Participatory mapping as a tool for capturing local perspectives on cultural landscape
– case study of Ostlänken

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Preface

This study has been conducted within the research programme INCLUDE –part of the Mistra initiative on sustainable transport (“Transport-Mistra”). INCLUDE focuses on how ecological and socio-cultural landscape qualities can be integrated at different levels in infrastructure management and planning processes. The programme involves cooperation between several universities, research institutes, and governmental authorities in Sweden and abroad, most notably SLU, KTH, VTI, Stockholm University, and Kalmar University. The programme has been financially supported by Mistra together with the Swedish Road Administration, the Swedish National Rail Administration, the National Heritage Board and the Natural Protection Agency.

This report has been produced within INCLUDE sub-project C, which has been focusing on barriers and bridges in the planning process for integrating natural and cultural landscape values in infrastructure planning and management. The project has been led by Assistant Professor Karolina Isaksson at KTH in close cooperation with Ph.D. Krister Olsson, KTH, Professor Tim Richardson, Aalborg University, and M. Sc. Chia-Jung Wu, KTH.

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1. Introduction

1.1 Background
Landscape is an important aspect in infrastructure planning. A road is not just a route, but an interface merged to its surroundings (McCluskey 1992). Thus a road not only creates an asphalt pavement, but also affects the natural and cultural landscape and the character and sense of a place. Today, there is a wide research field to illustrate this, but there are still great challenges ahead when it comes to dealing with this in planning practice. How can infrastructure planning change in the future, to better integrate the diverse spatial aspects that it relates to, especially when it comes to cultural landscape values?

The concept of cultural landscape is dynamic. The cultural values in landscape can be objective and subjective, collective and individual (Jones 1991, Stenseke 2001). Cultural landscape is in itself a debated issue, and many questions have arisen around it from the early 1990s and onwards, for example: Which historical remains should be protected? Whose stories shall be listened to? Which period of time should represent the landscape? What is authentic? (Widgren 1994, af Geijerstam 1998, Stenseke 2001). These questions suggest that landscape cannot be judged by expert views only. How to capture the local perspective and how to introduce it into the planning process becomes a crucial issue.

To create a dialogue between the public and different authorities and experts in discussing infrastructure and cultural landscape, the Swedish Road Authority and Heritage Board have, since the early 1990s, looked into using a visualization approach. The aim is to see how cultural landscape can be described in integrity rather than selected sites, and also how cultural landscape can be presented in a way that makes it easier for the public and experts to communicate around it. Among varied approaches, “participatory mapping” tried in the railway project Ostlänken has been suggested as a method with a potential to combine local participation and visualization (Frisk et. al. 2006).

Since the 1990s, participatory mapping has become a popular tool used in community planning and natural resource management in countries worldwide (Vajjhala 2005a). However, the experience from the planning of Ostlänken – a fast speed railway in south-eastern Sweden – provides a slightly different perspective. The case illustrates that participatory mapping is still a new and to some extent controversial method in Swedish transport planning. Although it is seen as interesting and inspiring by authorities from both the infrastructure planning and heritage sector, it has not yet been widely applied. The participatory mapping made within the planning of Ostlänken was a pilot project aimed at testing the potential of participatory mapping as a methodology to assess and integrate cultural landscape values in EIA (Environmental Impact Assessment). Many interesting questions are awaiting to be explored: How do the participatory maps differ from the traditional way to describe cultural landscape in Swedish planning? What potential does participatory mapping have when it comes to facilitating decision-making? And, what kind of limitations or challenges have to be noticed when it is applied in future?

1.2 Aim and research questions
The aim of this study is to explore the potential of participatory mapping as a tool to be used in order to capture the local perspectives on cultural landscape in infrastructure planning. The study

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1 Visualization of cultural landscape has been particularly investigated by the Swedish National Road Authority and National Heritage Board during 2004-2005 through the project Visa Väg. In the project, different examples of visualization in road and railway planning from 1992 to 2004 has been examined, including sketches, maps, 3D modelling, etc. See Frisk et. al. 2006).
also aims to examine the potential and the limitations of participatory mapping as a method to extract information for the EIA. Empirically, this study focuses only on the participatory planning approach applied in the case of Ostlänken. This case study will be the basis for a more general discussion on how the method might be applied and improved for the future when it comes to infrastructure planning.

The focus will be on the following questions:

- What was the background to the participatory mapping that was carried out in the case of Ostlänken? Whose initiative was it and which were the reasons behind it?
- What are the possibilities and difficulties in using participatory mapping as input information for EIA?
- At which stages and through which channels can the participatory maps be more useful and applicable when it comes to large-scale infrastructure planning in decision-making?

1.3 Outline of the report

After the introduction a theoretical chapter follows, dealing with the question of the difference between local and expert perspectives on cultural landscape. In that chapter we will examine and illustrate the difference between participatory mapping and “traditional” scientific maps, i.e. those that are currently used to evaluate cultural landscape in EIA.

After the theoretical chapter we move on to chapter 3, which is a presentation and analysis of the empirical case, i.e. the participatory mapping approach that were used in the case of Ostlänken. The fourth and last chapter consists of a discussion on the results of the analysis, and also conclusions drawn from the participatory mapping in the case of Ostlänken. In this chapter there are also some more general recommendations and reflections on the possibility to further develop the method.

1.4 Method

This report focuses on the participatory mapping approach that was applied in the planning of the fast speed railway Ostlänken. This railway project was chosen as the case study for two reasons. First, in terms of participatory mapping it was a pioneering project that tried to apply the method in relation to EIA in Swedish transportation planning. Secondly, Ostlänken is in itself a unique case in terms of its geographical scale – being a railway plan that goes through several administrative counties in Sweden. The use of participatory mapping in such a huge project of national impact will, most likely, lead to other types of questions and challenges which may not be shown in small projects like community-based planning. Ostlänken is an interesting case not only to analyse how participatory mapping is used as an innovative tool for capturing local perspectives on cultural landscape, but also to explore the possibility to apply such method in infrastructure planning in the future.

Since participatory mapping remains a new method in Swedish transport planning, the reactions of planning practitioners from the field are an important part of this study, besides the theoretical review of participatory cases abroad. Four interviews were made with experts at the Heritage Board and the consultation agencies working for EIA in the Ostlänken project. Their expertise varies, including geography, archaeology, landscape architecture and engineering. Questions were structured during each interview. The perspectives from regular planning authorities and the locals who helped with the participatory mapping were obtained indirectly through the experts interviewed. The interview questions were prepared and sent to the interviewees in advance. A
digital recording device was used during all the interviews, with permission from the interviewees. Two interviews were conducted in English and two were conducted in Swedish, but have later been translated into English.

In order to make suggestions for future practice, the result of the participatory mapping in the case of Ostlänken has here been used as raw material intended to represent a local perspective on the landscape in focus. The map has also been used as a material for trying out how the contents of a participatory map can be structured in other ways in order to be more useful in the decision-making process.

1.5 Definitions

**Scientific map & Participatory map:**
Scientific maps in this report are the maps traditionally used to evaluate cultural landscape in planning. These tend to present natural and man-made features in precision. Participatory maps are distinguished from scientific maps in this report to emphasize that the contents of the maps derive from a local perspective rather than a scientific perspective.

**Cultural environment & Cultural landscape:**
The Swedish term *kulturmiljö* means cultural environment, if translated literally into English. This term is a key word, referring to cultural landscape in a Swedish context. The concept of *kulturmiljö* originated from historical monuments (*kulturminne*), indicating culture within a certain environment. Today, the concept has shifted to a more landscape-based cultural environment, to highlight the integrity and structure of culture (interview 2). Therefore, “cultural landscape” now works as a term to describe *kulturmiljö* in Sweden. In the meantime, landscape is taken for an important aspect when evaluating cultural environment in the Swedish infrastructure planning (Frisk 2006). Cultural Environment Analysis (*kulturmiljöanalys*) essentially deals with cultural landscape as one of the subjects under EIA.
2. Landscape, map and power

2.1 Landscape as a construct of mind

We can think, therefore we are able to see an entity called landscape. Landscape in turn evokes thought. 

Tuan 1979

Landscape as a concept originally referred to a domain. From the sixteenth century on, particularly in the Netherlands and in England, landscape became a genre of art (Jackson 1964, Tuan 1979). Later, however, when more precise terms like “estate” and “region” arose, “landscape” was redundant from this functional perspective. Similarly, the word also became vague from an aesthetic perspective, where it can be replaced by ”scenery”, which offers greater clarity (ibid.). This suggests that landscape is a concept beyond any economic and artistic description of environment.

In Tuan’s Thought and Landscape, landscape is viewed as a construct of mind and feeling. Landscape is meaningful because of the thoughts thrown upon human beings. Items in the physical landscape give us clues to constitute an integrated image. Yet, such imagery can be both subjective and objective. For instance, a landscape can be transformed into a biological system for the calculation of soil capacity, but also transcribed into personal emotions stimulated by nature (ibid.). This implies a discrepancy between scientists and the public in how they perceive landscape.

2.2 Different perspectives on landscape

What happens then when a scientist looks at the landscape from his or her expert-perspective? Scientists tend to put landscape into different models depending on their field of expertise. The temporal dimension, for example, can be a clue for an archaeologist to relate landforms to geological erosion that took place before humans even set foot in the landscape in question (ibid.). Or, atomic theory can provide another clue to a physicist who needs to conceptualize a mountain. By framing landscape into a universal category or an existing knowledge they are familiar with, scientists separate their observation of landscape from personal involvement; their own response to the uniqueness of that landscape. Landscape can thus become alien to scientists while their mental picture and perceptual experience are apart (ibid.).

In contrast to the scientific view, a local perspective of the landscape associates with practical life and immaterial aspects (Stenseke 2001). In a traditional agricultural society, for instance, landscape is the resource of production. Landscape is evaluated according to whether people can make a profit out of it. The bare cliff in the local view symbolizes poverty rather than scenic beauty or ecological values, which would be the scientific view (Ibid.). A local perspective of landscape can be both collective and individual. The former is often linked to regional identity, which characterizes the sensitive tie between people and places (Ibid.).

One can therefore use different approaches to interpret a landscape. In Landskapets Värden – lokala perspektiv och centrala utgångspunkter, there is an interesting case of two Swedish communities – Solberga, Tegneby in the western part of Sweden. The area is known for its pre-historical heritage, such as rock carvings and stone remains. Interestingly enough, the knowledge of these pre-historical remains is mainly generated by archaeologists and historians, not the locals. Even though many locals have made their own discoveries of stone axes, shards etc, their interests in...
the pre-historical landscape is moderate (Stenseke 2001). Also, the locals do not necessarily understand the official or scientific maps. For example, one third of all the interviewed locals did not know exactly what $R$ means on the economic map. It stands for historical remains (ibid.).

The locals were mainly interested in the transition of the landscape from the 18th century and on: how the landscape was once mosaic, how the stone ridges and dikes were built, how the mountains became forests in the past century and how the land use changed along with legislative reforms. Compared to a scientific viewpoint, with focus on prehistory, the locals’ perspective display a landscape immensely involved in human activities (ibid.).

### 2.3 Time – a contested perspective in planning

Cultural landscape is a dynamic concept not just because of its subjectivity, but also because of different chronological periods chosen by different people. When it comes to a planning context, there are distinct differences between the experts’ and the locals’ perspective. While scientists often focus on ancient times, locals tend to relate more to recent history and contemporary life. This leads to a contesting issue: when infrastructure creates a new landscape, should we look backward or forward?

In the academic tradition, the retrospective view has dominated landscape analysis. For example, Swedish landscape researchers are almost always historians, archaeologists and natural scientists such as geologists and ecologists. Their interests concentrate on how the physical landscape once looked like (Stenseke 2001). The landscape works as a time capsule to help researchers travel in time.

The tendency of going “back to the past” is closely linked to the image of environmental awareness in past decades. Nostalgia has prevailed when it comes to ideas of landscape, given the deterioration of the global environment. Protection has been a key word in the discussion of landscape in relation to humans, who are considered to behave notoriously bad in the landscape. The authorities’, science’s and tourists’ interest in the rural landscape have shown a nostalgic sentiment towards the idyllic agricultural society. (Saltzman 2003).

![Figure 1. Retrospective vs prospective perspectives on landscape](source: author)

Undeniably, landscape changes over time. Protective thinking thus faces the challenge of reversing or halting the progress of time, which in reality is impossible. However, protection might be a way of continuing and adapting the contemporary landscape, if it is recognized by the locals. In the book *Inget landskap är en ö* (No Landscape is an Island), Saltzman discusses the struggle over landscape on Öland, an island off the southeast coast of Sweden, and highlight specifically the important role of local modern agriculture:

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2 fornlämningar
In the nomination of Southern Öland to the World Heritage List, it was stated that this is a landscape formed by farming in continuous development through history as well as today. Thus modern farming was pointed out as are perquisite of, rather than a threat to the values of this landscape. The importance of the role of the farmers was so clearly stated that it almost appeared as if it was the farmers of the area themselves who were being nominated as heritage (Saltzman 2003:267).

This also suggests that the local identity is of great importance when it comes to making the act of landscape protection legit.

When landscape is discussed in the context of infrastructure planning, which often means radical change for an existing landscape, the retrospective and protective approach often prove to be difficult to handle in the planning process. The act of looking back is important – but is only one perspective that easily can be disregarded as not relating to what is happening in the present and what should be done to adapt to the near future. To add a prospective view to the landscape in the planning process, the people who actually live in the landscape need to come into focus again. The creativity in human thoughts should be realised, so that a local perspective could be seen in relation to a global one and a social perspective in relation to an ecological perspective (c.f. Harvey 2000, Saltzman 2003).

2.4 From scientific maps to participatory maps

2.4.1 Scientific maps over the landscape

A map is an important medium to transcribe landscape in a condensed and comparable form. It is a tool used to describe a physical landscape by which cultural landscape can be free from being captive in invisible thought (Fast and Philipson 2002). Given the fact that humans keep affecting the landscape, maps have to be updated constantly. Comparing different types of maps of the same area is thus helpful when tracing the transformation in landscape (Larsson 1991).

Below, there are several examples of maps often used for landscape analysis in Sweden. From an international perspective, Sweden has a vast number of old maps (Hall 2003). The variety of maps shows the possibility to depict landscape diversely. For instance, the Ordnance Map highlights distinctions between for example broad leave and needle forests, whereas Economic maps emphasise boundaries between estates. Despite different “landscape relations” shown on the maps for their specific purposes, there are also common features, such as vegetation, topography, housing disposition, estates and roads defined by certain colours, shapes and symbols.
Land transition maps (skifteskarta) were made during the 18th and 19th centuries with handwritten marks, showing the boundaries between the farmlands and forests as well as boundaries between villages and gardens. Houses, stone walls and roads were also marked (Larsson 1991).

Ordnance maps (generalstabskarta) began to be produced and used widely during the 19th century, showing road networks and housing distribution. They also showed the distinction between broad leaved and needle forests instead of making the distinction of farmlands and forests. Elevation is added at later stage (Larsson 1991).

Economic maps (ekonomisk karta) were largely produced during 1800 – 1889 and mainly showed boundaries between estates (Hall 2003). In the maps, everything is green except agricultural lands and gardens, which are shown in yellow. Starting in the 1930s, maps were drawn with the help of aerial photos. The scale is usually 1: 10 000 and 1:20 000 (Larsson 1991).

Topographic maps (topografisk karta) are similar to, yet not as detailed as, economic map. Maps mark out waterways in blue and leave open lands without any color. The division between farmlands and forests is not shown. The scale is 1: 50 000 (Larsson 1991).

Figure 2. Different types of Swedish maps used for cultural landscape study
(Source: På upptäcktsfärd i kulturlandskapet)
In reality, however, there is a significant distinction between map and landscape. A map is actually a simplified version of landscape; something to help people grasp a specific landscape in an effective manner and discuss it easily without having to travel. From the examples illustrated above, it is apparent that maps are images of selected features rather than all details. In the meantime, let us take a look at the fourth dimension of landscape. How the content of a map may be manipulated and what it is that is blind in the traditional way of mapping will be discussed in the following section.

2.4.2 A map is never neutral

In *Deconstruction of the Map*, Harley claims that a map is essentially the exercise of power. He divides the power of maps into external and internal power. The external power comes from the patron of the map and the internal power from the map maker.

When tracing back the historical development of cartography one realizes that maps have been created for a number of different purposes. For instance, the early Swedish maps were made in the 17th century, mainly serving to calculate the amount of agricultural land and for military reasons (Hall 2003). In other cases, monarchs, churches and ministers have initiated map making to suit their personal agendas. In other words, there is a historical link between maps and political power. Maps embody specific forms of power and authority. In colonial North America, for example, Europeans took their right to draw lines across the territories of Indian people (Harley 1992). The map allowed them to say that the land was theirs (Ibid.). In modern society, it is still easy for bureaucrats, developers and planners to avoid considering the contested nature of the specific development project or landscape in focus. Where maps seem to be neutral they can be the sly “rhetoric of neutrality” (Ibid.).

While the external power of maps unveils the intentions behind the map, there are also internal power aspects to consider. Harley argues that landscape is disciplined, normalized and made ignorant to the social and cultural context by the acts of selection, generalization, classification and – altogether – the expected accuracy in the rules of cartography, seen as “scientific” and “neutral” (Harley 1992). The overwhelming power of science has its root in the positivistic epistemology that boomed during the Enlightenment, the period that saw the birth of cartography. The aim of mapping is thus to produce a “correct” relational model of terrain (ibid.), a target that is nowadays reinforced by the digitalization of mapping. Yet, a map:

> is not the landscape itself or anything remotely like an exhaustive depiction of it. If we do forget / about this /, we grow rigid as a robot obeying a computer program….We may then know the map in fine detail, but our knowledge will be purely academic, inexperienced, shallow…(Roszak 1972 in Harley 1992).

Today maps are both popular and indispensable tools in the planning process, and many development and environment related projects are inherently based on spatial information: the locations of key resources, people and problems are central to the decisions being made. But little attention has been paid to whether maps are effective for eliciting information about people’s priorities, perceptions and preferences – and then communicating this information to a wider audience (Vajjhala 2005b). Maps should be understood as a resulted image by a process designed by humans.

2.4.3 Towards a participatory approach
Participatory mapping is an emerging tool widely used in the field of urban planning and resource management from the 1990s (Anau 2003). Participatory mapping can be defined broadly as any combination of participatory methods for eliciting and recording spatial data. The mapping skills range from hand-drawn sketches to technology-based visualization like 3D modelling. The participatory map can be done by individual or group, depending on the way of public participation (Vajjhala 2005a).

Participatory mapping is revolutionary in the sense that it is a mapping process driven by locals and that the locals own the map. As a planning process, participatory mapping is in stark contrast to consultation, which is often designed by outsiders to meet their agenda (Brown & Hutchinson 2000). Basically participatory mapping is a response to the increasing awareness of the significance of local knowledge in understanding nature and environment. That science represents knowledge of a single truth is today strongly questioned (Svanberg & Tunon 2000). Also, in many developing countries, local knowledge is important to investigate environment owing to poor information from the authorities. Participatory mapping then becomes an easy and effective way to obtain spatial information. Figure 3 shows a participatory map where forest species and movement routes are given in detail by local residents.

Figure 3. Participatory map of Dhunkharka in Nepal, showing locations of tree resources, foot trails and boundaries

Source: Rural Development Forestry Network

In urban planning, the “Green Map System” is a good example of participatory mapping. It started by the development of a map of New York City from the residents’ perspective in 1992. Using its own symbols for environmentally notable sites, the Green Map System has gained global popularity and led to the publication of over 150 different community maps around the world. Green Maps have so far been created with a high level of cartographic quality by both professionals and volunteers. The mapping process and the results are often compiled into education materials and tourist information (Tulloch 2004).

“Indigenous mapping” is another significant trend within this participatory approach. Indigenous mapping has been widely used to reclaim territory and to rebuild traditional knowledge (Tsai 2006). The method is currently promoted by the United Nations Environment Programme. The Centre for the Support of Native Lands has been a pioneer in participatory mapping, particularly of indigenous lands in Central and South America, but also in Africa and Southeast Asia. Indigenous mapping carries the purposes to help rebuild the fading sense of identity in the indigenous society and demonstrate land rights (Tsai 2006). The maps are often used as a basis for designating nature reserves and indigenous areas.

Concerning the mapping techniques, the integration of participatory mapping and Geographical Information System (GIS) has been intense in recent years. It is known as Participatory GIS (PGIS) or Public Participation GIS (PPGIS). Originally, participatory mapping and GIS have been developed to meet different ends. Participatory maps focus on representing local views and descriptive information. The focus is on questions of “how”, i.e. how people live or move, and the information is compiled in a bottom-up process. In contrast, GIS maps are designed to

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produce an “objective” description. It is concerned with “where”. The process is top down (Vajjhala 2005a). The approaches have different attributes, and also different limitations. With GIS, that provides massive quantified data, there is a difference between information and communication. When performing GIS, the heterogeneity of the human dimension is disregarded. On the other hand, participatory maps have been called time-consuming and some have argued that the results are difficult to compile and unwieldy for effective use by decision makers (Vajjhala, 2005a). Participatory mapping and GIS could however complement each other.

Figure 4. A combination of a participatory map and GIS.
Source: Integrating Participatory Mapping and GIS

The experiences of participatory mapping from around the world as illustrated above show a variety of planning and geographical contexts. The input and output of participatory mapping vary to a great extent. Before discussing the benefits and downsides of participatory mapping, it is worth to raise the question “What is the purpose of mapping?”
3. Participatory mapping in Ostlänken

This chapter will present the background of the cultural landscape investigation during the planning process of Ostlänken, where the participatory mapping was initiated. The aim and experience of participatory mapping will be presented in detail.

3.1 Cultural landscape investigations in the planning process

Ostlänken is a high speed railway, 150 kilometres of double tracks, currently planned to be built between Stockholm and Linköping. Today the two cities are connected by a railway built in the early 20th century. By reducing the travel time between Stockholm and Linköping to one hour, the new railway aims to increase the economic growth and reduce the flight and car traffic in the region (http://www.ostlanken.se October 2007).

Three alternative routes are proposed for this new railway: The red alternative will go along the existing railway, the blue alternative will go along the existing highway and the green alternative through virgin land (Riksantikvarie-ämbetet 2005). The planning process started in 2001 and is currently in the final stage of the feasibility study, where the “best alternative” is about to be decided, after EIA and public consultation (http://www.banverket.se October 2007).

Between 2002 and 2006, three reports have been written on cultural landscape for the railway Ostlänken (figure 6). The first investigation, Landskapets Historiska Dimension – fallstudie Ostlänken genom Sörmland (Fast & Philipson 2002), was a methodology project carried out by the Institute of Cultural Geography at Stockholm University. By using maps made in early 20th century (Häradskarta), the research focused on the cultural landscape transition in recent times. As a continued study, Kulturhistoriskt planeringsunderlag för Ostlänken – exempel från Sörmland (Beckman-Thoor et al 2003) was mobilized by the local government of Sörmland in cooperation with the Heritage Board at the end of the year 2002. This report aimed at complementing the previous study by adding a pre-historical time dimension. Furthermore, it tried to go deeper into the local perspective in modern times. The purpose was to create a methodological model for the Cultural Environment Analysis in EIA (interview 1). The last of the three reports on cultural historical landscape was the Järnvägsutredning – kulturmiljöanalys (Cultural environment analysis for the railway investigation plan) – produced by the heritage board 2005 and serving as an input to the EIA in the feasibility study. Figure 6 illustrates how the different reports on cultural landscape fits into the overall planning process.

There are three aspects specifically defined to help evaluate cultural landscape: knowledge values, lived experience values and utility values. In the documents in focus here, knowledge values are defined as historical remains, whereas lived experience is related to people’s memories, daily activities, movement patterns, and local identity. Utility values are in turn defined in terms of leisure activities and tourist potential (Beckman-Thoor et al 2003).
The participatory map that was developed in *Kulturhistoriskt planeringsunderlag för Ostlänken* was aiming to investigate lived experiences and utility landscape values. However, the participatory map was not used in the *Cultural Environment Analysis* that followed - an issue we will come back to later on in this analysis.

![Figure 6. Timetable of Ostlänken & progress of cultural landscape investigation](image)

*Source: author, reference: Ostlänken – en stark förbindelse för tillväxten*
3.2 The participatory mapping process

This section will discuss, in detail, the process of participatory mapping that was carried out in the project *Kulturhistoriskt planeringsunderlag för Ostlänken*. The participatory mapping was conducted in two areas: Enstaberga–Skavsta and Svärta–Masugnssjön (see Figure 7 below).

![Figure 7. The two areas in Sörmland where the participatory maps were made. The green, red and blue corridors show the three alternatives proposed for the railway Ostlänken. Source: author, reference: Beckman-Thoor et al 2003](image)

The participatory map for lived experiences⁴ and utility values aims to explore three aspects of landscape, summarized as follows (Beckman-Thoor 2003):

I. Understanding about landscape: to find places with particular stories and interesting memories attached to them

II. Utility & function of landscape: to find out how people move in the area and where the meeting places are

III. Consequences: to investigate the railway’s impact on the landscape, both individually and in general for the area

These three aspects served as a basis for the formulation of a range of questions that were used in the mapping process (see appendix). The mapping process was carried out through personal interviews and questionnaires.⁵ The local participation in the mapping process was thus individual and partly indirect. It did not involve walking tours or group discussions which is normally the case in participatory mapping.

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⁴ The Swedish term “upplevelse”, translated as “lived experiences” here, emphasizes the experiences that make special impressions or cause strong reactions rather than the fact of a certain event. “Upplevelse” can be an adventure or a very simple action, like walking in a park. The concept implies personal feedback with intellectual thinking by understanding or reasoning about something new. This suggests that an “upplevelse” does not necessarily have to be positive or negative (interview 2).

⁵ The questionnaire is attached in the appendix.
The interviews and questionnaire involved a map that served as the basis for the investigation. The map chosen was an official map showing housing distribution, land-use, vegetation and transportation networks. The idea of the map was to create a common framework for the locals in which they could express their ideas. Local residents were asked to mark out areas or places which they considered important.

In the process, an “interview guide” was sent out both to the interviewees and to the questionnaire participants. The investigation was described as methodology research rather than a consultation for the decision-making in Ostlänken (interview 3). The results from the interviews and questionnaires were compiled by the project leaders and eventually put together on another map. The intention was to create a comprehensive picture based upon the input given by local residents and thus to make the local perspective comparable with the “scientific maps” normally used in the EIA process. Worth to note is therefore that the procedure did not follow the basic criteria of participatory mapping process, which are supposed to be driven by local people in a bottom-up procedure. The purpose in project *Kulturhistoriskt planeringsunderlag för Ostlänken* was more about visualizing local perspective in a concrete and measurable way than to empower locals in the planning process:

> We thought a lot about how to present the result, which can be compared to other findings, since the Culture-Environment Analysis for EIA is based on maps. Local perspective has to be in the same form as the expert perspective, otherwise it will only be put in the appendix. Through the presentation of a map, the local perspective can be shown in a similar way as, and gain the same weight as, the expert perspective (interview 3).

Several interesting phenomena and challenges were observed during the mapping process. For the field researchers, it was mainly the change of their role in meeting with the locals. Instead of being experts, they became assistants, and helped the locals to further their knowledge about the issue at hand:

> It is difficult to explain to the locals that we would like to use *their* knowledge: what they did, how people move, where their grandmother used to pick up the milk, etc. They think we, as experts, work with rationality, and that they, among themselves, who live in the landscape, are only concerned with emotions. They don’t think they are capable to judge (interview 3).

The experts have to beware of how the use their language in communicating with the locals:

> They were surprised when we first came to them as researchers and asked them about their opinions. …/…/ It is difficult, because landscape associates to many different things. “Understanding about landscape” or “sense of place” are strange concepts for people. The field researchers have to think about how to raise questions to the locals in an appropriate way (interview 3).

From the locals’ perspective, putting an idea on a map was not easy:

> Some persons were reluctant to draw on the map because they thought the map was too beautiful. They asked us to send them other maps to use. Some of persons sent the map back in black and white to us because they wanted to keep the colorful map (interview 3).

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6 Fastighetskarta from Lantmäteriet.
Below is a sample of the participatory map of the Enstaberga–Skavsta area returned by a questionnaire participant. The map marked the hiking area and the golf course.

![Sample Participatory Map](image)

**Figure 8. A sample of the individual participatory map of the Enstaberga–Skavsta area.**

*Source: Fast & Philipson 2002*

In the project it became clear that the local perspective on landscape shows a great variety and consists both of story and history:

> The local residents told us about memories and curiosities, like special happenings or stories, for example where someone happened to fall down. They also talked about historical places that create local history, like medieval churches, Viking burial grounds and mining sites that create local identity (interview 1).

In the mapping process, all the descriptions given by the locals in the interviews and questionnaires were elicited and placed on the map one by one:

> We presented all the information on the map because we wanted to show how multifaceted landscape is. People living in the landscape do not differentiate yesterday, today and tomorrow. In their stories, nature and culture are not separated but closely interlinked. (interview 3)

The map marks out different places by symbols and circles in different sizes, but it does not to show whether one were more important than the other, according to the local in question, or if one had been stressed as being more interesting than the other:

> We did not count the number of people who thought that the church was important and how many who had other things that they found more important. We simply took note of their ideas and thoughts (interview 1).

Both scientific and informal symbols were added to the collected result of the participatory map. The historical sites were marked by an R, which is commonly used in traditional scientific maps.
in Sweden, and it represents historical remains. The informal symbols include the old train station, cafés, sport fields, watersheds and so on.

Figure 9. The participatory map of the Enstaberga–Skavsta area

Source: Beckman-Thoor et al 2003

3.3 Experts’ reactions

This section will present experts’ opinions about the participatory map made in the cultural landscape investigations for Oslånken. The interviews were made with experts in the Heritage Board and the consultants who worked for the EIA of Oslånken. There were three specific questions: What is the motive and the significance of the participatory map? What potential and limits are there? What could be improved in the future?

3.3.1 Motives & significance

In the interviews, the experts express a generally positive attitude to participatory mapping as a method emphasising local perspectives on cultural landscape:

> At the moment it is very politically correct to discuss the lived experience values. The Heritage Board has different projects on how to get the public more involved in working with values of historical remains to make the cultural environment democratic. Everyone wants his or her special place kept intact (interview 1).

> There is a need to widen the views on cultural heritage. Public opinion must be taken into account by the experts.... The planning process, designed in modern times, does not take into account how we would like things to be in this post-modern era. The planning process is not up to date (interview 2).

Also, the participatory map is a methodological attempt to evaluate cultural landscape from a local perspective. It attempts change the traditional way of assessing cultural landscape confined in historical ‘dots’.
Our idea is to make those places important too on the map, not only the historical remains, because they do not tell the whole story. There are other places more important to the public... Landscape cannot be bound in certain places where “culture” exists – that would be an isolated culture. Instead, the integrity of the landscape should be shown (interview2).

Thus, the participatory map in Ostlänken can be seen as a product urged by two trends: One is the political goal to enhance individual identity of cultural environment and dialogue between experts and the public. The other is the shift in the way we define cultural landscape, one that goes beyond the boundaries of ancient monuments, to the interdependence between people and the landscape today.

3.3.2 Potentials & limitations in the planning process

In what way can the participatory maps contribute to the planning process? What negative and positive experiences in Ostlänken can we learn from?

Expert v.s. local perspective: corresponding, competing or complementary?

The experts have different opinions on the investigation of the participatory map. For the project management of Kulturhistoriskt planeringsunderlag till Ostlänken, the local perspective shows a thorough knowledge, echoing the experts’ views, in terms of historical sites:

…they know of, for instance, the medieval church, the Viking burial site, Riksettun, etc. They are aware of the most important historical aspects (interview1).

It is surprising to see to which extent they agree with the experts. Or perhaps the locals are taught by the experts which areas that are the most important (interview 1).

However, when it comes to the question of whether the local perspective can be helpful in decision-making, the attitude is more reserved:

These are very scattered opinions. The Railway Authority finds them interesting but is not sure how they can be of use (interview1).

It can be a help in the process of considering where a railway or road should be located, but the participatory map cannot have a large influence on the decision-making process as such when it comes to the actual decision. It does not possess the qualities needed. It is a very general approach. ...It is entertaining, but rather shallow. When you look at a participatory map, you really have to analyze it. What I think is most substantial, are all the historical remains (interview 1).

Saying that the substantial value of the participatory map is basically only the historical remains, suggests that historical remains are still the main concern from an experts’ point of view. From an administrative or legislative point of view, landscape for local memories and experiences can be a weak alternative compared to historical remains in decision-making, in terms of their cost.

At one point the project manager, Banverket, told me that legislation on protection of historical monuments is more for the middle class and people with cars. A mushroom forest7 on the other hand, which is cheaper to remove, can be extremely valuable in suburban areas populated by less educated people without cars. People in this area

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7 Svampskog
really depend on the environment here. People rarely have the opportunity to drive by historical monuments, but often go on foot in the area, for recreational purposes (interview 2).

It is cheap to destroy ordinary people’s landscape and costly to destroy the exclusive monuments. From this point of view, the conflict has nothing to do with landscape values, but rather with money (interview 2).

Although the local perspective may not be able to compete with the expert view in decision-making, there are opinions to the fact that the local perspective can serve as an archive of contemporary life:

*It could be used as a modern archaeological document to preserve the (local) story about landscape. While the railway will destroy a large part of the actual landscape, the stories will remain* (interview 2).

A point that was being brought up in the interview was also that that in the future the local perspective might contribute more to the process than the expert view, in the planning process:

*The legislation is all about the past and looking backwards, but it is really difficult to translate the past into the future. In fact, the locals are better at discussing the future than the experts are. Once, in a road project, I was told that we (the experts) were the ones who should be explaining the history of a place, but not what was going to happen in the future* (interview 2).

**Scales have to match**

Scale is another crucial issue regarding the suitability of participatory mapping, if one reflects on the case study of Ostlänken. One of the experts brings up the issue of how to make sure that the local perspective can match the scale of the planning project in question:

*The local perspective and should be linked to the project and its scale. [...] If not/ then it will be difficult to integrate them, since every line you draw will meet somebody else’s landscape. If you can extract certain regional knowledge from the local point of view, to suggest which corridor might be better, then the map is useful in the planning process* (interview 2).

It is emphasized that the cultural environment is often a weak aspect in a large project like Ostlänken, where the economic interests are mighty and the impact on the physical environment, such as noise, is a major concern. According to one of the interviewed experts, the local perspective has a greater potential in smaller projects – where it actually can make a difference (interview 1).

**3.3.3 Development & improvement for the future**

The application of participatory mapping was a methodological exploration carried out as part of the cultural environment investigations in the planning of Ostlänken. This study formulates ideas for further development. But also the interviewees communicates their thoughts on how the practice of participatory mapping could be turned into a more effective tool in the EIA- and further planning and decision-making process. One thing that is emphasised in the interviews is the need for data that is “easy to assess and to evaluate” (interview 4). Furthermore, it is stated that designing the questions and processing the results of the interviews and questionnaires require quite a lot of effort on the field researchers’ behalf. Instead of simply gathering all the
information from the locals, the questions could be made more specific and the result thereafter presented in a more well-structured manner:

Perhaps you could point out which one of these aspects that is more concrete. Are they historical remains or just memories? Then you have to consider what kind of memories they are. Is it a substantial or just an individual memory (interview 1)?

It is important to know what to ask, how to ask and how to present the answers upon finishing (interview 4).

3.4 Further interpretation of the participatory map

3.4.1 Purpose of interpretation
This section will explore how to make the participatory maps from the Ostlänken case more reader friendly and thereby easier to compare with a scientific map. The aim is to explore the contribution or input that the participatory map might have to offer the formal planning and decision-making process.

The reactions from the experts, presented above, suggest that the participatory maps made for Ostlänken are inspiring but difficult to be used for EIA purposes and also for the planning process in general. Even though the locals' perspectives are presented on a map, the map itself is difficult to read and interpret, especially next to a scientific map. The difference between the scientific map and the participatory map presented in Kulturhistoriskt planeringsunderlag för Ostlänken is huge (figure 10). Whereas the scientific map shows only the historical remains as classified by the traditional expert-perspective, the participatory maps cover the heterogeneous subjects mentioned by the locals, including land-use, movement routes, places that once existed and those that still exist. Although several areas are circled, they are not categorized and/or weighed against each other. The two types of maps are different in their precision of locations as well. The distribution of historical remains is clear by colour in the scientific map. The participatory map is text-orientated and the exact location of sometimes difficult to identify due to the lengthy sentences written on the map.

Apparentlg, there is certain gap to be bridged between the scientific map and participatory map mentioned above. If participatory maps are to be integrated with scientific maps, there might be a need of conforming to certain attributes of scientific mapping such as categorization and generalization.
3.4.2 Process of interpretation

In this section follows an experiment to further develop the participatory map for the area Svärta-Masugnssjön. By using the locals’ descriptions on the map as a kind of raw material, the interpretation consists of two steps: 1) What are the actual contents in a participatory map and how can they be structured? 2) How can the presentation of the participatory maps be changed?

**Step 1: Categorization by time period**

There are of potentially several ways to structure the local descriptions of the landscape: natural and cultural landscape, visible and invisible landscape, positive or negative landscape experiences, etc. Here, “time period” is applied and prove to be an interesting way of structuring the local landscape perspectives. As illustrated in table 1 below, the local perspective can be grouped into three periods: present, past and future. The descriptions are quoted directly from the participatory map.

<table>
<thead>
<tr>
<th>Time period</th>
<th>Landmarks &amp; experiences mentioned in the participatory map</th>
</tr>
</thead>
</table>
| Past        | • Gruvor: *det är gammal gruvbygd, sedan känner man till mycket om gårdarnas historia*  
              • Gamla masugnar  
              • Åbro gruvor  
              • Första gruvområde  
              • Fornlämningar: gravfält, fornborg, runsten i skogen  
              • Vreta gruvor: *den gamla prästgården, de sjungande stenarna, psalmpark*  
              • Småskaligt jordbruk: På 50-talet samarbetade småjordbruken. Man äkte mellan de olika ställena och hjälptes åt. Karlshäll, Stora Smedstorp, brostugan, hällen och fället var med.  
              • Älter bruks – och skogsgård – järnbruk, kanontillverkning, mejeri, smedja, såg  
              • Svärta gård: på 60-talet stannade tågen. Då hämtade vi posten här  
              • Lillsjön: *dränerades vid motorvägsbygget*  
              • Järnvägen: Min farfar var med och byggde järnvägen 1911-1913  
              • Svärtaån: vid Nyköpings västtorn kom de farande ärns Svärtaån, rikt fjällliv, fiske, tranor, bäver, igenväxning |
| Present     | • Masugnssjön: *Underbart vackra Masugnssjön, Vattendragen mellan sjöarna har varit en förutsättning för brosdriften, Bad- och fiskejärn 'jällsjökaraktär'*  
              • Stora Strövområden: man möter älgrar, hjortar, rådjur och vildsvin. Men inga människor  
              • Bår- och Svampske: helt plötsligt springer jag på en gammal torpgrunde och så börjar jag fantasiera om dom som bott där och vad dom haft för liv  
              • Malins mosse naturreservat “trollskog”  
              • Naturskönt strövområde  
              • Fågelsjö  
              • Torpgrunder  
              • Cafe Åstugan – *ett litet guldställe*  
              • Utsiktsberg – *usiikt över bela dalgången* |
| Future      | • Vid Riksettan: *Jag tycker inte om att man splittrar sönder landskapet.*  
              • Vid Riksettan: *Jag är lantlig från början och har bott här i bela mitt liv och vill kunna ge mina barn samma sak* |

Table 1. The local descriptions structured in time framework.
By looking at the time framework above, it is easy to see that landscape values regarding “the past” cover both historical remains and personal memories. Local knowledge and identity proves to be closely interlinked with specific places. One example is the mining sites, which have been developed in the area since 16th century. One of the statements says “This is an old mining village that guides people to our local history”. The memories depict the landscape in the past century by relating back to the agricultural lands cultivated during the 1950s, how people received mail at the old train station during the 1960s, and how the water disappeared after the highway was built in the 1980s, etc.

Concerning ”the present”, places for recreational activities and meetings for the residents today play a great role on the map, which includes forest and water areas, but also buildings such as the local café. The map also shows a couple of expectations for the future. For instance, Riksettan, the historical Swedish road dating back to medieval times, is of particular interest, when it comes to what to protect. This is not made evident simply from looking at the map, but is dealt with and explained in detailed in the report (Beckman-Thoor et al 2003).

**Step II: Generalization & abstraction**

One problem with the current participatory maps is that they contain so much information that they get difficult to grasp. The content of these maps could be made more compact and informative. There are several possibilities for further generalization and abstraction. For example, from the descriptions sorted into the time span “past” in the table above, one might create a new map called Local Historical Map. In this map, descriptions might be assembled into more specific groups. One suggestion for this case is to sort them into three categories: historical sites, mining sites and places of memories. This new map can then be processed onto the original participatory map in order to highlight which places that were originally marked out and can be compared with the historical remains on the scientific map. Similar maps can be created for the time span “present” and “future”. For instance, the routes for walking, bike routes, and school bus routes can be shown in different colours on the map, and are then easy to compare with the existing railway and proposed alternatives.
3.4.3 Comparing participatory mapping & scientific mapping

By looking at the structures of time in the interpretation above, what does the participatory mapping illuminate that a scientific map do not, when it comes to helping out in the decision-making?

Figure 12 below compares the time spectrum embedded in the scientific map and the participatory map presented in the report *Kulturhistoriskt planeringsunderlag till Ostlänken*. The two maps are obviously very different pictures of the time period they are the representation of. The scientific map shows the historical remains from 5000 B.C. to 1050 A.D, including the Stone Age, the Copper and early Iron Age, the late Iron and the Viking Age. The participatory map, on the other hand, illustrates early history, landscape transition in modern time and imaginations for future.

As a tool to facilitate decision-making in infrastructure planning, a participatory map may *add* things that are absent in the scientific map of historical remains. The local perspective relates to the industrial era and modern times as a part of “history”. For instance, the old train station, cafés and the motel built in the 20th century are mentioned as landscape values. In the participatory maps people also have the opportunity to reflect on different possible scenarios for the future. Thus the method carries a potential to encourage local people to make their voices heard on also other future development projects – might it be transport infrastructure or something else. There seems however like much more could be done here if that is the purpose. For example, local people could come together in group discussions and brainstorm meetings and thus strengthen and sharpen their common visions and formulate a strategy for how to influence planning and decision-making.
In addition, the participatory map may help “cross-check” the pre-historical and medieval values illustrated in the scientific map. The local history and identity, for instance the mining sites in the area Svärta-Masugnssjön, are unique things that can serve as a contrast to the apparent neutrality of the official documentation of historical remains. This suggests that a participatory map can contribute with new data that can be of help in prioritizing the documented ancient landscape in the planning process. If so, there is also a need of clarification of the concept “knowledge values” which could include expert knowledge and local knowledge. One might even argue that the distinction between the two is not relevant anymore.

To sum up, the time spectrum of a participatory map is dynamic. The design of the mapping questions and the interpretation of the mapping results are both of the utmost importance for those practising participatory mapping.
4. Concluding discussion

Compared to the trend that has developed in other countries, the participatory mapping performed during the planning process of Ostlänken has two characteristics worth noticing. Firstly, it is a methodological trial, specifically carried out to give input to the EIA, which is in turn part of the basis for taking a decision of if and – if so – where a new railway will be built. Secondly, the method attempts to enhance the local perspective as a parallel criterion to the expert perspective that has dominated the evaluation of cultural landscape in infrastructure planning. As to the background discussed earlier, public participation and local empowerment, which are widely discussed in the research on participatory mapping abroad, have not been the main objectives for the participatory mapping done in this case.

Through further interpretation of the “time period” framework in this study, the participatory mapping applied in Ostlänken was found to have two main fields of potential importance: to complement what is already documented and to find what is lacking in the traditional scientific maps. To the former, the participatory maps mark the historical sites that have specific ties to local history and identity. Thus it might facilitate decision-making by serving as an input for prioritizations between the often quite anonymous historical remains or monuments in a scientific map. To the latter, the participatory maps fill in the cultural landscape depicted by the late history and modern times, which are often overlooked by the scientific maps. By this, the participatory map makes up the landscape “gap” between early history, contemporary times and the future. The shift from monument protection to human adaptation in the debate of cultural landscape can be observed as an important message that supports the idea of participatory mapping.

However, participatory mapping is always at risk of being completely overwhelmed by its own rich information. Thus it is important to go through the results thoroughly if participatory mapping is to be useful as a direct input in the planning process. If the participatory map shall be comparable with the scientific map, it seems necessary to process the outcome through further categorization and generalization. This means that first-hand local descriptions have to be carefully arranged before presentation. In other words, participatory maps need to weave local “facts” into specific “themes”. To achieve this goal, the experts must face a new kind of task to translate the information into more easily understood texts with a stronger persuasive potential.

The participatory maps made for Ostlänken are a pilot study in Swedish Railway planning. Despite the difficulties in using participatory maps in the EIA process, which have been referred to above, the mere existence of a participatory map in Swedish railway planning shows the authorities’ ambition to consider the public opinion and their interest in the progress of visualizing cultural landscape in a local perspective. Still the methodology requires further development for different purposes and scales of use. The possibility to integrate participatory mapping with consultations or empowerment of the locals in other stages of the planning process are both interesting issues for future research.
References


Vajjhala S. P. (2005b) ' *Ground Truthing* Policy, using participatory Map-Making to Connect Citizens and Decision Makers*


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[www.osilanken.se](http://www.osilanken.se)
[www.banverket.se](http://www.banverket.se)

**Interviews**

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Appendix:
Questionnaire for the Participatory Map in Kulturhistoriskt
planeringsunderlag för Ostlänken – Exempel från Södermanland:

(Translated to English by the author)

General Questions:

1. Man/Woman
2. Age
3. Profession
4. How many persons are there in your household?
5. Residence place?
6. How long have you lived in this place?

I. What do you experience as important characteristics or values in landscape?

7. How would you describe your home area?
8. What do you consider as valuable in landscape?
9. What would you wish the landscape to look like in future?
10. What do you know about the area’s history?
11. What kind of memories / stories connected to the surroundings do you have?
12. In which way has the landscape / area changed during the time you have been living here?
13. What is the quality of living here?
14. Will the quality be changed by a railway going through the area?

II. How do people move in the area?

15. Between which places do you move mostly (we are curious about the regular communication
to and from work, service facilities, etc.)?
16. How do you move mostly in the area (by walk / car / bus / bike, etc.)?
17. Can you mention other places / areas which you used to visit or which are important for you
(for instance, outdoor destinations, recreation areas, places with history and memories)?

III. Attitudes towards the railway project

18. How do you get information about the railway project (newspaper, friends / acquaintances,
etc.)?
19. How would a new railway through the area influence you personally?

20. How would a new railway influence the area generally?

21. Do you have any expectations or anxieties about the railway?

22. What do you think about positive and negative effects of the railway?

23. When a new road or railway is going to be built today, people have lots of reference materials about what should be protected or preserved in landscape. Those which are affected directly are not discussed. What do you think is important to protect?

24. Other comments. Is there something else you would like to add?

Please write or draw on the map: could you mark out the significant place, movement patterns or something else you think is important.