, globalization and accessibility were used as a base for the investigation of driving forces in the case study, and they all influence the landscape development together. To single out which driving force that influences a specific function or phenomena is perhaps impossible on a landscape scale since driving forces, actions, and consequences are intermingled and dependent on each other. If an analysis was made only investigating a certain aspect of the historical development of a landscape, for instance the biodiversity of wetlands, the driving forces of change would perhaps be more specific, and their relation to the certain aspect clearer.

An aim of identifying driving forces can be to facilitate the prediction of future development. By examining the past landscape and the driving forces influencing its development, some connections between driving forces and their effect on the landscape could be identified. These could possibly be transferred to the present and the future landscape, in an attempt of predicting

future development. In the case study in this thesis no conclusions about the future landscape on the Bjäre peninsula was drawn, but the historical landscape development was connected to some driving forces. These driving forces can be seen as trends that possibly also will affect the future landscape development on Bjäre, if they are not replaced by other driving forces or processes.

Concluding reflections

By means of the literature review and the case study on Bjäre, the first two aims for the thesis are accomplished. Methodological approaches have been investigated in theory, and an attempt to apply them in the case study was made. The changes in the landscape, and their possible driving forces, have also been discussed with the terminology of the landscape as a budget frame. The third aim: to discuss and connect current planning challenges with the case study results, is fulfilled in the discussion. The overall objective of the thesis is reached through the knowledge gained in the literature review and the case study, as well as by discussing the research questions.

The landscape's past is a broad field. Hence, limiting the subject has been one of the hardest challenges with the thesis. Limitations were especially difficult when trying to identify driving forces since they originate from all types of fields, some of them which I have poor knowledge about. I have tried to set the boundaries with my role as a landscape architect and planner as a base, but my limited knowledge within some of the fields dealt with in the case study, for example economic history and agriculture, can still be seen as a weakness in the thesis.

The material about the historical landscape on the Bjäre peninsula partly formed the analysis, and the result, of the case study, which can also be seen as a weakness. The advantage of this though, is that I could make use of the material and information available, and spend more time on investigating and developing the analyses. Another possible deficiency, as always when working with historical material, is the reliability of the material, which sometimes can be hard to judge. The key here is to make an evaluation of the material and be aware of the limitations of it.

The work with this thesis have made me come in contact with new ways of viewing the landscape, and have helped me realize that the landscape is even more complex than I imagined before. Hägerstrand's theory about the landscape as a budget frame is possibly the approach that will influence my way of viewing the landscape the most in the future. Perhaps because it is an easy and evident way of explaining complex processes. This approach is also something I would encourage to study further.

During my landscape architecture study I have furthermore learnt that planning and design of a landscape or a place always must be adapted to the specific situation; there is no general model or template that can be applied to all landscapes or places, no matter how well thought-out it is. Knowledge about the landscape's past is a part of the process of understanding what a landscape "is"; what makes this landscape to precisely this landscape and nothing else? And what do I, as a landscape architect or planner, need to take into consideration to develop this landscape with respect for its unique situation? Perhaps is this what knowledge about the landscape's past can contribute to the most.

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Appendix

Original category, Land and vegetation cover map	Merged categories used in the case study
1.1.1 Continuous urban fabric	Settlement
1.1.2.1.1 Discontinuous urban fabric with more than 200 inhabitants with minor areas of gardens and greenery	Settlement
1.1.2.1.2 Discontinuous urban fabric with more than 200 inhabitants with major areas of gardens and greenery	Settlement
1.1.2.2 Discontinuous urban fabric with less than 200 inhabitants	Settlement
1.1.2.3 Solitary houses with property	Settlement
1.2.1 Industrial or commercial units, public services and military installations	Settlement
1.2.3 Port areas	Infrastructure
1.4.1 Green urban areas	Recreation
1.4.2.1 Sport grounds, shooting ranges, motor, horse and dog racing tracks	Recreation
1.4.2.4 Golf courses	Recreation
1.4.2.6 Camping sites and holiday cottage sites	Recreation
2.1.1 Arable land	Cultivated land
2.2.2 Fruit trees and berry plantations	Cultivated land
2.3.1 Pastures	Cultivated land
3.1.1.1 Broad-leaved forest not on mires	Broadleaf forest, mixed forest and thickets
3.1.1.2 Broad-leaved forest on mires	Broadleaf forest, mixed forest and thickets on wetland
3.1.2.1.2.1 Coniferous forest 5-15 m	Conifer forest
3.1.2.1.2.2 Coniferous forest >15 m	Conifer forest
3.1.2.2 Coniferous forest on mires	Conifer forest on wetland
3.1.3.1 Mixed forest not on mires	Broadleaf forest, mixed forest and thickets on wetland
3.1.3.2 Mixed forest on mires	Broadleaf forest, mixed forest and thickets
3.2.4.1 Thickets	Broadleaf forest, mixed forest and thickets
3.2.4.2 Clear-felled areas	Young forest and clear felled areas
3.2.4.3 Younger forest	Young forest and clear felled areas
3.3.1 Beaches, dunes, and sand plains	Sandy grounds
3.3.2 Bare rock	Bare rock
4.1.1 Inland marshes	Wetland
4.1.2.1 Wet mires	Wetland
4.1.2.2 Other mires	Wetland
5.1.2.1 Lakes and ponds, open surface	Open water
5.1.2.2 Lakes and ponds, surface being grown over	Open water
5.2.3.1 Sea and ocean, open surface	Open water
5.2.3.2. Sea and ocean, surface being grown over	Open water