Human touch, natural processes: The development of the rural cultural landscape in southern Finland from past to present

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This paper presents a brief study of the rural cultural landscape in southern Finland. Most rural landscapes in southern Finland are produced by traditional agriculture and affected by modern farming. The cultural landscape of the countryside is therefore a human cultural achievement: working the land creates the agrarian landscape. Natural processes must be yielded and acknowledged, however. The various periodic layers of the rural landscape derive from its inhabitants and their historical periods. In this way, the landscape is comprised of natural and cultural phenomena, which can be both old and new. This paper is based on a study of the rural cultural landscapes of Perniö and Karjaa in southern Finland. The examination suggests a long-term landscape development from prehistoric to historical periods.

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Introduction

Origins of the present landscape of Finland can be traced to the end of the Ice Age. Landforms made by glaciers were moulded by melting and running water, waves, and currents about 12,000 years ago. Thick deposits with layers of sand, silt, and clay accumulated in standing water. The changing water levels, shore displacements, and isostatic uplift movements changed the landscape further. Forest vegetation covered the open ground surface, first with mixed deciduous forests and later with mixed deciduous and coniferous forests (Eronen 1992: 70–73). The first humans appeared in Finland's present territory about 10,000 years ago (Carpelan 1999a: 168) (Fig. 1). They were

Fig. 1. The open and bare North Lapland gives an impression of the natural landscape in the end of the Ice Age. The Sami ways of life were traditional in the 1930s. (Photo courtesy of the National Board of Antiquities/SUK 5065: 21, 34/ Erkki Mikkola 1934)

Dating	Age	Period	Dating
8300–1900/1700 calBC	Stone Age	Mesolithic Neolithic	8300–5100 calBC 5100–1900/1700 calBC
1900/1700 calBC–50 AD	Early Metal Age	Bronze Age Pre-Roman Period	1900/1700 calBC–600/500 BC 600/500 BC–50 AD
50–1150/1350 AD	Iron Age	Roman Period Migration Period Merovingian Period Viking Period Crusade Period	50–400 AD 400–550/600 AD 550/600–800 AD 800–1050 AD 1050–1150/1300 AD
1150/1350–1520 AD	Middle Ages	Early Swedish Rule	
1520 AD–	Modern	Late Swedish Rule Russian Rule Independence	1520–1809 AD 1809–1917 AD 1917 AD–

Table 1. A chronology of Finland's history. There are no written sources from the prehistoric era. Archaeological cultural heritage is therefore the only source concerning the Stone Age, the Early Metal Age, and the Iron Age. Historical sources are connected to the historical periods from the Middle Ages to the present (Kuoppamäki 2000). Archaeological sites and monuments can also give valuable information of the historical periods. Radiocarbon dates (calBC) from Carpelan 1999a: 160–161, 1999b.

hunters and gatherers who followed the retreating Scandinavian ice sheet margin from south-eastern Europe. It took thousands of years, however, before a human touch was clearly visible in the landscape.

A present cultural landscape is a sum of elements from different prehistoric and historical periods (Table 1). By examining these elements and their relationships, it is possible to interpret the whole of the landscape. In this sense, a cultural landscape is a subjective interpretation of the landscape elements. A cultural landscape can also be studied in a broader context that connects landscape development to state-level and international processes. The geographer Tarja Keisteri (1990: 49) proposes that all visible and invisible material and abstract elements should be taken into consideration. She suggests that all factors concerning the structures, organisation, culture, and material representations of a society affect the cultural landscape.

Cultural landscapes are subject to change because of the relationship between the natural environment and human society. A society has options in relation to the natural environment, because the effect is reciprocal (Storå 1994: 11). A society changes when its natural environment changes, but the changes in society can also cause changes in the natural environment. Human adaptability to change varies depending on economic activity, socio-cultural systems, population, and technology (Fig. 2). Perceptions, myths, ethics, and values are also part of a society's dialogue with nature (Myllyntaus 1994: 33).

Interaction between social conditions, economy, and the environment produces a large selection of landscape elements, which represent human activity in the natural environment (Gísladóttir 1993: 71–72). Usually, these elements represent the long-term effects that result from human activity on earth. A study of landscape elements is important in order to analyse what resources societies exploit and how they remould their environments. Many elements are visible, which allows their discovery and interpretation. Other past human traces are invisible, however, including most archaeological sites and monuments. The traces of prehistoric settlement and inhumation cemeteries, for example, are not recognisable on the ground surface. The archaeological cultural heritage can be difficult to recognise and interpret also because of destructive physical and human processes.

Prehistoric (8300 calBC–1150/1350 AD) and historical (from 1150/1350 AD) archaeological remains are very important and interesting source material for landscape interpretation (Maaranen 2000a: 25–27). The Finnish Antiquities Act (1963/295, §1–2) defines the types of ancient monuments and states that it is forbidden to "excavate, cover, alter, damage, or remove" ancient monuments or disturb them in any other way without permission. Ancient places can provide useful information about prehistoric times without written sources. Most of them are not excavated, however, because of the lack of financial resources. Nowadays, there are more than 14,000 prehistoric places in Finland, but their number grows constantly (Lähdesmäki 1999: 177–180; Maaranen 2000b: 137–138). Many archaeological remains

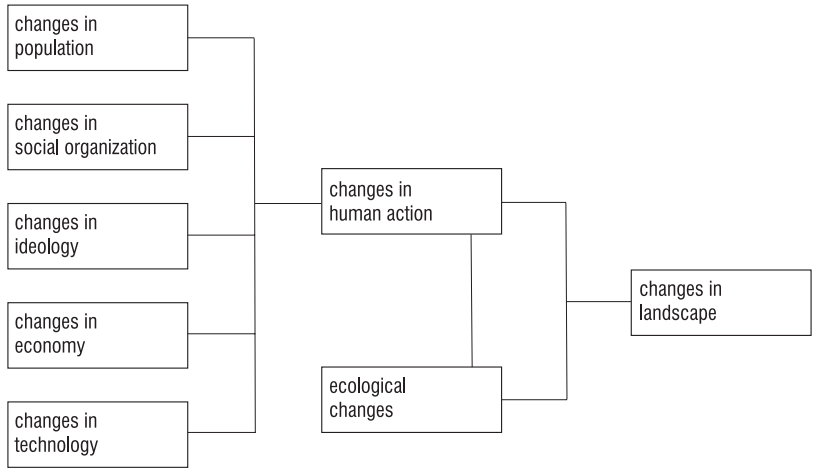

Fig. 2. A model of a landscape change (adapted from Stjernquist 1992: 9, Fig. 6).

survive in environments of traditional land use, which were abandoned after World War II. A huge number of sites and monuments has been destroyed, however, by agriculture, forestry, and construction (Kristiansen 1985; Kirkinen 1999). The accurate number of these ancient vanished places is unknown, but it is likely to reach hundreds in Finland alone.

Historical archaeological sites and monuments in Finland number more than 100,000. Most of them are not listed or known, so studying them can be quite complicated. The study of this archaeological cultural heritage nevertheless helps to understand historical phenomena, because written sources from older historical times are often few or fragmentary. Time has destroyed many written sources, because there were no archives to maintain the documents or fire, war, or lack of proper care destroyed the archives. Amongst the most important sources are historical maps, which were maintained for military and administrative purposes. Many of these maps have been preserved because of their importance: several archives had copies (Alanen & Kepsu 1989: 6–8). Modern maps are also important in landscape studies concerning topography, geomorphology, and soil. In landscape studies, archaeological and historical sources are combined with the data from pollen analyses and vegetation.

A cultural landscape retains several different layers of history, which may be reconstructed as historical cross-sections at regular intervals (CD-Fig. 1). The development of an agrarian landscape is usually characterised by phases of expansion, consolidation, and regression. It is difficult to illustrate a cultural landscape as a continuous process, however, because the cross-sections are in the form of discrete jumps between historical periods. The role of natural processes and human impact in the change thus remains hidden. New information technology has solved these problems to some extent: it is now possible to demonstrate a dynamic landscape change and underline the most important effects and processes (Visualizing… 2001).

Landscape reconstructions describe changes in society and landscape. They can be produced at different scales and for different time slices, depending on the material available and the purpose of the reconstruction (Berglund 1997: 35–36). Reconstructions can be used to present land use, vegetation, and primary production, or settlement patterns, societies, and communication routes. Areas can also be compared to trace similarities and differences. Anomalous features are the most interesting in the interpretation of past human activity, because they can provide additional information of the development processes of a cultural landscape.

Reconstructing the past

The examination of southern Finland's rural cultural landscape is based on my previous studies in Perniö and Karjaa (Fig. 3). The long-term landscape study in Perniö was part of the SUKKA project regarding the medieval manor houses in Finland (*Suomen keskiaikainen kartanolaitos*) (Haggrén et al. 1999). The project was organised

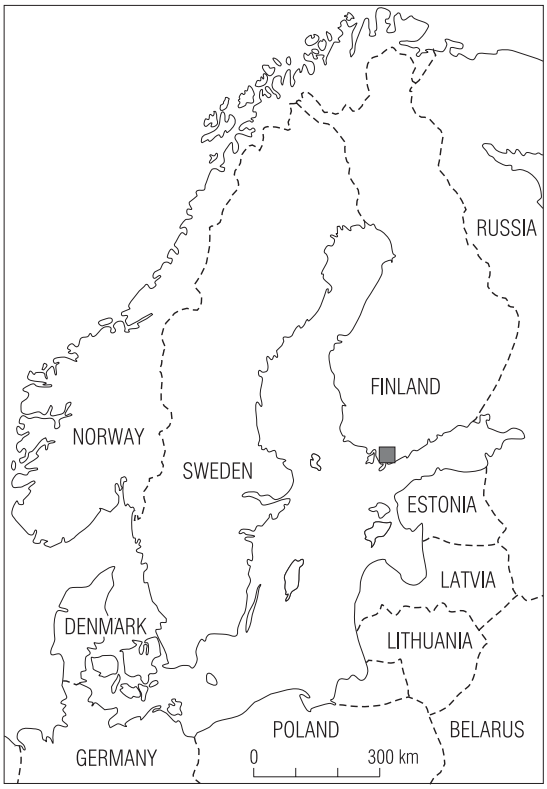

Fig. 3. The location of the Perniö–Karjaa research area in southwestern Finland.

in the 1990s by the University of Helsinki and joined by researchers from the National Board of Antiquities and the University of Turku. The reconstruction of the Perniö cultural landscape was tested by a similar reconstruction study in Karjaa near Perniö (Maaranen 2000c: 210–214).

The change of Perniö's cultural landscape was reconstructed from the Stone Age to the twentieth century. The study in Karjaa was limited to the period from the Stone Age to the end of the Middle Ages. The study of the areas' environmental development was connected to the study of human activity. The aim was to reconstruct the past environment and landscape and to understand their interaction with their inhabitants. A focus of interest was the analysis of variations in human activity in different time periods. Both Perniö and Karjaa were suitable for such a study because of their long settlement history and numerous archaeological sites and historical sources. Because of the abundance of source material, it was expected that the case studies could imply a gradual shift from central to peripheral settlement that also applied to prehistoric and historical times (Maaranen 1999: 116–118). These archaeological and historical reviews enabled correlations and comparisons in time and space. The examination of the relationships between centre and periphery during different times was also possible.

The study of the cultural landscape was found to be a very effective tool in analysing ancient human activity and its changes. First, a regional geographic analysis was carried out to reach an understanding of today's landscape and its constituents. Geomorphological mapping was then undertaken to know the character, development, and origin of the natural environment. Vegetation development was reconstructed on the basis of the combined data of soil, geomorphology, and pollen. The human activity areas were marked on these maps. This data formed the basis of the overall landscape reconstruction and interpretations of its development. As a result, the environments inhabited by different prehistoric societies and their spheres of activity could be defined. The study thus increased the understanding of how landscape mirrors past societies.

An economic point of view was the basis of the study: the environment was considered primarily an economic resource used according to rational rules. Economic aspects of society are quite tangible and the economy is often put forward as the prime explanation of archaeological phenomena (Renfrew & Bahn 2000: 461–483). The obvious reason for this is the lack of knowledge concerning the cognitions of archaeological societies. Environment, and landscape as a part of it, can, however, be seen from an entirely cultural point of view (Ersgård & Hållans 1996: 22f). That perspective stresses ideological, social, and cultural factors and sees environment as being modified by the society's worldview in general and by its ideas about the relationship between society and environment in particular. The cultural point of view was abandoned in the study of Perniö and Karjaa, because pinpointing the social and cultural factors that govern ancient society was found to be very difficult.

Prehistoric landscape development

The development of the cultural landscape in southern Finland is characterised by a continuous increase in human activity during the prehistoric

Fig. 4. A cultivation terrace in Brobacka, Karjaa, southern Finland. These kinds of cultivation terraces are very typical representatives of traditional soil cultivation (Gren 1997: 21). (Photo courtesy of the National Board of Antiquities/S-L Seppälä 1996)

Fig. 5. The cultural landscape of the Aura River near Vanhalinna in Lieto is one of the finest in southern Finland. Prehistoric and historical sites and monuments surround the Vanhalinna hillfort. The hillfort dates back to a period from the Iron Age to the Middle Ages. (Photo courtesy of the University Foundation of Turku. The picture was taken in the early 1990s.)

and historical times. The spatial distribution and size of population vary, however, from one period to another. These variations affect landscape processes in time and space.

Hunter-gatherers and fishermen dominated the Stone Age (8300–1900/1700 calBC) in southern Finland. The landscape of these maritime hunter-gatherers was the natural environment. The human impact on this environment was weak and, according to Emanuelsson (1988), similar to the effects of big carnivores. The impact of hunter-gatherers was also remarkably spotty and there was relatively little modification of ecosystems (Simmons 1989: 84, Fig. 3.3). Evidence of a long-term modification includes fire that was used regularly to clear vegetation.

Natural landscape elements and processes thus dominated the Stone Age landscape. Coastal plains, mouths of rivers, and archipelagos were the most favourable environments to seek sources of livelihood. Mesolithic (8300–5100 calBC) hunters had small dwelling places on bay and strait shores and alongside water routes. In the end of the Stone Age, Neolithic (5100–1800/1700 calBC) settlers brought new elements to the natural landscape. These included small grazing meadows and slash-and-burn cultivation plots. Some dwelling places were permanently settled and fire was used to clear forests to improve hunting possibilities (Thorpe 1996: 75, 93).

A transition from hunting and gathering to agriculture occurred at the very end of the Stone Age. Knowledge of agriculture was acquired slowly and agriculture was not fully adopted till the end of the Early Metal Age (1900/1700 calBC–50 AD) (Vuorela 1998: 178, 1999; Zvelebil 1998: 12). The transition to farming, however, was the most important factor in the development of the cultural landscape. Simmons (1989: 87, Fig. 4.1) stresses that the effects of cultivators caused a long-term change of vegetation. This change resulted in a more open landscape.

Agriculture spread slowly but inevitably during the Early Metal Age. The very first cereal plants were barley (*Hordeum vulgare*) and wheat (*Triticum turgidum* and *T. aestivum*) that were cultivated roughly 3,500 and 2,000 years ago in Finland, respectively (Rousi 1997: 61, 65, 73; Vuorela 1999). Thorpe (1996: 97) presents the adoption of agriculture as a shift in thinking rather than as an economic development. This was highly possible also in Finland, because there was no pressing need to change the economy from hunting to farming. Animal grazing affected the environment most in the beginning of agriculture, and domestic animals maintained an important role as a source of livelihood also in historical times (Huldén 1999: 93, 98–99).

The landscape carried highly visible marks of human activity from the Early Metal Age because of animal husbandry and small-scale slash-and-burn cultivation. Thin mixed deciduous forests that domestic animals grazed dominated the Early Metal Age cultural landscape in southern Finland. In the nearby semi-permanent dwelling places there were small cultivated plots where fire was used to clear the land before cultivation. Animal husbandry was more important than cultivation, and domestic animals strongly modified the landscape in the vicinity of the settlements.

During the Iron Age (50–1150/1350 AD), agriculture spread across southern Finland and permanent fields were introduced. Agriculture was thus adopted as an important source of livelihood. Evidence from pollen analyses shows that cereal cultivation was practised in many places (Roeck Hansen & Nissinaho 1995: 36), although physical traces of ancient cultivation are quite rare nowadays (Fig. 4). The first permanent fields were cleared by fire and fertilised with animal manure. At the end of the Iron Age, there was a small-scale rural cultural landscape, which continued to develop during the Middle Ages (Fig. 5).

Historical cross-sections

The Middle Ages (1150/1350–1520 AD) were the time of population growth and expanding agricultural settlement. Finland was incorporated in the Swedish Empire under the twelfth and thirteenth centuries, and the Empire's enabling acts began to influence land use and settlement patterns in Finland. These acts regulated the structure of villages, the division of common lands, and ownership of fields, among other things (see Roeck Hansen 1996).

The first villages had been erected already at the end of the Iron Age, but the village organisation was not established until the Middle Ages. The first permanent roads began to develop and bind the small villages to each other. The most important of these routes still exist in today's landscape. By the side of agriculture, hunting and fishing were important sources of livelihood. Slash-and-burn techniques were practised at the same

time with permanent field cultivation. The slash-and-burn cultivation was especially important to settlers, who had to live and clear permanent fields in the periphery. Animal husbandry also had a very remarkable role because of produce (milk, manure).

The Christian Church erected the first population centres of the Middle Ages near older centres from the end of the Iron Age onwards. These prehistoric old centers were important to the Church for religious and political reasons. The Church sought to adopt places that were of importance to the pagans, and bring them under Christian control (Nilsson 1992: 10–12; Purhonen 1998: 146–147). In this way, the new religion and social hierarchy were introduced to the people. Later, some of these important centres (including religious buildings like churches and rectories) moved from one place to another because of changes in the settlement pattern, caused by population growth. The Church found it important to be available in the centre of the settlement as a spiritual leader and as an administrative quarter.

Another important type of centres were the castles and manor houses of the Swedish Crown. These administrative centres were visible elements of the power of the Swedish Empire in the cultural landscape of southern Finland. The ones with a favourable geographical location and wide settlement around them gained importance and began to develop into towns. The Finnish medieval towns were small and few, however. There were only six towns in Finland during the Middle Ages: Turku, Ulvila, Rauma, Naantali, Porvoo, and Viipuri (Nikula 1999: 13–14).

At the beginning of the Modern Times (from 1520 AD), early industrialisation and desolation of agrarian settlement affected the rural cultural landscape. The depopulation resulted from problems in agriculture, caused by a hard tax burden on peasants and the loss of farm workers because of the Crown's continuous warfare (Oja 1955: 89; Säihke 1963). The tax-paying ability of many young medieval villages was reduced and many farms were abandoned. Some rural manor houses, in turn, were in quite a good situation. They had options to try new sources of livelihood as manufacturers. The early industrialisation emerged in the form of iron works in the sixteenth and seventeenth centuries. The iron works needed running water, timber, minerals, and workers that were available in the countryside. The iron works changed the rural cultural landscape significantly by cutting forests, channelling water routes, and erecting industrial buildings (Fig. 6).

Until the eighteenth century, the rural landscape in southern Finland was still quite unchanged in many respects. Land surveying was relatively strictly controlled and the legislation during the eighteenth century carried out many claims concerning land use, structure of villages, utilisation of forests, hunting grounds, cattle grazing, and so on (a law in 1734, see Ruotsin… 1997). New land surveys during the eighteenth and nineteenth centuries affected village communities and the rural cultural landscape, however. Village communities began to become dispersed and fields became larger, replacing traditional

Fig. 6. Mills were numerous in the rural cultural landscape of southern Finland. The damming of small rivers and streams was common in order to raise the water level in a millpond and channels. The old dam of Brödtorp in Pohja is still in good condition. (Author's photo, 05/98)

farming with small fields, large meadows, and group villages.

Finland was incorporated in the Russian Empire in the early nineteenth century. Finland gained autonomy under the Russian rulers and much of the old legislation was maintained. The new transportation technology (railroads) helped the Russian Empire to connect Finland and Russia more closely to each other, because the gauge in these two countries was different from the rest of Europe. Railroad centres were built during the nineteenth century in southern Finland. They differed from the religious and administrative centres of the Middle Ages and the later industrial centres. The railroad centres drew people from the countryside to the densely-built and -populated areas during the twentieth century.

A significant change in agricultural production occurred in the mid-nineteenth century due to a transition to milk production and haying meadows. Gathering hay and grass from natural meadows was no longer necessary. These previously so important lands were now used as pastures or ploughed to fields. Another, even more important change was the adoption of artificial fertilisers during World War II (Bernes 1993: 109–110). This change had extremely widespread effects: traditional grazing and grazing grounds were abandoned, because there was no need for animal manure. The traditional, open rural cultural landscape began to overgrow without grazing animals.

The Finnish state was born in the year 1917 in the aftermath of the revolution in Russia. The independence affected the position of crofters. After the civil war in 1918, their weak position was acknowledged and improvements were made. This did not affect the rural landscape, but it began to change rapidly after World War II. On the one hand, the state established small farming units for the Karelian evacuees from the territories ceded to the Soviet Union after the war. On the other hand, fields for cereal cultivation were expanded. During the post-war period, the displaced Karelians were resettled on land parcels according to the Land Acquisition Act of 1945 (Luostarinen 1997: 61). The new farms were established on the lands of the big manor houses and estates as well as on the land owned by the state. The size of these farms was connected to the size of arable land, which was allowed to be a maximum of 15 hectares for a single farm. Some of the established farms were not suitable for agriculture because of their small size and infertile soil, and were abandoned quite quickly during the transformation of the Finnish countryside in the 1950s and 1960s (Kupiainen 1985: 95–98).

Today's challenges

The rural landscape in southern Finland is a result of multiple landscape processes from past to present. The roots of today's cultural landscape can be traced back to the end of the Iron Age (Fig. 7). Most medieval villages are preserved and many ancient traffic routes are still in use. The archaeological heritage, valuable heritage landscapes, and built heritage are equal parts of this landscape.

The landscape produced by traditional agriculture fades away bit by bit, however, because of the new farming technology and economy. Intensified production methods have a strong impact on the landscape. The use of more efficient farming methods leads gradually to uniformity of the environment. One of the most important factors is the mechanisation of agriculture that changes the cultivation methods. Traditional agriculture gave rise to a cultural landscape of variety, small-scale features, and a diverse natural environment, which are now disappearing entirely from the rural landscape. There is a demand for large-scale field systems that are easy to cultivate economically and rapidly with machinery. The demand for greater efficiency creates landscapes of large fields, which serve the needs of mechanisation, uniform production quality, and standardisation (Sepänmaa 1997: 27).

Another important thing is the overgrowth of the familiar open landscape. This is not at all unique to southern Finland, because the same process has taken place in Scandinavia and Europe. The problem was not really noticed in Finland until the 1960s, when the effects of the changing agriculture had become clearly visible (Tikkanen-Lindström 1999: 145). Abandoned farms and the change from animal husbandry to plant and cereal cultivation are major reasons for the overgrowth. Preservation of rural landscapes requires continuous work and maintenance, for nature will reclaim quite rapidly what is left to 'waste'.

In Finland, the vanishing rural landscape became a subject of interest to the Ministry of the Environment. It made an inventory of the country's traditional landscapes (Arvokkaat… 1992)

Fig. 7. There are many traces of past human action in Karjaa's rural cultural landscape. The Brobacka area is one of the most interesting ancient sites because of the prehistorical graves and remains of historical cultivation plots. (Photo courtesy of the National Board of Antiquities/Päivi Maaranen 1998)

and produced a management manual for them in the early 1990s (Maisemanhoito 1992). In these publications, nature and landscape are valued as the principal resources of the countryside. In their opinion, it is important to recognize and study the number of valuable pasturelands and heritage landscapes and to understand that landscape conservation can reveal important features of them. These multi-layered rural landscapes are found ever-changing, but society can monitor and guide these changes. Alongside sites of national value, the publications acknowledge sites of local historic importance. In the preservation of cultural heritage, environmental values, layers of landscape, and social orientations are emphasised.

In the beginning of the twenty-first century, rural landscapes face severe problems. The new legislation of the European Union has put farms in a difficult situation from an economic point of view (Heikkilä 2000: 35). Because of the history of the crofters' and evacuees' small holdings, there are still more small farms in Finland than in other European countries. The strict EU regulations make it difficult to continue farming on these properties. Many farmers are thus opting for a different livelihood. In the future, the decreasing number of farmers and the closure of farms lead to a decreased diversity due to landscape expirations. This is an unwelcome trend for the preservation of cultural landscapes. In order to protect the Finnish small-scale and mosaic-like rural landscape, it is essential to maintain permanent population and agriculture in the countryside. Without the people and activities that have produced the cultural landscape it is impossible to preserve and maintain it.

REFERENCES

Alanen T & S Kepsu (1989). *Kuninkaan kartasto Suomesta 1776–1805. Konungens kartverk från Finland*. SKS, Helsinki.

Arvokkaat maisema-alueet (1992). Maisema-aluetyöryhmän mietintö I. *Ympäristöministeriö, ympäristönsuojeluosasto, mietintö* 66/1992.

Berglund BE (1997). Methods for reconstructing ancient cultural landscapes: the examples of the Viking Age landscape at Bjäresö, Skåne, Southern Sweden. In Miller U & H Clarke (eds). Environment and Vikings: scientific methods and techniques. *Birka Studies* 4, 13–30.

Bernes C (1993). *Pohjoismaiden ympäristö: tila, kehitys ja uhat*. Pohjoismainen ministerineuvosto, Kööpenhamina.

Carpelan C (1999a). On the postglacial colonisation of eastern Fennoscandia. In Huurre M (ed). *Dig it all. Papers dedicated to Ari Siiriäinen*, 151–172. The Finnish Antiquarian Society & The Archaeological Society of Finland, Helsinki.

Carpelan C (1999b). Käännekohtia Suomen esihistoriassa aikavälillä 5100…1000 eKr. In Fogelberg P (ed). Pohjan poluilla. Suomalaisten juuret nykytutkimuksen mukaan. *Bidrag till kännedom av Finlands natur och folk* 153, 249–280.

Emanuelsson U (1988). A model describing the development of the cultural landscape. In Birks HH,

HBJ Birks, PE Kaland & D Moe (eds). *The cultural landscape. Past, present, and future*, 111–122. Reprint 1990. Cambridge University Press, Cambridge.

Eronen M (1992). Variations in climate and environments in Northern Europe in prehistoric times. *PACT (Journal of the European Study Group on Physical, Chemical, Biological and Mathematical Techniques Applied to Archaeology)* 36, 67–80.

Ersgård L & A-M Hållans (1996). Medeltida landsbygd. En arkeologisk utvärdering. *Arkeologiska undersöningar, Skrifter* 15. Riksantikvarieämbetet, Stockholm.

Gísladóttir G (1993). Geographical analysis of natural and cultural landscape. *Meddelanden från naturgeografiska institutionen vid Stockholms Universitet A* 289.

Gren L (1997). Fossil åkermark: alder tiders jordbruk – spåren i landskapet och de historiska sammanhangen. *Fornlämningar i Sverige* 1. 2nd ed. Riksantikvarieämbetet, Stockholm.

Haggrén G, M Niukkanen & K Peltonen (1999). Manor house archaeology: The SUKKA Project (1992–1995). In Mattinen M, M Häyrynen, M Kairamo & T Tuomi (eds). *Monuments and sites – Finland*, 182–183. International Council of Monuments and Sites, Helsinki.

Heikkilä T (2000). *Suomalainen kulttuurimaisema*. Tammi, Helsinki.

Huldén N (1999). Husdjuren i sydvästra Finland. In Tuxen-Petersen F (ed). *Husdyr og landskab. Kulturlandskabets husdyr og bevaring af gamle landracer i Norden. Rapport fra et nordisk seminar om "Kulturlandskabets husdyr og bevaring af gamle landracer i Norden, 4.–6. juni 1997*, 91–100. Dansk Landbrugsmuseum, Gl Estrup.

Keisteri T (1990). The study of changes in cultural landscapes. *Fennia* 168, 31–115.

Kirkinen T (1999). The influence of modern land-use on the formation of archaeological record. Source critical problems of regional studies. In Huurre M (ed). *Dig it all. Papers dedicated to Ari Siiriäinen*, 21–28. The Finnish Antiquarian Society & The Archaeological Society of Finland, Helsinki.

Kristiansen K (1985). Economic development in Denmark since agrarian reform. In Kristiansen K (ed). *Archaeological formation processes: the presentativity of archaeological remains from Danish prehistory*, 40–62. Nationalmuseet, Copenhagen.

Kuoppamäki P (2000). A web history of Finland. 2 March 2000. <*http://kyyppari.hkk.fi/~vk21206/finhist.html*>

Lähdesmäki U (1999). Archaeology: an introduction. In Mattinen M, M Häyrynen, M Kairamo & T Tuomi (eds). *Monuments and sites – Finland*, 177–179. International Council of Monuments and Sites, Helsinki.

Luostarinen M (1997). Maaseudun suuri historia/The great history of the countryside. In Luostarinen M & A Yli-Viikari (eds). *Maaseudun kulttuurimaisemat/Rural landscapes in Finland*, 59–63. Suomen ympäristökeskus, Sulkava.

Maaranen P (1999). Landscape development from the Stone Age to the Middle Ages in Perniö, Southern Finland. In Fabech C & J Ringtved (eds). *Settlement and landscape. Proceedings of a conference in Århus, Denmark, May 4–7, 1998*, 116–118. Jutland Archaeological Society, Copenhagen.

Maaranen P (2000a). Arkeologinen kulttuuriperintö osana suomalaista maisemaa. In Saarinen J & P Raivo (eds). Metsä, harju ja järvi: näkökulmia suomalaiseen maisematutkimukseen ja -suunnitteluun. *Metsäntutkimuslaitoksen tiedonantoja* 776, 25–34.

Maaranen P (2000b). Questions of management planning and preventive conservation concerning the site management of the archaeological cultural heritage of Finland. In Koskivirta R (ed). *Conservation without limits. II Nordic Group, XV Congress, 23.–23.8.2000, Helsinki, Finland*, 137–146. Loimaa.

Maaranen P (2000c). Ihmisen toimintaympäristön muutos Perniön ja Karjaan seudulla esihistoriallisella ja varhaiskeskiajalla. Maisematutkimuksen ja luonnonmaantieteellisten ympäristötekijöiden analyysin soveltamisesta arkeologisen lähdeaineiston tarkasteluun. Unpublished Phil. Lic. thesis. University of Helsinki Institute for Cultural Research, Department of Archaeology.

Maisemanhoito (1992). Maisema-aluetyöryhmän mietintö II. *Ympäristöministeriö, ympäristönsuojeluosasto, mietintö* 66/1992.

Myllyntaus T (1994). Approaches to environmental history. In Nissinaho A (ed). *Cultural ecology: one theory*, 25–36. Project "Changing Environment – Changing Society," University of Turku, Turku.

Nikula R (1999). Finland's built cultural heritage. In Mattinen M, M Häyrynen, M Kairamo & T Tuomi (eds). *Monuments and sites* – Finland, 13–19. International Council of Monuments and Sites, Helsinki.

Nilsson B (1992). Till frågan om kyrkans hållning tillicke-kristna kultfenomen. Attityder under tidigt medeltid i Europa och Norden. In Nilsson B (ed). Kontinuitet i kult och tro från vikingatid till medeltid. *Projektet "Sveriges kristnande," Publikationer* 1, 9–48. Lunne Böcker, Uppsala.

Oja A (1995). Keskiaikaisen "Etelä-Suomen" asutus ja aluejaot. *Suomen historiallinen seura, historiallisia tutkimuksia* XLIV.

Purhonen P (1998). Kristinuskon saapumisesta Suomeen. Uskontoarkeologinen tutkimus. *Suomen Muinaismuistoyhdistyksen Aikakauskirja* 106.

Renfrew C & C Bahn (2000). *Archaeology: theories, methods & practice*. Rev. 3rd ed. Thames & Hudson, London.

Rikkinen K, P Maaranen & P Suihkonen (1999). Erätaloudesta nyky-yhteiskuntaan. In Westerholm J & P Raento (eds). *Suomen kartasto*, 48–53. Suomen Maantieteellinen Seura & WSOY, Helsinki.

Roeck Hansen B (1996). *The agrarian landscape in Finland circa 1700: with special reference to Southwest Finland and Ostrobothnia*. Stockholm Universitet, Stockholm.

Roeck Hansen B & A Nissinaho (1995). A fossil landscape in Salo, Laitila, SW Finland. *Karhunhammas* 16, 25–40.

Rousi A (1997). *Auringonkukasta viiniköynnökseen. Ravintokasvit*. WSOY, Porvoo.

Ruotsin valtakunnan vuoden 1734 laki: Rakennus Caari 1–9 (1997). Agricola-projekti historian äärelle. 12 August 1998. *<www.utu.fi/agricola/hist.kktk/lait/1734/1175909.html>*

Säihke I (1963). Varsinais-Suomen maanviljelys ja karjanhoito 1500-luvulla. *Varsinais-Suomen historia V*, 5–6, 7–71. Varsinais-Suomen historiantutkimusyhdistys, Turku.

Sepänmaa Y (1997). Maaseutua ei voi tuoda – agraarimaiseman estetiikan lähtökohtia/Origins of the landscape aesthetic. In Luostarinen M & A Yli-Viikari (eds). *Maaseudun kulttuurimaisemat/Rural landscapes in Finland*, 23–29. Suomen ympäristökeskus, Sulkava.

Simmons IG (1989). *Changing the face of the earth: culture, environment, history*. Reprint 1990. Basil Blackwell, Oxford.

Stjernquist B (1992). Introduction. In Larsson L, J Callmer & B Stjernquist (eds). The archaeology of the cultural landscape. Field work and research in a South Swedish rural region. *Acta Archaeologica Lundensia, Series 4* 19, 9–16.

Storå N (1994). Cultural ecology and the interaction between man and the environment. In Nissinaho A (ed). *Cultural ecology: one theory*, 11–24. Project "Changing Environment – Changing Society," University of Turku, Turku.

Thorpe IJ (1996). *The origins of agriculture in Europe*. Routledge, Surrey.

Tikkanen-Lindström T (1999). Cultural landscapes and their maintenance: an introduction. In Mattinen M, M Häyrynen, M Kairamo & T Tuomi (eds). *Monuments and sites – Finland*, 145–146. International Council of Monuments and Sites, Helsinki.

Visualizing past landscapes (2001). University of Oulu, Archaeology Laboratory. 14 May 2001. *<http://arklab.oulu.fi/public/visual.html>*

Vuorela I (1998). The transition of farming in Southern Finland. In Zvelebil M, L Dománska & R Dennell (eds). *Harvesting the sea, farming the forest. The emergence of neolithic societies in the Baltic region*, 175–180. Sheffield Academic Press, Somerset.

Vuorela I (1999). The beginnings of agricultural land use in Finland. *PACT (Journal of the European Study Group on Physical, Chemical, Biological and Mathematical Techniques Applied to Archaeology)* 57, 339–351.

Zvelebil M (1998). Agricultural frontiers, Neolithic origins, and the transition to farming in the Baltic basin. In Zvelebil M, L Dománska & R Dennell (eds). *Harvesting the sea, farming the forest. The emergence of neolithic societies in the Baltic region*, 9–28. Sheffield Academic Press, Somerset.