On the Road : Studies in Honour of Lars Larsson

Jennbert, Kristina; Hårdh, Birgitta; Olausson, Deborah

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ON THE ROAD

STUDIES IN HONOUR OF LARS LARSSON

Edited by
Birgitta Hårdh · Kristina Jennbert · Deborah Olausson

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Lars i Italien 9-20.10

Lars i Portugal

Lars i

9-20.10

Lars på Grönland 24-31.
Lars i Lettland 1-19.

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Lars i Lettland 7-10 maj

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Italien 9-20.10

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Lars i Lettland 7-10 maj

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Lars i Portugal 9-19.4

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Lars i Portugal 9-19.4

Lars L i Sydafrika 24.1-26.2

Foreword

"Anyone seen Lars?"
"Isn't he in Africa?"
"No, no, he's in Portugal."
"Really? I thought he was in New Zealand."
"No, he has to give a lecture in Cambridge this week."

… a little illustration of what it can sound like at the Department of Archaeology and Ancient History in Lund. We sometimes find it difficult to keep track of where our professor is. Admittedly, Lars Larsson's many trips and wide-ranging contacts have been of great benefit and pleasure to us and the entire department during all these years. Countless interesting scholars from all the corners of the earth have spent time with us, sharing their knowledge and giving us new perspectives. Undergraduates and doctoral students have had the privilege of participating in fieldwork in exotic places.

About a year and a half ago we had the idea of trying to find out where Lars is when he is not here. We thought it might be interesting to get into closer contact with the institutes and researchers who have encountered him in different ways. With this aim, we scoured our address books and sent electronic letters all around the globe.

The result was overwhelming. We were convinced that many people would want to join in celebrating Lars, but we could not have been prepared for such a huge response. Our timetable was drawn up and the articles began to flow in – lots of them. At first it was almost frightening. Would we be able to accomplish what we had started? Thanks to generous grants from Ebbe Kochs Stiftelse, Gyllenstiernska Krapperupstiftelsen, and Kungliga Humanistiska Vetenskapssamfundet in Lund we were able to cope with the financial side, but how were we supposed to handle the growing pile of manuscripts, often from faraway places? Once we got going with the work, however, we found it highly pleasurable. It was exciting to meet all these scholars, many of them well known to us but many totally unknown. After the editorial process with the manuscripts, we feel as if we have voyaged far and wide.

The result is a book that clearly reflects the travels of an exceedingly active scholar and the impressive network of contacts that he has created around the world. We wanted a book that would reflect these peregrinations, hence the title *On the Road*. The assembled articles describe journeys past and present, to places near and far, from prehistoric times to the present day and vice versa. But we should not forget the places nearby, Ageröd, Skateholm, and Uppåkra among many others. Despite everything, Lars has always had his fixed point in the soil of Scania and in Västra Nöbbelöv.

So, Lars, we present this book to you as a sign of our admiration and affection on the occasion of your 60th birthday. We sincerely hope you enjoy reading it as much as we have enjoyed putting it together!

Lund, winter solstice 2006

Birgitta Kristina Deborah

NEAR PLACES

BIRGITTA HÅRDH

On the road to the central place

THE RECIPIENT OF this festschrift was appointed professor of archaeology at Lund University in 1984. The following year I attended an international conference where a German colleague asked who had become professor in Lund. I answered him and he searched in his memory for a while, whereupon he lit up: "O yes, the one with Önsvala." A couple of years earlier Lars had published an article on an Iron Age cemetery in south-western Scania. The episode shows how specialized research often is. The German colleague, a well-known authority on the North European Iron Age, was little acquainted with other parts of prehistory. Here, however, we have a scholar, widely known for achievements in the Stone Age who has made a distinguished impact on research in quite another period.

The later part of the 1990s has rightly been called the golden age of archaeology in Scania. Concerning research on the Iron Age it has been labelled *the awakening* in a recently published thesis. This should be seen, perhaps somewhat provocatively, in contrast to the preceding decades (Björk 2005). With a number of large-scale projects and several academic theses, the decade from 1995 to 2005 has really brought new knowledge and new perspectives on the south Swedish Iron Age. This awakening has to a large extent been influenced by Lars Larsson's contributions as an active member of referee groups in projects in contract archaeology, as a supervisor of doctoral theses and last but not least as the initiator and driving force in the project "The Social Structure of Southern Sweden during the Iron Age" as well as the investigations at Uppåkra. With this article I would like to point to some possible issues for further research in the Iron Age society of Scania.

Theses and major projects

Among the roughly 30 academic theses published at the Department of Archaeology and Ancient History in Lund between 1995 and 2005 no fewer than eight have an Iron Age focus. Together they contribute in a very successful way to our understanding of the Iron Age in south Sweden. Among the important achievements are comprehensive surveys of graves and burial traditions from early Iron Age and the Viking Age. The theses give accounts of qualitative variations among the graves as well as regional variation (Nicklasson 1997; Svanberg 2003; Björk 2005). Other important results are thorough discussions of building traditions, aristocratic sites and the significance of handicraft. An important topic is centres and centrality (Andersson 1999; L. Carlie 1999; Helgesson 2002; Söderberg 2005).

Two large-scale projects were carried out during the same decade in Scania. One was caused by the extension of the railway northwards from Malmö. The second project was connected to the roads approaching the Öresund Bridge. The projects together have given a cross-section through west Scania, densely settled during the whole of prehistoric time. This has given a unique possibility to analyse various conditions for settlement and human culture in interplay with environment. The vast amount of settlement sites, traces of communication etc. also give an assembled image of the prehistory of the region (Billberg and Björhem 2000:26; A. Carlie 2005).

The latter part of the 1990s was also the time for the above-mentioned project on "The Social Structure of South Sweden during the Iron Age". It was carried out 1997–2002 in cooperation between museums, antiquarian authorities and the Department of Archaeology in Lund. The main goal was to analyse settlement structure during the Iron Age. An important task here was to compile a survey of excavations carried out by the National Heritage Board and the various museums in Scania (Jacobsson 2000; Tegnér 2005). With these two compilations we now have up-to-date surveys with short descriptions of excavations relevant for research on the Iron Age in Scania.

"The Social Structure" project has produced a large number of scholarly texts. These are listed, up to 2003, in the seventh volume of Uppåkrastudier (2003:363ff).

Uppåkra – the great adventure

For anyone who had his or her archaeological training in Lund the Uppåkra site has always had a special meaning. In the lecture room at the University Historical Museum, objects from the excavations in the 1930s have been on display: heavy millstones, daub from houses and tools of various types and some fibulas found in a casket in a burnt house. On the road between Lund and Malmö there was the mighty height crowned by the church of Stora Uppåkra. Senior archaeologists could tell that the height was built up partly of thick cultural layers. It resembled an oriental tell settlement. It was inevitable that the place acquired an almost mythic touch, gigantic, brooding over its secrets and

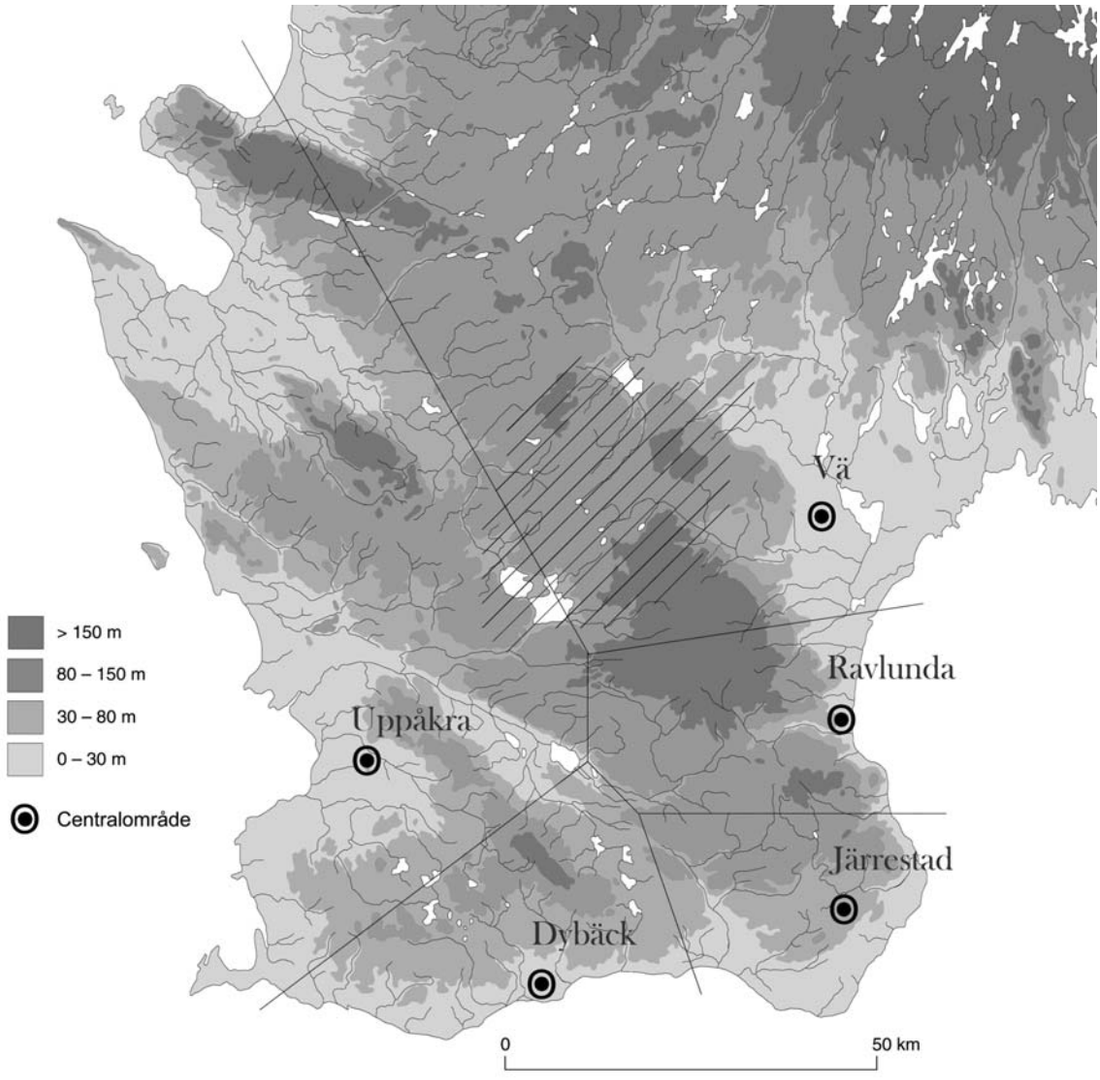

FIGURE 1. Map showing sites in Scania for which some kind of centrality has been claimed (after Helgesson 2002).

dominating the surrounding landscape. However, the size and the thick cultural layers also became an obstacle for major investigations at Uppåkra. The task seemed overwhelming as regards both costs and work.

When "The Social Structure" project started in 1997 it became necessary to consider the Uppåkra settlement. This was pursued in a purposeful way by Lars. Here it was necessary to break new ground. A very good knowledge of appropriate prospecting methods and a well developed contact network was needed to launch this huge undertaking. I am also convinced that a great amount of courage was necessary to be able to tackle this place at all. The clue to success lay in the ability to balance between large-scale surface investigations on one hand and intense investigations, *i.e.* excavations at carefully selected spots, on the other.

For the large-scale investigations a number of methods were applied, such as measuring of resistance, drilling, surface surveys and not least searching with metal detectors (Larsson 1998, 2003). A group of specialists with a well-documented ability to work with detectors were invited from Bornholm. This caused some agitation among Swedish archaeologists, who wondered why Danish amateurs should be employed instead of Swedish students. However, the Danish amateurs, who were true specialists, have made an everlasting impact on the Iron Age of Scania. From the first day the investigations by the Bornholm group was sensational.

The leader of the group, Klaus Thorsen, has told me that Lars was very cautious about promising anything special for Uppåkra. He even had a couple of other sites ready if nothing was found at Uppåkra, so the detector weekend would not be a total failure. However, according to Klaus the detectors started to sound even as their owners were adjusting them. After only a couple of hours it was obvious that Uppåkra surpassed our wildest expectations. The excavations in 2001 to 2005 established the unique character of Uppåkra.

In the project programme for "The Social Structure" we emphasized that Uppåkra should serve as a catalyst for the analysis of Iron Age society in south Sweden. This has

become true to an even larger extent than we could have imagined then.

Questions for the future?

The last decades' investigations are undoubtedly founded on earlier research, not least the achievements of Berta Stjernquist and Märta Strömberg. Today the material has certainly increased, quantitatively and qualitatively, and the possibilities for detailed analysis – regional and diachronic – are excellent. Qualitative analysis, not least on relations between places, the character of places, studies of organisation at local and regional levels are possible to realize and quite a lot of this type has also been carried out recently. The multitude of investigations, results and perspectives makes it of course difficult to suggest future work, and the selection will inevitably be subjective. However, some topics concerning places, their variability and relations appear in most of these works, but from different perspectives. It would be most fruitful to review the works with the focus on selected questions such as:

1. The central places – their character and relation to regions and other places.

2. The proposed hierarchies among settlement sites in western Scania.

3. What happened in western Scania at the end of the 10th century and what were the relations between Uppåkra and Lund?

Central places

A decade ago central places were a scarcely known concept in Scanian archaeology. Today there are quite a number of places for which centrality has been claimed in one way or other, for example Uppåkra, Vä, Åhus, Maletofta, Ravlunda, Järrestad and Dybäck (Figure 1). These places differ considerably in continuity, size and character. Obviously their functions varied. The necessity to discuss the concept of central places has gradually become acute. The possibilities to do this are exceptionally good in Scania, with a collection of distinguished places or areas spread out over the province. Here it is not possible to think in hierarchic terms. Centres are in some way or other connected to power, and power is a complex issue. According to Michel Mann a society can only be understood through four sources of power: ideological, economic, military and political. These aspects operate in networks, which only partially coincide (Mann 1986:27f; cf. Hed Jakobsson 2003:109). It is well worth proceeding with discussions of how these places might be connected to various types of networks. A first step would be to find criteria to define the character of the places. Which of them might be labelled, for example, as aristocratic residences or trading places? The chronological dynamic should of course be considered.

The role of economic aspects in the creation and transformation of power relations is emphasized by, among others, Moreland (2000) and Näsman (2000). Central places can be integrated in their region and dependent on it for its support, or they can be based on networks, trade relations to similar places at vast distances. For the second type of places the surrounding region is of less importance and vice versa (Harrison 1997:26). Proceeding from objects produced at Uppåkra, there have been suggestions of a gradual integration of the economy of the site with the surrounding region. The central place gradually became more and more dependent on supplies from the rural settlements around. This probably started on a smaller scale already during the Migration Period. The uniqueness of Uppåkra is the possibility to investigate this process over a long time perspective (Hårdh 2002; Helgesson 2002). Here questions about control over production and resources and the supply of the site are crucial. The craftsmen as well as the retinue have to be considered. Both groups had to be sustained (Callmer 1997; Mogren 2005). A further clue is the setting of the place in the surrounding landscape. The multifaceted investigation around Järrestad (Söderberg 2005) could favourably serve as a model here, although the situation in west Scania seems to have been far more complex. Hed Jakobsson emphasizes the link between economic and religious aspects of Iron Age society. Here it is important to consider whether religion should be seen as an ideological legitimation of an existing, economically based power or whether it, on the contrary, constitutes the power position of a site. Perhaps a certain family even was given resources for religious reasons. Because they were connected to the gods, they also had to be glorified (Hed Jakobsson 2003:108, 111f). These aspects are relevant for Uppåkra as well as for other sites.

What was the interplay like between contemporary places, in Scania and adjacent regions? What were, for instance, the relations between Järrestad, Uppåkra and Tissø? Järrestad has obvious similarities to Tissø on Zealand and a connection between the two is likely (Söderberg 2005). However, was it possible for the aristocrat from Järrestad to ignore the existence of Uppåkra on his way to Zealand? The Dybäck area with its manifold prestigious manifestations (Larsson 2003) is worth further discussion, not least with regard to Uppåkra. Relations over Öresund are also a topic with great prospects.

The studies by Tony Björk and Fredrik Svanberg concern burial traditions, in the Early Iron Age and in the Viking Age. They are able to show regional groups, which also to a large extent coincide. This is probably an expression of regional groups with a high degree of stability. Future studies might concentrate on other aspects of material culture, for instance building traditions, and investigate whether the same regional groupings can be traced there. Helgesson has distinguished a number of locations with concentrated wealth and centres. Can they be connected to the regions discerned through the burials? Perhaps a model borrowed

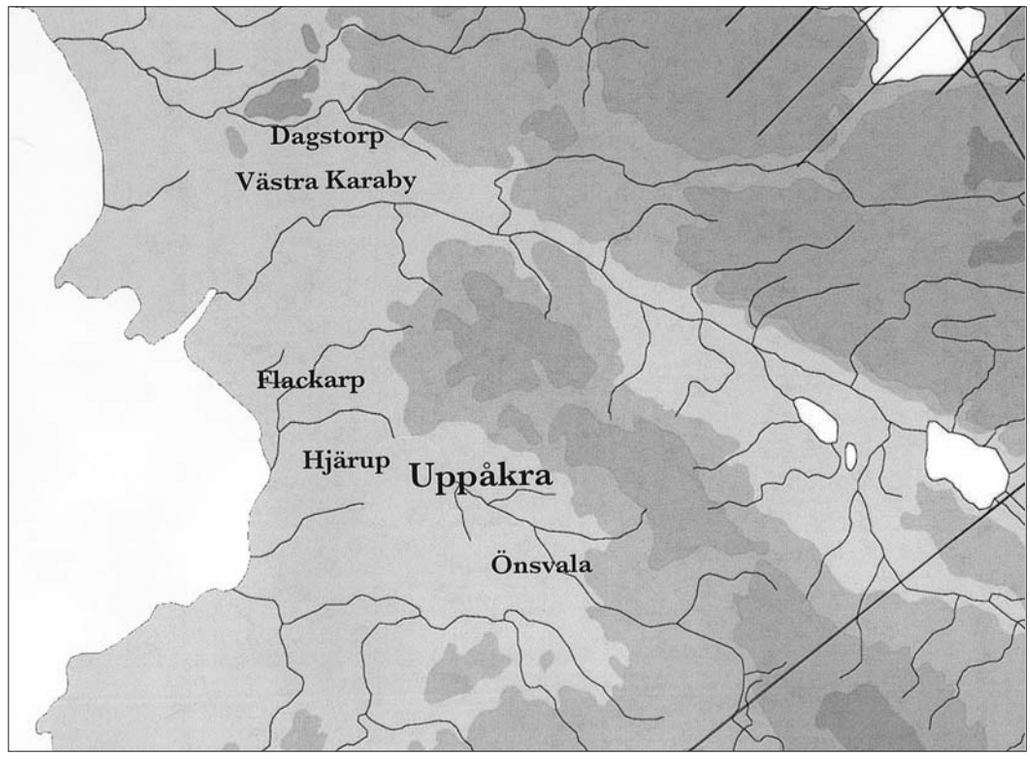

FIGURE 2. Map showing some sites in west Scania with some special characteristics.

from Braudel, where long-term traditions contrast with short-term events (1997:90, 319), could give new insights into the social dynamics.

The hierarchy of settlements?

That Uppåkra has come into focus again during the last few years has had a great influence on the discussion of societal organisation in Scania, especially in west Scania. There are several studies that have treated the question with various approaches. Recently Anne Carlie has analysed 130 settlement sites excavated in connection with the above-mentioned railway extension (2005). This is a considerable number and an assessment of their various qualities is likely to give important insights into Iron Age conditions. Carlie also extended her region of analysis southwards in order to include Uppåkra in the study, which comprises the period from 500 BC to 800 AD. The settlements have been given points according to the character of the site, suitability for communications and finds of precious metal, imports of traces of handicraft. The settlements were grouped into four levels and also grouped chronologically. Only Uppåkra reaches the highest level. Carlie presents her record with a number of instructive maps, which also show graves, prestigious finds, roads, landing places etc.

Johan Callmer discusses in a number of studies the aristocratic residence in the Iron Age. Mainly using placenames, he has studied how Uppåkra and its surroundings might have been organized (2001). Uppåkra is surrounded by no less than nine villages with the element *-torp* in their names, dated to the Viking Age, or according to Callmer, perhaps even slightly earlier. Archaeological material seems to corroborate this suggestion. The ideal model for a Merovingian/Carolingian residence is a central farm, often in a village, surrounded by subordinate farms. Uppåkra suits this model very well, where the places with *-torp* names might depict satellite farms, established in the Late Iron Age.

Bertil Helgesson has used the collected archaeological record to study the social organisation in a long-term perspective, *i.e.* the entire Iron Age (2002). He uses finds like precious metal and weapon finds to distinguish rich settings. Especially for the period *c.* 300–550/600 he has been able to point out several elite spots in western Scania besides Uppåkra. He thinks it unlikely that these functioned as independent centres and suggests a hierarchic structure in four levels in the region. With this he also maintains that the social structure in west Scania seems to have been more complex than in the rest of the province. After *c.* 700 AD weapon graves became so frequent in west Scania that Helgesson suggests that they reflect a strategic organization mainly for control of communications.

Here it is also appropriate to consider the ten or so sites at a few kilometres distance from Uppåkra, which have been searched with metal detector and given results that indicate that they were something more than mere agrarian farms. Mainly the later Iron Age appears with abundant finds, often of high quality.[1]

Some places like Dagstorp, Flackarp, Västra Karaby,

Önsvala and Hjärup (Figure 2) appear in more than one of the above-mentioned studies, which possibly means that they have been regarded as special from different perspectives. Other places are possibly more specialized. A future analysis could perhaps proceed from the variation among these places. With regard to source-critical aspects due to variations in investigation, it would certainly be meaningful to discuss aspects of relations between them considering complex power networks. Webster emphasizes the character of heterarchic societies with "the messy effects of agency in their formation and collapse and the bottom-up perspective on power relations" (Webster 2005:261).

FIGURE 3. Gilded silver animal head from Uppåkra. Close parallels are the mountings from the Jelling tomb. Length 33 mm. Photo: B. Almgren, Historical Museum, Lund University.

Uppåkra and Lund

A most exciting topic is the relation between Uppåkra and Lund and the events that led to the founding of the new town. The question of urbanization is of course crucial here. Mats Mogren asks whether it is possible to discuss urbanization processes before the formation of a state. Perhaps the multifunctional central places even are a prerequisite for state formation. This is certainly an interesting aspect for this region. Mogren also suggests that the central places could advantageously be studied with the analytical instruments that have been developed though research on urbanization (Mogren 2005:16ff; cf. Yoffee 2005).

Characteristic of Uppåkra is its stability as a centre for more than a millennium, as a matter of fact as long as Lund has existed as town. How can we imagine Uppåkra through this long existence? I think Uppåkra is best understood as a collection of closely assembled farms, probably also with some common establishments. There was probably at least one larger farm and the cultic or ceremonial house must also be considered. This would mean that, for the Viking Age, the best parallel is probably the oldest Lund with its spacious plots (Carelli 2001).

Lund, according to Stefan Larsson, was not given an ideal location for settlement. However, with the establishment of the new place someone in power demonstrated his ability to transform communication patterns and introduce new patterns of movements and conceptions of space in the area. He sees Lund as something qualitatively new in the region (S. Larsson 2006). Then the foundation of Lund was a way to break a thousand-year-long tradition. I think the probability is high that the localization of Lund is due to the existence of Uppåkra.

So, what happened in the late 10th century when mighty agents – king and church – operated in the region? What were the relations of Sven Forkbeard to Uppåkra? An ally, a rival or even the ruler? A silver head in Mammen style (Figure 3) (Hårdh 2003) and a foot of the same type as the ones from the Kammien casket at least show links to the metal handicraft of the Jelling kings. Even more exciting is a small mounting connected to Knut the Holy.[2] This certainly is worth considering. Perhaps Knut's relations to Uppåkra were closer than merely possession of land there.

Several studies concern a prehistoric road from the south coast of Scania through Uppåkra and present-day Lund to the west coast at Helsingborg. The Viking Age fortresses at Trelleborg and Borgeby must be considered here as they are clearly connected to this important communication link. It is most probable that they played an important role in the political events that led to the foundation of Lund, whether they were strongholds for the king or for some antagonist.

Final remarks

The prerequisites for a qualitative analysis of Iron Age Scania have never been as good as today. The material basis is comprehensive and analytical tools are abundant. A large number of studies have appeared during the last decade and many interpretations and suggestions have been put forward. An intriguing task would be to review them together and contrast the different views. We can already perceive something of the networks of various content, extension and levels, which seem to have existed. An Iron Age traveller certainly had to know how to act to be able to move through this intricate web of relations on his or her way to the Central Place.

English revised by Alan Crozier

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Notes

1 I wish to express my gratitude to Jonas Paulsson who has informed me about the investigations.

2 I am indebted to Rolf Petré, who has drawn my attention to these objects. Unfortunately the mounting was at the restoration department in Kiruna when this article was written, so no photo could be obtained.

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MATS RIDDERSPORRE

Storehög and Lillehög

A narrative of their marvellous travels in Uppåkra

Storehög and Lillehög

IN RESEARCH CONCERNING Iron Age society in Scandinavia, the so-called central place has been in focus during the last few decades. Among places that have attracted the concern of archaeologists and other researchers, the Iron Age settlement at Uppåkra, south of Lund in south-west Scania, occupies an important position. Uppåkra is known as one of the largest and most long-lasting Iron Age settlements in Scandinavia, with an occupation period of about a thousand years, manifested in extensive occupation layers and massive finds of metal artefacts (Larsson & Hårdh 1998, 2003; Larsson 2004). Within the area of the occupation layer, the two barrows *Storehög* and *Lillehög* have central and topographically exposed positions (Figure 1). Traditionally the barrows have been interpreted as Bronze Age barrows (Vifot 1936), but the possibility that they were constructed during the Iron Age has also been discussed. Concerning Storehög, there is evidence that the occupation layer respects the barrow and that the barrow was constructed before the deposition of the Iron Age layers (Larsson 1998). In the following, the names of the two barrows will be discussed in relation to information collected by the (Danish) ecclesiastical administration in the 1570s and by the (Swedish) National Land Survey in the 1770s.

The names, which mean *the big barrow* and *the small barrow*, are quite appropriate as one barrow is larger than the other. On the other hand, there is evidence from written sources and archaeological excavations of two more barrows close to Storehög (Larsson 1998). Both these barrows may have disappeared during the eighteenth century. In contrast to Storehög and Lillehög, they are not documented on the oldest land survey map of Uppåkra from 1776, and the one that is known from written sources had disappeared before 1796. One may wonder what names could have been given to these barrows – "the not so large barrow" and "the not so little barrow"? As it seems, the names *Storehög* and *Lillehög* refer to a situation when there were only two barrows at the site. In that case, it could be interesting to get a hint of when the names were given to the barrows.

In the 1930s new buildings were erected on a farm in Uppåkra in the area between Storehög and Lillehög, which led to important archaeological excavations conducted by Bror Magnus Vifot. In his report he assumes that the two barrows were constructed during the Bronze Age, and in a note he refers to the place-name scholar Ingemar Ingers,

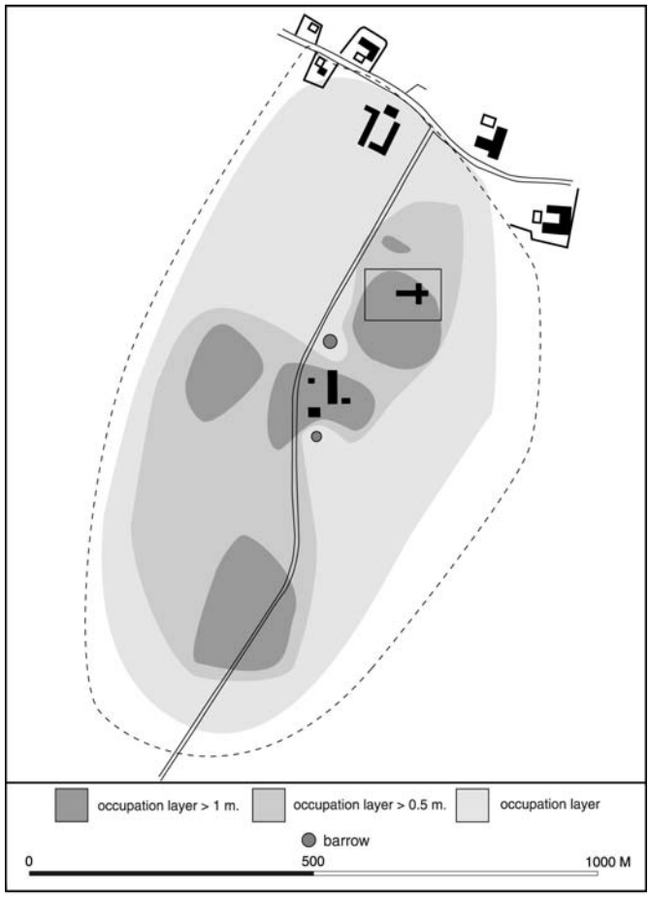

FIGURE 1. Uppåkra. The occupation layer and the two barrows Storehög and Lillehög (after Larsson 1998).

who had noticed that the names of the barrows could be found already in the Lund diocesan terrier from *c.* 1570 (Vifot 1936:301). Now things become puzzling. On the one hand at least four barrows are reported in a central position at the Uppåkra site, where two still exist and at least one of the others is reported to have disappeared during the 18th century, on the other hand a situation with only two barrows already in the mid 16th century. Combining information from the Lund diocesan terrier with the land survey documents from 1776 makes things even more puzzling. As will be shown in the following, the information in the terrier deals with a different locality than the later known site of Storehög and Lillehög. An interesting question thus arises concerning the possible migration of the names of the barrows in the Uppåkra area.

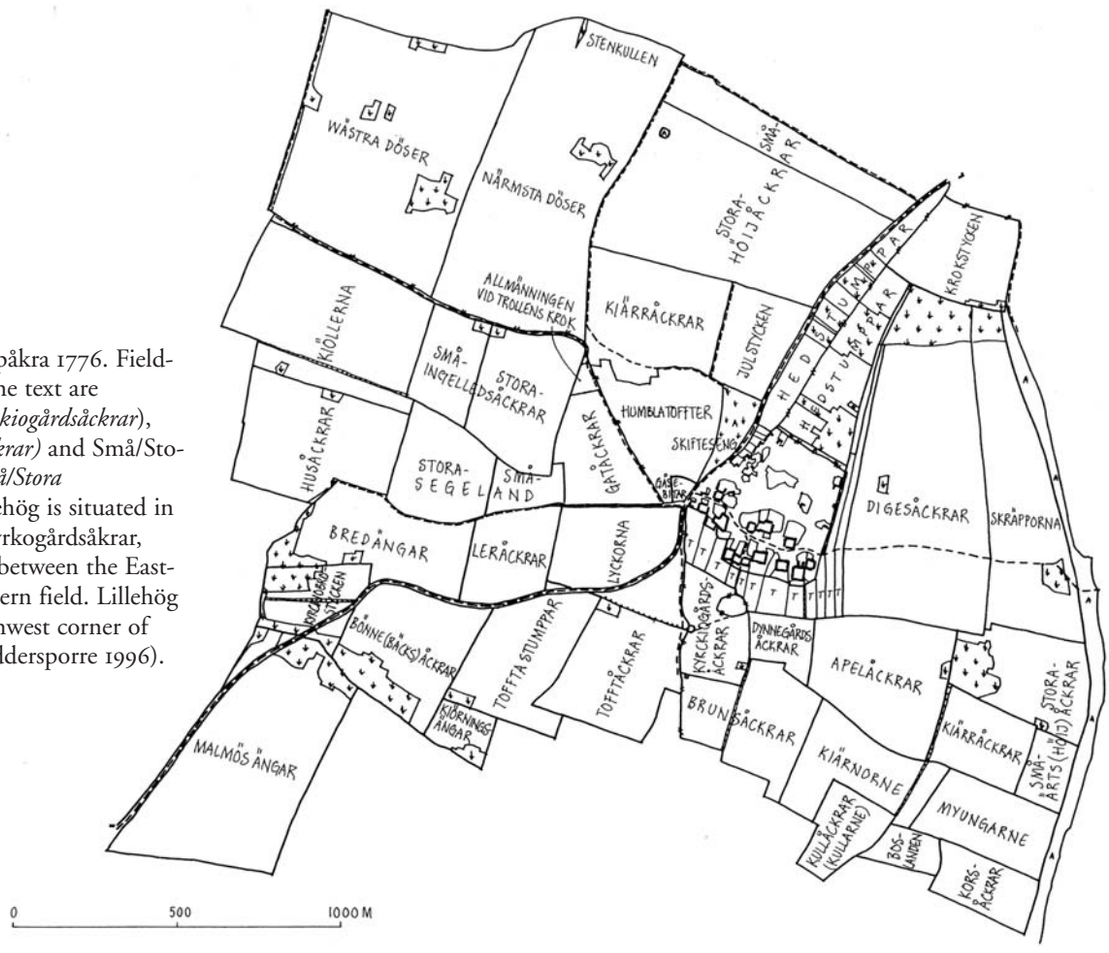

FIGURE 2. Stora Uppåkra 1776. Field-names referred to in the text are Kyrkogårdsåkrar (*Kyrckiogårdsåckrar*), Brunnsåkrar (*Brunsåckrar)* and Små/Stora Ärts(hög)åkrar (*Små/Stora Ärts(höij)åckrar*). Storehög is situated in the western part of Kyrkogårdsåkrar, next to the boundary between the Eastern field and the Western field. Lillehög is situated in the northwest corner of Brunnsåkrar (after Riddersporre 1996).

Mr Big and Mr Little

The Lund diocesan terrier is a record of land held by ecclesiastic institutions within the diocese of Lund around 1570. The terrier was published in the 1950s by K. G. Ljunggren and B. Ejder (*Lunds stifts landebok*). During the Middle Ages the Church was a large landowner, but after the Reformation it was mainly the farms that supported the vicar and the parish clerk that remained in the hands of the Church. In the parish of Uppåkra the terrier records the lands of the vicarage in the church village of Stora Uppåkra. At that time the villages of south-west Scania were organized according to the three-field system, with arable and hay meadows partitioned into three separate fields (*vångar*) and with the lands of all farms subdivided into a large number of narrow strips scattered all over the three fields. The record of the lands of the vicarage is thus representative of the entire village. In the terrier individual strips are identified by field-names that in many cases also appear on the oldest land survey maps from the 17th and 18th centuries (Riddersporre 1995).

The lands of Stora Uppåkra village were divided around 1570 into the Eastern field (*Östre vång*), Western field (*Västre vång*) and Northern field (*Norre vång*). The three fields can be identified on the oldest land survey map of Stora Uppåkra, drawn by Carl Fredrich Rango in 1776 (Riddersporre 1996). According to the map, the two barrows remaining today can be identified within the westernmost part of the Eastern field, on land called *Kyrkogårdsåkrar* (Storehög) and *Brunnsåkrar* (Lillehög) (Figure 2). Both these field-names also appear in the terrier from *c.* 1570 (*Kirckegaars agir* and *Bröns agir*) in the Eastern field (*Østre wongh*).

On the other hand, the terrier reports the field-names *Storers höy* and *Lillers höy*, also in the Eastern field, which are most probably the names that Ingers had noticed in his communication with Vifot in the 1930s (*höy* or *höj* is the Danish spelling of the Swedish word *hög*, barrow). Beside the identification of the locality of the two existing barrows within Kyrkogårdsåkrar and Brunnsåkrar, the separate mention of *Storers höy* and *Lillers höy* is puzzling. Normally the terrier should register one strip in Kyrkogårdsåkrar *or* (near) Storehög and one strip in Brunnsåkrar *or* (near) Lillehög, not both. An interpretation of the names could be that they indicate a kind of imaginary personal names: the barrows of "Mr Big" (*Storer*) and of "Mr Little" (*Liller*). More likely, however, the explanation could be that the clerk that collected the information did not understand the spoken word of his local informant.

The growing of peas

The map of Stora Uppåkra from 1776 was drawn with the object of a land reform (*storskifte*). Fortunately, the surveyor recorded a great many details concerning the situation

prior to the planned new situation, such as the three-field system, the old strip fields and the field-names (Riddersporre 1996). Thanks to that, the survey records not only the old field-names, but also their original location. Within the Eastern field there are two field-names in the easternmost part that are of great interest: *Stora ärtsåkrar* and *Små/Lilla ärtsåkrar* (Figure 2). The first words (*stora* and *små/lilla*) mean *large/big* and *small/little*. The first part of the second word is the Swedish word for *pea* (*ärta*; the letter *ä* includes a diacritic sign that indicates a sound value somewhere between *a* and *e*, that is marked in Danish by the letter *æ*) and the second part means arable. The field-names thus indicate something like "the large strips where peas are grown" and "the small strips where peas are grown". The difference between the large strips and the small strips is clearly indicated on the map.

On the map from 1776 the field-names are given in the plural (*Stora ärtsåkrar* and *Lilla ärtsåkrar*), but in the detailed description accompanying the map the lands of each farm is recorded individually. Here each farm has its own *Stora ärtsåker* and *Lilla ärtsåker* in the singular: "the large/small strip where peas are grown". It is highly interesting to notice that in the description most of the field-names are reported not as *Stora* or *Lilla ärtsåker*, but as *Stora* or *Lilla ärtshöy* or *ärtshöysåker*. This indicates that somewhere very close to the strips where peas where grown, there once was a barrow named *Ärtshög*. The distinction between *stora* (big/large) and *lilla* (small/little) does not imply the existence of two barrows, but of the large and small strips of arable land adjacent to the barrow (cf. Riddersporre 1999).

From *Ärtshög* to *Ershöj*

In relation to the dialects of Scania, *ärtshög* and *ershöj* are two ways of putting the same spoken word into writing. The letters *ä* and *e* have a similar sound value, and the *t* is easily dropped. Given that the land surveyor who recorded the field-names of Stora Uppåkra in the 1770s used official Swedish writing, he would have noted *Stora ärtshög* when the local farmer said something like *Store är(t)shöj*. On the other hand, two hundred years earlier, a Danish-speaking clerk may have heard something like *Store ershöj*, which in the final manuscript of the Lund diocesan terrier ended up as *Storers höy*.

The objective of this narrative is to argue for the opinion that the field-names *Storers höy* and *Lillers höy* that are registered in the Lund diocesan terrier from *c.* 1570, have nothing to do with the barrows Storehög and Lillehög in Uppåkra of today or the Iron Age central place. The names *Storehög* and *Lillehög* are the names of two individual barrows close to each other and of different size. These names are probably not older than the late 18th century, when the other barrows close to Storehög had disappeared. This opens for the possibility that the names were transferred from an earlier locality, indicated by the names registered as *Storers höy* and *Lillers höy* in the Lund diocesan terrier. The names in the terrier, on the other hand, refer only to one barrow (*Ärtshög*) situated close to where peas were grown on smaller and larger strips in the easternmost part of the Eastern field of Uppåkra already around 1570.

In conclusion, there was probably no migration of the names of barrows or fields in Stora Uppåkra between the 16th and 18th centuries. On the other hand, the names *Storers höy* and *Lillers höy* in the Lund diocesan terrier are an interesting indication concerning the history of pea growing. But that is another story.

English revised by Alan Crozier

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KRISTINA JENNBERT

The mania of the time

Falconry and bird brooches at Uppåkra and beyond

WHILE FORMULATING ISSUES associated with Lars Larsson, lots of possibilities arose in my head. The theme should have connotation with his lifestyle, his abilities and broad interests. Why not a Stone Age theme? As a first-year student I took part in Lars' earliest excavation at the Maglemosian site of Ageröd in central Scania, south Sweden. Or why not a highly theoretical one? One alluding to our talks over many years about doing archaeology, and our research topics? Maybe something about our agreements and disagreements?

But, since Lars is a traveller, I will use travel as a metaphor for his broad interests in all kinds of research fields, and for his lifestyle. Being a rambler myself, I think that physical movement is also a mental journey that gives force and energy. The bird brooches trigger this mental research journey, passing through periods of time, between the past and the present and around the world, in order to find keys to understand their beauty and art. This journey sets off in Uppåkra, near Lund in southern Sweden, where Lars initiated metal detector surveys at the beginning of the research project, resulting in thousands of finds (*e.g.* Larsson 2003). Among all these finds were the bird brooches.

Bird brooches in Uppåkra

After several seasons of metal detector surveys at the Uppåkra site around 130 bird brooches were found (Uppåkra database 2005, the Historical Museum, Lund University). The objects are of very high quality, made of copper alloys; some of them are embellished with silver or gold, and decorated with stones or gems. Ribbons, bands, and a male head sometimes decorate the back of the bird. The pictorial language signals a bird seen from its back. The beak, the head, the wings, the claws, and the tail are depicted on the front of the brooches.

Fragments of a pin or a pin anchor on the back of the bird's head indicate that the items were worn as brooches. Many of the brooches are perforated in the tail, as if they also were used as pendants.

The finds are without context as they were discovered in the plough soil over a very large area. Presumably, they are not fragments from a former cemetery as the total archaeological material found during the surveys does not indicate the existence of a cemetery. Instead the large of amount of metal is interpreted as metal scrap (Hårdh 2003). The mixed alloys in Uppåkra indicate advanced knowledge and experimentation by skilled craftsmen, similar to metalwork at Helgö (Hjärtner-Holdar *et al.* 2002). Whether the bird brooches were robbed from graves, or taken from/given by living persons, and brought to Uppåkra is of course impossible to know. Apparently, they were taken out of circulation, and later on, they were going to be remoulded into something else. If not, the bird brooches could have been manufactured at Uppåkra, even if no identical cast bird brooches were noticed (*e.g.* beak-shaped brooches in Hårdh 2001).

Looking through the brooches together with the ornithologist Professor Thomas Alerstam, Lund University, we noticed typical characteristic of the bird brooches, a theme with variations. Evidently, the typology of the brooches by Mogens Ørsnes expresses the variations (Ørsnes 1966:101ff), all of which could be noticed in the Uppåkra material already many years ago when just 44 examples were known (Branca 1999).

However, the pictorial language communicates a bird body. The question is what kind of species is represented, and if it is possible at all to identify bird species from an art object? The perspective of the bird is an artistic design created by the artisans' skills and perception. The bird constitutes a sign with codes and elements of some understandable and recognised forms for people at that time (*e.g.* Sonesson 1992).

Surely, the brooches had messages to the viewer. Yet, how could we as modern people decode this message in fragmentary survivals of ancient cultural material? The following interpretation of the bird brooches and the bird images is an associative argumentation between different archaeological and written sources in Scandinavia and the continent, besides my own fascination with birds and falconry.

Ravens or birds of prey?

The bird brooches have been interpreted as ravens, with connotations to Odin's ravens, Huginn and Muninn (Petersen 1991:55, 2005; Uppåkra exhibition 1998). They could also be understood as representations of birds of prey (Jennbert 2006a). Within the field of archaeology dealing with the finds in question there is caution about attributing the pictorial image to any species. The question is whether it at all is possible to find out if they represent ravens or birds of prey, or something else?

Doing archaeology is a never-ending adventure, and

FIGURE 1. Species of bird – raven or bird of prey? Bird brooch U 560 from Uppåkra, Skåne, Sweden. Photo: B. Almgren, Historical Museum, Lund University. Length: 58 mm.

when an amateur sets off into the world of birds, to find out about the descriptions and habitats of different species, it has clear travel associations. The raven has a relatively long and curved bill, long pointed wings with obvious separation of primaries while soaring, and a long graduated or wedge-shaped tail. Falcons and hawks are broad-chested, and have a heavy curved bill, long, broad, pointed wings, and heavy feet with sturdy claws, and long tail which can be rounded, straight and wedge-shaped.

Ravens and birds of prey have different habitats and behaviours. While ravens follow predators to scavenge on leftovers and carrion, birds of prey, depending on which species, hunt in different ways. Gyrfalcons (*Falco rusticolus*) fly low and surprise prey on the ground. They force it low or high and exhaust it. Gyrfalcons strike prey or drive it to the ground, rather than grasping it in the air. Peregrine falcons (*Falco peregrinus*) search out the prey from a perch or while they fly, and dive on it from high above and strike it with the feet, or pursue it from behind. The prey is killed by a bite in the neck. Goshawks (*Accipiter gentilis*) perch silently, waiting and watching for prey. They follow prey rapidly through forest vegetation. (Pers. comm. Thomas Alerstam, Lund University; *All about Birds*, Cornell Laboratory of Ornithology, Cornell University, New York).

Both ravens and different species of birds of prey change body position and feathers depending on what they actually do. Thus, the examination of bird brooches to identify species is an ambiguous job. Looking through all the bird brooches found at Uppåkra, taking into account that the objects are not taxonomic species but artistically moulded, the different elements (Figure 1) – such as the feet and heavy claws, the shoulders of the wings, *e.g.* the wrists, the pointed wings, but above all the shape of the body – signal birds of prey. The bills are straight, and similar to either a raven or a bird of prey. The tails are varied; they can be straight, rounded, or wedge-shaped.

A general trend is that they have marked eyes, and the wrists have "eyes". The ornaments on some of the objects show ribbons between the bird's head and the body, and between the wings on the body. A few have a male's head between the wings.

In conclusion, a close study of the ornaments reveals an interpretation based on the form and stance of the bird's body. The stout aerofoil of the shoulders and the folded wings with the claws in diving position suggest rather that the image represents a bird of prey. On the other hand, it is possible to interpret it as a raven seen from the back.

The ornaments give the impression of a tamed bird of prey, hunting its quarry in a straight diving position. It could be a goshawk or a peregrine falcon, but further identifications are worthless, and impossible to do. Thus, the iconography of the bird brooches signals birds of prey, with connotations of falconry, a special lifestyle. The question is what kind of information about the bird brooches and similar pictorial perspectives comes from their archaeological context, and what association can be made with practising falconry?

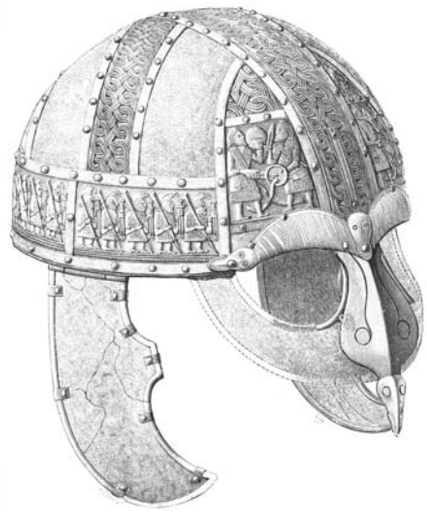

FIGURE 2. The helmet from the boat grave Vendel XIV, Uppland, Sweden, reconstructed by Olof Sörling (Stolpe and Arne 1912, Pl. XLI).

Archaeological contexts

The bird brooches belong to the south Scandinavian material equipment of the 7th century, usually as single finds, as in Scania (Strömberg 1961:116f) and Öland; a few are also found in Norway and south of Scandinavia (Ørsnes-Christensen 1955:105). However, especially on Bornholm, there are brooches in female graves, in pairs or single as a part of a jewellery collection on the woman's breast. (Vedel 1886:163f; Ørsnes 1966:101ff; Højlund Nielsen 1987: table 4; Jørgensen 1990:31f; Jørgensen and Nørgård Jørgensen 1997).

In quite another part of Sweden a similar perspective of a bird is created on the helmet found in the boat grave Vendel XIV, Uppland in eastern central Sweden (Figure 2). A bird flying down with the wings held together, and with "eyes" on the wrists composes the nose guard. Foils with warriors and birds on their helmets, and with swords, shields and spear also decorate the helmet. The male grave is one of many extremely rich equipped boat graves. Hjalmar Stolpe dated Vendel XIV to the later part of the 7th century, but Birgit Arrhenius places the grave earlier, between 560 and 600 AD (Stolpe and Arne 1912:53ff; Arrhenius 1983)

The south Scandinavian female jewellery expresses the same animal art style and decorative elements that are found on helmets, weapons and button-on-bow brooches in the Mälaren region and Gotland during the 7th century. The

similar animal art style with clear female connotations in south Scandinavia has connections with men in central Sweden. The bird brooches belong to phase 1C and D, and the typological element groups (EKG) 2 and 3, which have no geographic delimitation in Scandinavia, are dated to 600–680/700 (Højlund 1991).

The position of the proposed diving position of a bird of prey has connotations of female jewellery in southern Scandinavia, and is a male warrior attribute in the central part of Sweden. What kind of relations between these archaeological contexts can be seen?

Another pictorial bird, formed during the same period of time, gives renewed perspectives: birds in profile-formed bird brooches associated with female graves, and mountings on shield and saddles in the aforementioned rich boat graves. These bird images have been interpreted as birds of prey and even as having associations with falconry by Bo Petré (Atterman 1934; Nerman 1969; Petré 1984). Birds of prey in different images connect south Scandinavian women with women and men in central parts of Sweden, Öland and Gotland, but they also have eastern and western connections, as the bird profile and falconry are known from other parts of Europe. But what about true birds of prey and ravens in archaeological contexts?

True birds in graves

Generally speaking, bones of birds of prey are found in graves, but nowhere are bones of ravens found either in graves or at settlements or ritual places. Chronologically, graves with birds of prey range over a period of 500 years, with the earliest at the end of the 5th century. They are mainly situated in eastern central Sweden, but there a few of them a little southwards, but not in southern Scandinavia. Large mounds with male and female cremations, bodies of horses and dogs, parts of sheep, goat and cattle were equipped with luxury items, partly from abroad (Vretemark 1983; Sten and Vretemark 1988).

Several species of birds of prey, the most common being goshawk (Table 1), indicate that vegetation and the landscape scenery evoke different kinds of hunting methods and different species of bird of prey. The prey was also placed in the graves, such as crane and duck. The archaeological contexts and the bones of birds certainly indicate that falconry was a skill in the period of the bird brooches.

TABLE 1. Birds of prey and prey in 34 Swedish "falconry graves", 500–1000 AD (after Tyrberg 2002).

Species	Number of graves
Goshawk *Accipiter gentilis*	28
Peregrine falcon *Falco peregrinus*	5
Gyrfalcon *Falco rusticolus*	4
Sparrowhawk *Accipiter nisus*	3
Eagle *Aquila chrysaetos*	2
Eagle *Aquila chrysaetos/Halianthus albicilla*	1
Merlin *Falco columbarius*	1
Eagle Owl *Bubo bubo*	13
Teal *Anas crecca*	1
Goldeneye *Bucephala clangula*	1
Red-breasted Merganser *Merganser serrator*	1
Duck *Anatinae sp.*	5
Black Grouse *Tetrao tetrix*	3
Capercaillie *Tetro urogallus*	1
Hazel Grouse *Bonasia bonasia*	2
Crane *Grus grus*	5
Golden Plover *Pluvialis apricaria*	1
Snipe *Gallinago gallinago*	1
Pigeon *Columba* sp.	1
Starling *Sturnus vulgaris*	1
Crow *Corvus corone*	1
Fowl *Gallus gallus*	19
Geese *Anser anser/Anser* sp.	15

Falconry

Falconry is a skill, and a lifestyle. People have trained falcons and hawks for hunting for over a thousand years. Falconry is a cooperative scheme of many years' standing between the falconer and the bird of prey. Falconry is supposed to have been introduced to Europe from Eastern Europe, perhaps pictorially expressed as early as in the gold bracteates of the 6th century (Åkerström Hougen 1981).

The earliest legislation on falconry is the Salic Laws from the reign of Clovis I, the first king of the Franks (*c.* 500 AD):

> If anybody steals a hawk from a tree, and he is proved guilty, besides the return (of the object) and the informer's fee, he shall be judged liable to the extent of 120 dinarii, which makes up 3 solidi. 2. If anybody steals a hawk from a perch, let him be judged liable to the extent of 600 dinarii, which make up 15 solidi. 3. If anybody steals a hawk from inside the household, and he be found guilty, let him be judged liable the extent of 1,800 dinarii, which make up 45 solidi, besides the return (of the object) and the informer's fee. *Add 1.* If anybody steals a sparrowhawk let him be judged liable to the extent of 120 dinarii, which make up 3 solidi, besides the return (of the object) and the informer's fee. (after Epstein 1943:506)

But there were also other similar laws in other western countries, which shows that falconry already existed, but also that the sport had developed into a mania of the time (Åkerström-Hougen 1981). Evidently falconry was a custom that was widespread in the upper classes, as we also can interpret the Scandinavian archaeological contexts. In the Vallentuna burial, a very well equipped male cremation just north of Stockholm, Sweden, the grave gifts with one horse, four dogs, steaks of sheep, cattle and pig, birds of prey and their prey, luxury goods among them a dice with runes, interpreted to mean "hawk" (Figure 3). Is this possibly the name of the dead warrior, a *rinker* (Sjösvärd *et al.* 1983)?

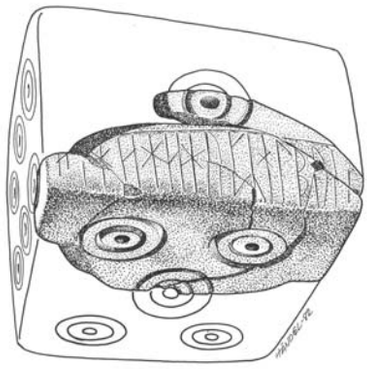

FIGURE 3. The die from Vallentuna, Sweden, *c.* 600 AD (after Sjösvärd *et al.* 1983).

The bird brooches and falconry

The bird brooches found in women's graves evoke falconry, an aristocratic form of hunting which is also attested in the bones in richly equipped graves, and the brooches and mountings with birds of prey in profile. Falconry is no doubt linked to the aristocratic consumption of game, perhaps for the table but also as an icon for wealth and social abilities.

The interpretation of the bird brooches as representations of birds of prey and falconry relies on associations between archaeological and written sources from the time in question. When bird brooches and the birds in profile on the Vendel helmets are interpreted as ravens with reference to Old Norse mythology and war, it is without considering other archaeological sources. The material culture in Scandinavia and in other areas indicates connections with Roman cavalry and an aristocratic political life to the west and the east. The ability and lifestyles must have an all-embracing importance in alliances, negotiations and wars. However, it might be possible that Odin's ravens are represented in the archaeological material, as for example the bird facing a woman and a man on the picture stone Lärbro, Stora Hammar, Gotland (Lindqvist 1941: fig. 85), flying in courtship. However, it is questionable whether Old Norse mythology gives answers to pre-Christian iconographic representations, and this is an ongoing discussion in the field of archaeology and history of religion.

FIGURE 4. Whose identity? Two perspectives on bird brooch U 263 from Uppåkra, Skåne, Sweden. Length: 55 mm. Photo: B. Almgren, Historical Museum, Lund University.

The large amount of metal finds in Uppåkra has been connected to ongoing metal handicraft and production for many centuries. The use of the bird brooches as pendants, and the secondary use of them as metal scrap, indicates that the bird brooches had symbolic and economic value beyond their use in female grave rituals from the 7th century. Uppåkra was a place of impressive economic and ritual importance for many centuries in the first millennium AD (*e.g.* Hårdh 2002; Larsson 2002, 2004). The site also could be interpreted as a crucible, a melting pot, important in ideological changes as old items were melted down and new ones were produced.

Lifestyle and identity

The bird brooches have a changing biography, as grave gifts, pendants, and scrap metal. The burial custom could be characterised as a grave language, understood as a kind of montage, and significant for the persona of the dead but also an activator of norms and values, memories and traditions, networking and regeneration, as well as religion and mentality in everyday life. The grave is a kind of montage of lifestyle attributes, and a ritualisation of the dead. As in life, the staging of dead person and the *persona* became visible.

The graves are installations of wealth and materiality, and richly equipped burials have a large package of attributes for several lifestyles. These rich graves probably represent a grave language in its whole complexity, and they hint at interpretations of lifestyle metaphors also of persons in graves with not as much of wealth and materiality (Jennbert 2006b). So, what do the birds represent more than the proposed falconry? Certainly, the generosity and affluence of wealth was related to power and prestige. The pictorial language of the bird brooches was part of a communicating social elite. But what about the male masks on the bird brooches?

On quite a few of them a male mask is situated on the bird's back (Figure 4). Bearing in mind that the pictorial perspective of the brooches signals a physical movement of the bird, the male mask signals different messages depending of how the brooches were worn. Male masks are also formed on other objects, not only during the same period but in earlier and later centuries as well. A good example is the aforementioned brooches with a bird of prey in profile, some of these brooches a male mask is placed on the bird's hip.

To sum up, the association between bird brooches and birds of prey, and a male face to female jewellery makes the wearer and the male person quite interesting. Whose is the prey? The bird brooches and the connotations of falconry

decode both a social identity and a lifestyle, expressed in the aesthetics of the time. Obviously, the bird brooches signal a message within the social elite, between men and women, and in continental networking in eastern and western directions. The gender issues are supported with ideological preferences at the time. Thus, the large numbers of bird brooches, and other metal objects, at Uppåkra also represent contemporary travelling, objectified in the production and remoulding of elegant handicraft.

Acknowledgement

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English revised by Alan Crozier

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DEBORAH OLAUSSON

On the road

Paving stones past and present

Prelude

IN 1980 KRAFTS TORG, the plaza east of the apse of the Cathedral of Lund, underwent renovation. This involved tearing up the asphalt street and replacing it with a pedestrian area covered in paving stones and grass. From the windows of our adjacent offices on the third floor of Kraftstorg 4, Lars and I had a bird's-eye view of the work. The paver, on his knees or bent double at the waist, chose each paving stone from the pile placed in front of him. Rotating the stone cube in his hand and examining the six surfaces, he decided on the best placement. With a metal hammer he scraped a surface in the bed of sand prepared for it, placed the stone, and hammered it in place with a few decisive blows. Slowly and painstakingly the crescent-shaped pattern of paving stones grew in an advancing wave until the last stone was laid, completing the stone pavement and once again sealing the underlying layers which constitute the foundations of this medieval city.

Having grown up in the United States, I find it fascinating to walk on the stone pavements which cover the streets and sidewalks of Lund. As in any modern city, Lund's streets must be opened for repairs and to install equipment and cables to meet the demands of modern technology. After each operation the pavers are back in place, patiently hammering in the paving stones which had been removed and once again creating a smooth surface for cars and pedestrians. I imagined I was witnessing a craft tradition with roots in the Middle Ages, perhaps as old as the 1,000-year-old city of Lund. Who made these hundreds of thousands of paving stones? Was there any skill involved? Paving stones are an example of lithic technology of a different sort. How and where were the stones made? How have we managed to keep alive the know-how needed to lay the stones in this modern age of efficiency and mechanization?

Paving past and present

The earliest street levels in Lund date to the early 12th century. They consist of a cobblestone pavement covered by a lime-mortar layer. In the latter part of the century large parts of the major streets and squares in Lund were covered with timber pavement consisting of massive beams of primarily oak. A new street level, formed during the 13th century, was paved with slag, probably the by-product of craft activity carried out along the street. By the 14th century the main street in Lund was paved with leather scraps, also from production along the street (Magnusson Staaf *et al.* 1995).

FIGURE 1. A small paving stone (Sw. *smågatsten*) from the streets of Lund. 8 x 8 x 10 cm. Weight 2.2 kg. Photo: B. Almgren, Historical Museum, Lund University.

In Stockholm between 1200 and *c.* 1850 streets were paved with naturally rounded pebbles collected from the town's surroundings (Cramér 1992:73). Nielsen (1994:25) maintains that the work of laying cobblestones was entrusted to professionals, and he cites an account from 1440 in which Nils Stenläggare (*stenläggare* = stone-layer) receives payment for paving work in Stockholm. The practice of paving streets with cobblestones began in earnest in Sweden during the 1700s and up until 1845 it was the house owner's responsibility to keep half the width of the street in front of his property paved (Cramér 1992:73; Nielsen 1994:9).

A fundamental change occurred in the second half of the 19th century with the introduction of dressed stone. The first type of paving stone used was called *storgatsten* (large paving stone). Each stone was 10 to 12 cm. wide and 12 to 30 cm. long and weighed 12 to 17 kg. Streets paved with *storgatsten* functioned well for 15 years if traffic was at most 2,500 horse-drawn vehicles per day. If the street was torn up and repaved with the same stones it would last for another 15 years. However, large paving stones were expensive and in 1907 Swedish engineers decided to test the smaller paving stones (Sw. *smågatsten)* which began to be used in Germany in 1890. These stones are cubes 8 to 10 cm. on a side and they cost less than the larger stones (Figure 1). The following advantages were noted: they are resistant to wear, create less dust, facilitate street cleaning, provide good traction

FIGURE 2. The Herrgården quarry on the island of Tjurkö in Blekinge. The photograph, probably taken about 1890, shows how thirty years of quarrying have rearranged the previously forested island. The picture manages to capture all stages of paving stone manufacture. In the upper right-hand corner we see a drilling team at work. One man is holding the drill while two others hit it with their sledgehammers. Down in the quarry pit a stonecutter is about to split a block into two paving stones. A man in the dump heap to the left is removing bumps from the side of a paving stone with a hammer and chisel. Behind him another trimmer is standing at his workstation and next to him is a pile of paving stones ready to be measured. Photo: Hjalmar Falk, Blekinge Museum.

for horses, are quieter, cheaper, and more attractive (Nielsen 1994:19ff).

By 1912 small paving stones were increasingly replacing other types of paving in Lund and elsewhere in Sweden (Cramér 1992; Nielsen 1994; *Värna och vinna staden* 2001:56). In 1930, 6,541 men or 57 % of the members of the stoneworkers' union were employed in the paving stone industry (Rehnberg 1973:20), but by 1933 the use of small paving stones had reached a culmination (Cramér 1992:75; Nielsen 1994:22). Asphalt was becoming increasingly popular, chiefly due to the lower cost of production and use. Rehnberg (1973:20) notes that a calculation made in 1950 showed that paving with small paving stones cost 22 Swedish Crowns per square meter, as compared to a cost of 9 Crowns for asphalt.

During the 1960s and 70s, Swedish towns and cities were swept up in the throes of modernism and paving stones were considered an old-fashioned throwback. Asphalt or cement blocks became the preferred paving material and many stone-paved streets were covered over with a layer of asphalt.[1] In 1971 32 % of the streets in central Lund were paved with asphalt, compared to 68 % with paving stones. Five years later, in 1976, the figure for asphalt had risen to 40 % (Stadskärnans omvandling 1976:26). However in the 1980s the cultural value of paving stones was recognized and stone experienced a renaissance. Nowadays paving stones are often preferred for cultural-historically valuable streets and squares. Lund has passed an ordinance whereby streets within the medieval city walls are to be paved with paving stones, if possible (Nathéll 2000; *Värna och vinna staden* 2001:57).

High quality paving stones can be reused many times and today they constitute valuable property (cf. *Anläggare snattade kommunens gatsten* 2003). Today one can buy small paving stones for 7 Swedish Crowns per stone or 489 Crowns per square meter (Stenbolaget 2006). When paving stones are discovered under asphalt they are usually recovered and stored for later use (Cramér 1992; Nielsen 1994; Stenhuggarens plats 2002).

Making paving stones, a labor-intensive process

The manufacture of small paving stones in Sweden began in the middle to late 19th century and reached a peak in the 1930s (Åkesson 1986). By 1940 most of the industry was defunct (Åkesson 1986; Carlsson 1993; Nielsen 1994). While some attempts were made to mechanize aspects of the manufacturing process (see below), to all intents and purposes it remained a trade which was practiced by hand and passed on from father to son.

Swedish granite and gneiss are especially tough and resistant to weathering (Andersson 1911:64). Since the greatest demand for Swedish paving stones in the early days of the industry came from Denmark, Germany, England and Argentina, quarry locations in proximity to the coast were sought in order to facilitate shipping. The major centres for paving stone manufacture in Sweden were in Bohuslän and Halland on the west coast and Blekinge on the Baltic (Andersson 1911; Åkesson 1986; Nielsen 1994). Domestic demand was generally met by opening local quarries adjacent to towns (Cramér [1976] 1984; Låås [1959] 1984).

Thanks to published and filmed interviews with the craftsmen who participated in the industry, we have first-hand knowledge of the process. The stonecutter in Blekinge used the term granite for all the stone he worked. He divided granite into two types, namely *bräcksten* and *klyvsten,* corresponding to granite and gneiss. *Bräcksten* can be split in any direction while successful splitting of *klyvsten* required knowledge of internal planes in the stone. The experienced stonecutter could distinguish the planes in *klyvsten* by eye (Lidström 1938:120).

Interestingly, two informants noted that stonecutters generally used woodworking terms when describing how they worked granite. Granite was said to possess qualities similar to wood; for instance it was more easily split in one direction than in others. When an experienced stonecutter dressed stone with his hammer the process was said to resemble splitting wood: the sides of the stone came out flat and even, without protuberances or depressions. An inexperienced stonecutter often failed to produce clean stones and was forced to trim the stone afterwards (Lidström 1938:121; Låås [1959] 1984:14f).

The process of making large or small paving stones was as follows (Figure 2): A large block of 10 to 20 cubic meters was quarried by blasting. This block was then split into successively smaller blocks by means of wedges driven into holes. These holes were drilled by hand using a metal drill and a sledgehammer. Lidström's informants noted that the placement and appearance of the drill holes were a measure of the stonecutter's skill. Blocks were split into rectangles whose size depended on the size of the paving stones being made. The stonecutter chiselled a line on one side of the rectangle, then turned the stone and hit it with a chisel over this line until the rectangle split into two halves. This process continued until cubes of desired size were produced. The final step involved trimming the faces and removing any uneven spots. Trimming was done by direct percussion with a metal hammer or by indirect percussion with a chisel and hammer. Smooth faces and standardized size were the mark of quality in paving stones because these facilitated the paver's work (Lidström 1938; Nilsson 1973).

Lidström's account also describes the methods used to transport the paving stones to the quay. Horse-drawn carts could be used or small railways constructed. More primitive were the so-called *harar*. These were boards linked by ropes enabling the bearer to carry a load of paving stones on his back. Surely the least desirable means was to carry a load of stones under each arm with the help of one's jacket. The result of this method was said to be a worn-out jacket and sore ribs (Lidström 1938:149ff).

As the industry grew and became more professional the larger quarries installed cranes for lifting blocks as well as machines for transporting and loading stone onboard the boats. Mechanization of stonecutting, however, never caught on. In 1906 a machine for splitting small paving stones was introduced in Bohuslän. The heavy machinery was noisy and dangerous. Informants in the film *Skärvor från en svunnen tid* (Andersson and Johansson 2004) tell of numerous injuries to hands and fingers and the union tried to stop such machines by forbidding even non-skilled workers from using them (Andersson 1911:25). Furthermore, the quality of machine-made stone was considered inferior to what the skilled stonecutter could produce. By 1930 the machines were phased out (Andersson and Johansson 2004).

The Second World War and the increasing use of asphalt at home and abroad wiped out the market for Swedish paving stones by 1940. Stonecutting in Sweden did not die out entirely, but by 1970 there were only 600 stonecutters in all of Sweden (Andersson and Johansson 2004). Today the city of Lund buys its paving stones from a company which sells stones from Swedish quarries as well as from Poland, Portugal, Finland, India, and China (Nielsen 1994; Stenhuggarens plats 2002; Hjort, personal communication 2006; Tibbelin, personal communication 2006; A. P. Sten 2006). Paving stones from the European countries are all machine-made (Hjort, personal communication 2006). However Fjellman Jaderup (2006) describes a growing protest movement in Sweden against Chinese import because of the poor working conditions for the Chinese stonecutters, implying that much of the work there is still done by hand. According to Fjellman Jaderup, one-third of Sweden's current import comes from China.

The stonecutter, a skilled craftsman

Measured by modern standards, working conditions in the quarries in the industry's heyday were primitive and harsh. Nevertheless there was no dearth of labor since the work was piecework and a skilled stonecutter could earn far more

than in many other jobs available at the time (Frykman 1969:12).

In order to avoid silicosis from inhaling the dust all day the stonecutter preferred to work outdoors (Låås [1959] 1984:12), erecting a simple windbreak of boards and burlap as protection from wind and rain. Låås describes the difficulties of finding one's tools and blocks under a fresh layer of snow on winter mornings (Låås [1959] 1984:25). The terms of a formal agreement 1907 to 1910 between the Swedish Granite Industry and the unions representing the employees is described in Andersson (1911:106). This specified a 10-hour working day Monday through Friday and 8 hours on Saturday for half the year, 8-hour days the other half. During the darker months the stonecutters used kerosene lamps (Forsström 1978:5; Låås [1959] 1984:25).

The health risks associated with these conditions were chiefly rheumatism, silicosis and injuries to eyes, arms or legs (Andersson 1911:158ff; Låås [1959] 1984:25). Vacation, sick leave and retirement benefits were nonexistent, according to Låås ([1959] 1984:24).

Because most of the paving stones made in the Swedish quarries were exported, the industry was especially sensitive to foreign trade conditions. In regard to the situation in Blekinge, Lidström describes periods of depression resulting in unemployment among the stonecutters at frequent intervals: 1870–71, 1894, 1906, and 1914 (Lidström 1938:151f). In many instances the Swedish government interceded with financial support (Frykman 1969:15); nevertheless many stonecutters were forced to move often in search of work (Johansson 1973).

As with all occupations involving handiwork, skilled stonecutters were recognized and admired by their peers. Andersson and Sjölin describe a stonecutter more than 70 years old who still practiced his trade in 1977:

> To him the stone is a living thing with which he is well acquainted. He knows how to place wedges in each stone so that it will split exactly according to his intentions. His knowledge cannot be found in books [my translation](Andersson and Sjölin 1978:6).

Time and again informants described in almost mythical terms the skill of the best stonecutters; a skill which was said to be dependent on native talent supplemented by instruction from an experienced stonecutter. This sort of myth building is probably one of the reasons for the strong resistance to splitting machines described above.

Informants agreed that the best stonecutters were themselves sons of stonecutters. These boys generally began helping out in the quarries from the age of 10 and by age 15–16 they were considered skilled workers (Nilsson 1973:52; Låås [1959]1984:26; Carlsson 1993:23f). Twenty-one percent of those surveyed in 1909 had started work before the age of 14 (Andersson 1911:85). Besides the admiration of his peers the skilled paving stone cutter also enjoyed a higher salary since, as mentioned, work was on commission (Frykman 1969:12; Andersson and Johansson 2004).

FIGURE 3. Stone pavers at work in Lund in July 2006. The paver photographed said he had been plying his trade for 30 years. He is employed by a stone paving firm which serves all of Sweden. Photo by author.

Stonecutters were also admired for their independence and envied by those forced to obey a foreman in a factory (Forsström 1978:5). According to Låås employers were at times forced to resort to bribes of beer in order to persuade the stonecutters to do their bidding (Låås [1959] 1984:152). Pride in his work was an important motivating factor for the stonecutter (Johansson 1973:121), as it is for all undertakings requiring skill.

At smaller quarries each man quarried and worked his own stone while at the larger works blocks were quarried by less skilled workers and delivered to the stonecutters to be cut and dressed (Rehnberg 1973:17; Quirin 1984:1; Carlsson 1993:16) The most skilled workers were drawn to the larger quarries since they could produce at a higher rate there.

How many paving stones did an experienced stonecutter make in a day? Unfortunately the written sources are silent on this point. One informant in the film *Skärvor från en svunnen tid* (Andersson and Johansson 2004) talks about an uncle who could make 1,000 small paving stones in a day. If this is accurate, it is a truly impressive feat!

The stone paver, also skilled

In 1994, the Federation of Swedish County Councils commissioned a handbook on how to lay paving stones. The book, cleverly titled *Tillbaka till stenåldern* which means Back to the Stone Age, has as its aim to satisfy what was seen as a growing need for instruction about the art of laying paving stones. The author laments the reduction of practical knowledge about this craft, resulting in poorly laid and ugly stone pavements in Swedish cities. Luckily, he writes, a number of skilled and experienced stone pavers, who learned the craft by working alongside older pavers, still exist. One of the aims of the handbook is to preserve their know-how in order to make it available to younger generations. It is the hope of the Federation that the handbook will result in an increased use of paving stones in Sweden (Nielsen 1994:1).

FIGURE 4. A stone pavement is more flexible than asphalt. The main square in Lund. Photo by author.

According to Rolf Hjort, the city of Lund currently employs six full-time stone pavers. They have all undergone formal training to learn the basics and the theoretical background but Hjort notes that they can only be considered fully qualified after several years' training working side by side with an experienced paver (Hjort, personal communication 2006).

Stone paving is manual work and it involves bending and stretching (Figure 3). The stone paver works on his knees or bent at the waist. Each stone is chosen and laid by hand. The Federation commissioned a study in 1990–91 to try to find ways of reducing the wear and tear on the stone paver but the conclusion was that further mechanization of the work was not possible (Nielsen 1994:7f).

Paving stones in the postmodern age

We archaeologists are sensitive to the messages people convey through material culture. In Lund, paving stones carry a powerful message about Lund's 1,000-year-old history. Odd, then, that paving stones prove to be no more than about 100 years old. An organization calling itself *Gamla Lund* (Old Lund) was formed in 1918 with the purpose of "keeping the town's historical legacy alive" (Gamla Lund 2006). *Gamla Lund* has been a strong voice in promoting the use of paving stones in central Lund, even in the face of complaints from handicap organizations and older citizens about missing stones and uneven surfaces (Nathéll 2004; *Lunds handlingsplan för skydd mot olyckor* 2005). The practice of paving with stone cubes is not a historical relic, however; modern people have adapted it to suit modern needs and regulations (Figure 4). For instance, rather than painting the white stripes marking a zebra crossing on grey paving stones, white paving stones of marble, quarried in Närke in Sweden (Nielsen 1994:31), now mark the white stripes (Figure 5). The paving stone has also become a symbol of the anti-globalization movement in Sweden after

FIGURE 5. White marble paving stones ready to be laid at a pedestrian crossing in Lund. Photo by author.

protesting youths at the EU summit in Gothenburg in 2001 pried up paving stones and used them as missiles against the police (Hydén 2001). As a cyclist, I appreciate the fact that glass shards from broken bottles tend to be swept into the fissures between the paving stones, where they do no harm to tires. Cigarette butts end up there too, however, difficult to remove and creating an environmental hazard (*Var slänger du fimpen?* 2005). Modern street cleaning apparatus is too efficient for stone pavements. The powerful suction removes the sand from between the stones, leading to instability and shifting. A new technique, which involves filling the cracks with a mixture of sand and wax and heating it in place, is available, but too expensive for extensive use (Nathéll 2000).

As a resident of Lund since 1976, I have observed these conflicts and witnessed the renaissance of the paving stone. *Gamla Lund* has succeeded in instilling a sense of pride and history in the citizens of Lund, readily apparent when the city celebrated its 1,000-year anniversary in 1990. The entire medieval city is protected as an Ancient Monument and archaeologists employed by the Kulturen Museum appear anytime a hole is dug. Although my investigation surprised me by revealing that paving stones as such are hardly a medieval phenomenon, nevertheless I would say they are intended to convey a message about time-depth. Paving stones do not in fact represent continuity in the *longue durée*. They are not an example of the past in the present; rather they represent our idea of what the past was like. The skill of the paver, on the other hand, does represent an unbroken link with the past.

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Note

1 I found an interesting New World twist on this practice while on a visit to a small town in Colorado. Here round cobblestones were *painted* on the asphalt street.

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PÅVEL NICKLASSON

On the road to discovery

Aerial photography and central places – an example from Halland

Introduction

DURING HIS WORLDWIDE travels Lars Larsson had a central place to return to. The excavations and publication of Uppåkra have yielded vast and long-lasting contributions to the Iron Age research and the understanding of central places and Iron Age society. The row of Uppåkra books fills my shelf with colourful and most useful publications. The Uppåkra project is a source of inspiration for research on the Iron Age of Southern Scandinavia.

One aspect I find particularly interesting is the multitude of methods used to analyse the Uppåkra complex. They range from broad scientific analysis to analysis of particular archaeological artefacts to geographical analysis of the landscape at large. All this is the result of an inquisitive open mind, ready to use and experiment with methods and excavation techniques. I think that the art of employing a multitude of methods and combining different approaches is very important not only for analysing known central places like Uppåkra, but for finding them in less well investigated parts of Sweden. In this paper I will discuss how different archaeological methods can be used to discover and map central places. It is somewhat odd to find that places once central and vital to Iron Age society must be pieced together from the tiniest of fragments.

The central place of Stafsinge, Halland

In 1998 I led the excavation of a Bronze Age farm at Stafsinge outside Falkenberg in Halland (Nicklasson 2001; 2002). During the excavation we found two farms from the Late Bronze age, Montelius period V. We also found the somewhat more diffuse and scattered remains of a farm from the Pre-Roman Iron Age. A cultural layer containing pottery and other objects belonging to the underlying houses and other constructions covered the settlement area. The excavation showed that there were uninterrupted settlements in the area for several hundred years.

A disturbing fact was that the cultural layer alongside the artefacts from the Bronze Age contained high-status objects from the Late Iron Age and Middle Ages. Among the objects are glass beads, a bird-shaped brooch, a weight, a spur, garnets and fragments of glass beakers. No houses or other structures could be linked to these artefacts. The soil in this part of Halland consists of light sand and it is possible that an Iron Age settlement, overlying the settlement

FIGURE 1. Map of the Ätra valley showing Stafsinge close to the modern city of Falkenberg.

from the Bronze Age, has been completely destroyed by many years of tillage. These kinds of objects had, until then, only been found in Halland at the famous settlement at Slöinge (Lundqvist 2000a, b).

At the very end of the excavation at Stafsinge, some trenches were dug into an area that early on had been left out of the archaeological project. It had been said that the area did not contain any ancient monuments. In the trenches postholes, hearths and other features saw daylight in vast abundance. The topsoil was removed and the area was excavated in great haste. Many mistakes were made during the excavation. The site contained a truly great farm the Middle Ages. It should be dated to the late 12th century. Two longhouses, one about 60 metres and one around 40 metres long formed the nucleus of the site. Around them at least

two smaller outhouses were excavated. The largest of the longhouses was probably a cow house and barn, with living quarters for some servants. The other longhouse is a dwelling house with kitchen and a large room or hall. Analysis of samples of charcoal from postholes showed that both the longhouses were built of massive oak. Some glass found in one of the houses is dated to around 1300 and may indicate when the farm was abandoned.

In the area of Falkenberg and Stafsinge there are several old stray finds that in the light of the excavations at Stafsinge, indicate the presence of a central place or rich Iron Age settlement. There are, for instance several Viking Age silver hoards and a richly ornamented silver sword hilt, also from the Viking Age. The town of Falkenberg was founded in the late 13th century and one could assume that central functions were moved from Stafsinge, situated further inland, to a site closer to the coast. A fortress was built near the mouth of the river Ätran and since then the central place in the area has been the town of Falkenberg. Like Uppåkra, Stafsinge and Falkenberg show a long continuity of central functions for several hundred years, in fact the central place is still in function in the region.

From the finds in the area it must be concluded that there was a chieftain's manor or a central place near the mouth of the river Ätran from the Late Roman Iron Age or the Migration Period at the latest. It is still in function in the form of the town of Falkenberg. The central place could have been transformed several times, beginning as a chieftain's manor, as indicated by the high-status finds from the Late Iron Age. Then it changed into a trading place, as indicated by the silver hoards from the Viking Age. Later still, it became a medieval manor where taxes were collected, as indicated by the huge manor and fenced areas where livestock could be gathered. Finally, the central place was transformed into a rural fortified town as indicated by Falkenberg and Falkenbergshus.

The beginning of the central place coincides with the earliest finds at the central place of Slöinge some 20 kilometres to the south. The parallelism of the central places could indicate that the Iron Age society went through a major transformation in Halland during the Late Roman Iron Age and Migration Period. The Slöinge settlement was abandoned during the 10th century while the central place in Stafsinge still continued to function and develop. While the central places developed they demanded supply from a growing hinterland. Perhaps the land was not enough to supply two close central places and only the central place at Stafsinge survived into the Middle Ages.

Much of this is speculative thought. There is a lot of work still to be done to understand societal development in the Ätran valley during the Iron Age and Middle Ages. Considerably less archaeological and historical research has been done in this part of Sweden than in, for instance, southwest Scania or the Mälaren valley. The discovery of the central place was a surprise.

Further research

It is easy to understand that the information obtained by the rescue excavation was unexpected and that further investigation of the area around Stafsinge and Falkenberg should be done in order to understand how the area functioned during the Late Iron Age and Middle Ages. To continue the research some colleagues and I formed a project with the name The Ätran Valley in the Middle Ages. The project has carried out excavations and studies in several locations along the lower reaches of the river Ätran. The main purpose is to understand and analyse the societal development in this part of southern Sweden. Our results thus far have been published in a project volume (Nicklasson 2005b).

During 2002 and 2003 excavations were carried out on the medieval fortress of Sjönevadsborg situated on an island in the lake Sjönevadssjön (Nicklasson 2005a). The fortress is mentioned in the medieval cadastre Kung Valdemars Jordebog from around 1230 AD. The fortress was tied to the Danish kings and the royal manor that according to Kung Valdemars Jordebok was located at Sjönevad. Our excavations indicate that the fortress was built in the late 12th century and the scant artefacts indicate that the place was in use for only a short period of time. The fortress could tentatively be linked to the medieval manor at Stafsinge. The fortress and the manor were built at around the same time. They could both have been part of the kings' strategy to better control the frontier province of Halland. Perhaps Sjönevadsborg was abandoned around the time when the Falkenbergshus fortress was built at the mouth of the river Ätran. This fortress is better strategically located, both for defence and for controlling transport and trade along the Ätran valley. All the medieval royal fortresses in Halland were built close to the river mouths, from the Lagan in the south to the Viskan in the north. Most of them can be dated to the 13th century, either by excavations or by written records. Sjönevadsborg is the only exception. It is earlier and located inland in a small lake. The fortress of Sjönevadsborg was perhaps built more to emphasise the royal power than to really serve a military purpose. The second half of the 12th century could be the time when the king was able to push his position forward and claim the right to extract tax in this part of the kingdom.

A survey of old maps has been carried out on the locations of several of the royal manors in Halland mentioned in Kung Valdemars Jordebok. Especially the kings major property at the village of Faurås in the Ätran valley has been studied (Sanglert 2005). It is more or less possible to reconstruct where the royal manor is located in the modern landscape, and how much land belonged to it. The royal manor at Faurås should be roughly contemporary with the manor at Stafsinge. The Stafsinge manor indicates what a royal manor looked like, even if it was not royal property. The presence of the manor proves that the king was not the only powerful person in this part of Halland. Local magnates could build manors well worthy of a king.

FIGURE 2. Stomma Kulle, the mound and the standing stone on top of the ridge. The ancient monuments are overlooking the excavated area at Stafsinge 116. The photographer is literally, not knowingly, standing on another mound. Photo by the author.

The old parish church of Stafsinge, now just a ruin, was partly excavated in 2002 and 2003 (Nilsson 2005). The purpose was to date the church and to establish if, and how it was connected to the nearby medieval manor. The small excavation that was carried out could of course not answer all the questions concerning the construction of the medieval church. The oldest finds were some coins from the middle of the 13th century. The date corresponds well to the nearby manor that was built somewhat earlier. This shows that there was a connection between the church and the manor. The magnate at the manor was most likely responsible for the construction of the parish church. The location of the manor and the nearby old church could be the reason that the border of the modern parish of Stafsinge runs just a few hundred metres from the monuments. When the manor was abandoned the administration of the landscape was reformed and that which once was central found itself on the periphery.

Halland from above

Our project has aroused local interest. An employee at the County Administration in Halmstad showed some aerial photographs to me. The photographs had been taken on two separate occasions. The first set of pictures is from 1995 and the second from 2002. The National Land Survey had shot the pictures, to be used as a basis for maps. They are also called orthographic photos. The photographs are taken from around 4,500 metres altitude. The original aerial pictures are at a scale of 1:30,000. The photographs overlap so as to enable a stereoscopic view, which enable three-dimensional study of the pictures. The film used in 1995 was an infrared film while the film from 2002 was an ordinary black and white one. The infrared film has some special qualities described as:

> The sensitivity of IR colour film extends to wavelengths longer than those perceptible to the eye. Living vegetation reflects sunlight vigorously and in species-specific ways within this wavelength range. The film has therefore been found very useful for various types of vegetation surveys. Ground moisture and soils are also easier to interpret on IR colour pictures. The film does not render colour normally due to its sensitivity and special structure. For instance, objects with high IR reflection – chiefly vegetation – are depicted in various shades of red, which give the pictures their character (Boberg 1984:79).

On the picture from 2002 the trenches from the excavation in 1998 are still open. It is easy to navigate in the surrounding areas. West of the excavation some other areas were excavated as well. In one of them, called Stafsinge RAÄ 118, a glass bead was found. This could indicate that the central place covered a large area or that it was moved several times.

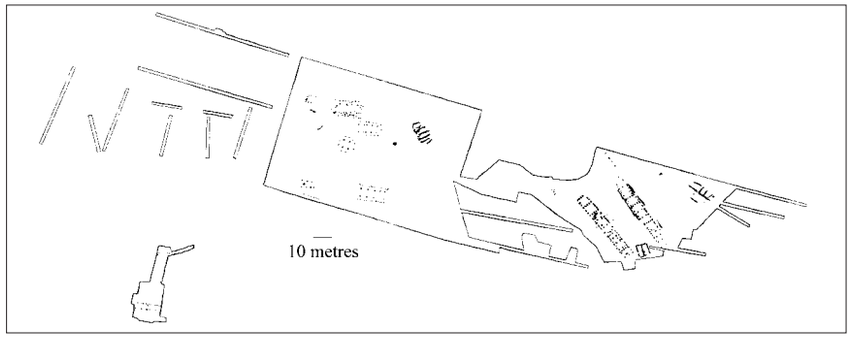

FIGURE 3. The excavated trenches at Stafsinge 1998. The farms from the Bronze Age are situated in the western part of the big trench. The huge medieval manor is in the eastern part.

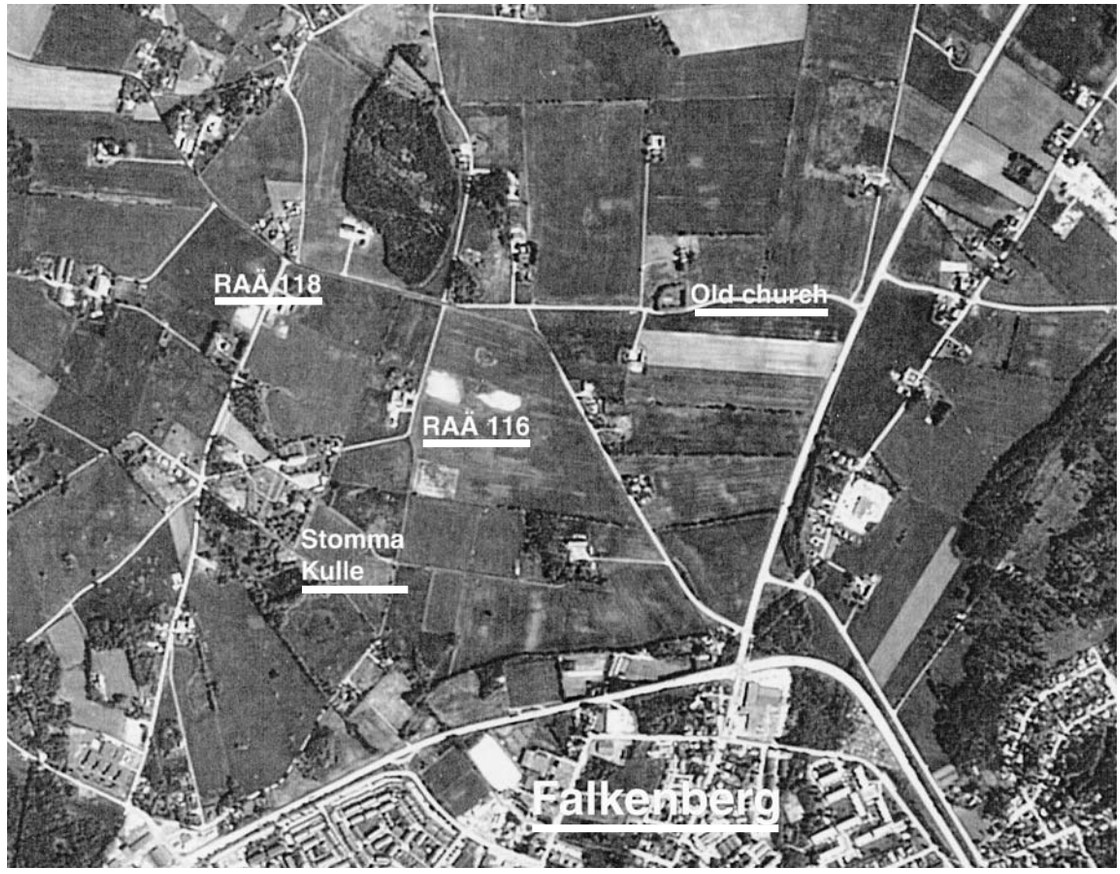

FIGURE 4. Aerial photograph from 2002 showing the area around the excavated site. Places of interest mentioned in the paper are noted. The area is about 4.5 km in east west direction. Lantmäteriverket Gävle 2002. I 2006/297.

The ruin of the medieval church is visible some hundred metres north of our excavation. On the highest part of the ridge at Stafsinge, the mound of Stomma Kulle is clearly visible. The ancient monument is truly impressive. It is a mound about 20 metres in diameter, situated on the highest part of the ridge. Besides the mound there is a huge standing stone, about 4 metres high. Around the mound, mostly hidden in the brush, there are some additional small stone-settings. This is one of the most imposing ancient monuments in this part of Halland. Some drunken soldiers excavated the mound during the Danish-Swedish wars in the 17th century. They just found some broken pottery, but before they had fully excavated the mound, green-nauseating fumes engulfed them, and they had to abort their work. Or so the story goes. The mound has not been excavated since, and the dating of the mound is uncertain.

The picture from 1995 shows the area in another light. In the field just north of Stomma Kulle there are at least three cropmarks from mounds of the same size as Stomma Kulle and one cropmark from a somewhat smaller mound. This means that instead of a sole mound with some smaller stone-settings and a monumental standing stone, there was a cemetery with several monumental graves on the top of the ridge. The four hitherto unknown mounds are not visible from the ground.

It is strange that the cropmarks were discovered on the photographs from 1995 but not on the ones from 2002. This may be due to the IR film used in 1995. It may work as an X-ray for ancient monuments below ground. The IR spectra catch small differences in moisture and heat in the ground. On the other hand, the IR film is less useful on fields with growing crops than ordinary black and white film. The X-ray effect is caught by the vegetation and what is shown on the pictures are just solid red areas. Other factors that influence the different sets of pictures are of course weather and light conditions, the time of the day and the moisture in the soil.

There are indications of additional prehistoric graves around Stafsinge in the early cartographic material (Connelid 2004:369f). These are nowadays either badly damaged or totally destroyed. I have so far not been successful in locating these ancient monuments on aerial photographs. Earlier historians or travellers do not mention these monuments. It is thus possible that they were of more ordinary dimensions and not nearly as spectacular as the mounds at Stomma Kulle. It may therefore be much harder or even impossible to locate them on aerial photographs. Perhaps the mounds and other graves at Stomma Kulle represented a burial ground connected to the nearby central place. The other cemeteries may be connected to the ordinary farms and settlements.

The question of when the mounds at Stomma Kulle were destroyed remains to be answered. The popular belief is that most ancient monuments situated in farmland were damaged in relatively late times, mostly in the 19th or even the

FIGURE 5. Aerial photograph of part of the same area shown in figure 4 taken in 1995. The picture was taken before the big excavations in the area took place. North of Stomma Kulle cropmarks of at least four mounds are clearly visible in the soil. Three of the mounds have the proportions similar to the visible mound on the ridge. This must have been one of the most spectacular cemeteries in this part of Halland. Lantmäteriverket Gävle 2002. I 2006/297.

20th century. In the case of Stomma Kulle we could be almost certain that the mounds had been overploughed a long time before. In 1864 Gustaf Brusewitz visited the area around Falkenberg. He made notes on several ancient monuments and made drawings of some of them (Brusewitz 1950 (1864)). He made a drawing of the standing stone at Stomma Kulle, but he did not draw any cemetery on the ridge. Even the drawing is a disappointment. It only shows the standing stone. Brusewitz did not draw anything of the magnificent view from the top of Stomma Kulle or any of the other monuments or buildings visible from the crest. He did certainly make such drawings from other parts of Halland. Those drawings would have been priceless in analysing the time before the modern-day landscape around Stafsinge. Brusewitz does not mention anything about an imposing cemetery on the ridge. That could be taken as evidence that the mounds had already been destroyed. Even the story of the soldiers in the 17th century is of interest here. Only one mound is mentioned in their story. Probably we could take this as an argument that the other mounds had already been destroyed. The destruction could be due to a number of reasons. Of course the field could have been tilled and the mounds could have been destroyed in the process. In the archives there are also several documents recording disputes between antiquarian authorities and farmers in the area regarding gravel digging on the ridge. Perhaps the mounds were early victims of this activity.

Aerial photography has been used previously in Halland to locate ancient monuments. Before the building of a road an archaeologist saw some aerial photographs of the area around Sannagård in Vinberg parish, close to Stafsinge. On the pictures the outlines of a 50-metre long ship-setting is shown (Artelius 1996; 2000:84). The monument was identified as Stenkyrkan, an ancient monument described by the early Halland historian Jonas Bexell, who visited the place in as the early 19th century (Bexell 1961 (1818)). Despite the promising results from Stafsinge and Sannagård, achieved to a large degree by chance, aerial photography has not been used to systematically analyse ancient monuments in a larger region. The results show that it is fully possible to discern ancient monuments from the air. For Stafsinge the result is that another piece of the puzzle to understand the central place encountered there has been found. The mounds are not dated, but a monumental cemetery would fit into the air of grandeur and status necessary for the prestige of a central place. For Sannagård the monument and a nearby Viking Age cemetery (Artelius and Arcini 1996) with several high-quality objects in the graves, is a precursor of the nearby royal manor at Faurås, probably established in the 12th century. Faurås was also one of the biggest villages in Halland. The rediscovered monuments make it easier to understand the structures of power in the area.

There are both possibilities and problems in using aerial photographs for finding ancient monuments. The possibil-

ities are of course that it is possible to discover unknown or damaged ancient monuments. In Halland the light and sandy soils should be very good for aerial study (Ericsson 1992:19). The National Land Survey photographs every part of Sweden with orthographic pictures at intervals of between five and ten years. It is thus possible to compare pictures from different years. Photographs could have been shot in different light, at different time of the year and of the day, all influencing the possibility to discern ancient monuments hidden in the earth. A complicating fact is that the maps are at a small scale, 1:30,000. This means that it may be possible to discern big monuments like the mounds at Stafsinge and the ship-setting Stenkyrkan at Sannagård, but not ordinary graves or other smaller remains.

Concluding remarks

The study of central places is an arduous task. It demands the use of a multitude of methods and an open mind willing to try new roads to discovery. What once was central has been shattered by time, oblivion and reshaping of the landscape. In the paper I have presented my ongoing work with the central place at Stafsinge outside Falkenberg in Halland. The research on central places must continue for many years and several methods must be tested in order to reconstruct the landscape around the central places. Lars Larsson's work with Uppåkra has been a formidable source of inspiration during the process.

The excavations carried out at the old parish church at Stafsinge show that the church is contemporary with the medieval manor excavated in 1998. In the project the excavation at Sjönevadsborg and investigations of early maps of Faurås have resulted in a deeper understanding of the medieval period in the Ätran valley. It seems that the second half of the 12th century was a dynamic time. The king established a firmer grip on central Halland with the royal estates, the fortress Sjönevadsborg and through representatives as in Stafsinge.

The results from the investigation of aerial photographs from Stafsinge have yielded very good and surprising results. Several damaged and hitherto unknown mounds have been discovered. The method could very possibly be used for other sites excavated as parts of research projects or in the very large rescue excavations. Especially suited are areas with light soils, like Halland. It is fully possible that a systematic search on the aerial photographs could change our view of the presence of ancient monuments in many areas.

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BERTIL HELGESSON

Aladdin's lamp from Starby

Novelty, antique or souvenir?

Introduction

STRANGE ARCHAEOLOGICAL OBJECTS from strange places are always attractive to archaeologists. A little oriental oil lamp found in a field in northeastern Scania, Sweden, is perhaps not so impressive, but seen in context it may tell one or even more exciting stories. In the famous fairy tale of "Aladdin and the Magic Lamp" the genie offered Aladdin three wishes. After I tried rubbing the lamp for several hours, still no genie appeared, so I decided to give myself three wishes anyway.

The first wish

In this part I wish to describe the oil lamp from Starby (for places in Scania, see Figure 1) and try to figure out in which historical context it might be seen. The lamp was found in 1975 in the southernmost part of Starby parish in northwestern Scania, Sweden. It was found in a field about 250 metres to the south of a farm and about 170 metres to the north of Lerbäck, which is a small stream and also the boundary to the neighbouring parish, Kvidinge. The lamp was found by a farm-hand when ploughing the fields and was handed over to Gunnar Olsson, the owner of the farm. Today, the lamp is a part of a farm collection which is owned by Gunnar Olsson's son Ingmar Olsson (I am greatly indebted to Ingmar for kindly letting me document the lamp). The finding spot for the lamp is registered by the National Heritage Board as ancient monument number 9 in Starby parish.

The lamp (Figures 2 and 3) is 98 mm. long, 65 mm. wide and 30 mm. high. It is oval in shape and has one small hole for the wick at one side and a small handle on the other. On the top there is a large hole with a diameter of 21 mm. for pouring in the oil. The lamp is made of burnt clay, is thin-walled and has plastic geometric ornamentation. The colour is light brown. The oil lamp is of Palestinian/Syrian origin (Pentz 2003). The type is sometimes called Islamic if there are Arabic inscriptions on them (*ibid.*). This Starby lamp has no inscriptions. In other cases lamps of this type are mentioned as Byzantine oil lamps or just Palestinian oil lamps. This type of oil lamp has a very broad dating, from the 4th until the 11th century. Pentz believes that the Starby specimen might be dated rather late in this period, from the late 8th century until the 11th century (*ibid.*). Since the dating of the lamp is very broad, there are several historical events which connect Scandinavia with the Palestinian/Syrian realm.

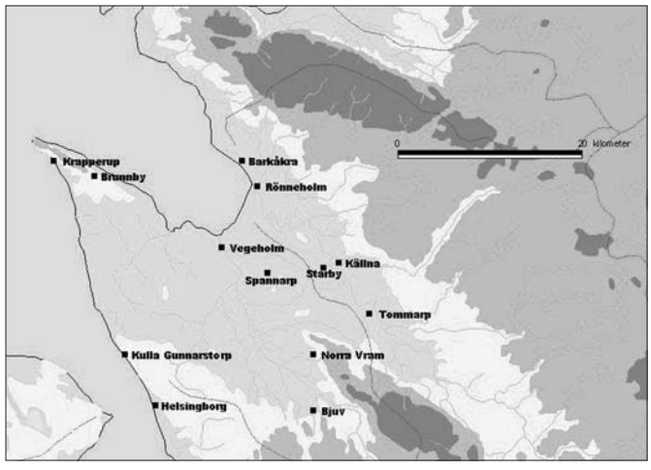

FIGURE 1. Map of northwestern Scania with places mentioned in the text.

Towards Constantinople and further to the East

The expansion of Arabic power in the mid 7th century meant that Palestine and the surrounding areas became a part of the Muslim world (Read 2003:63–75). Before the mid 7th century these areas were a part of the Byzantine Empire. After the disintegration of the Arabic world in the 8th century, parts of these areas were re-conquered by the Byzantines. It has long been believed that Scandinavian Vikings reached Constantinople in 839 and thereafter began a connection between Scandinavia and the Byzantine world. For a long time about 500 Scandinavian warriors were mercenaries in the Varangian Guard, with the main purpose of protecting the Byzantine emperor (Graham-Campbell and Kidd 1980:58). In the mid 10th century the Byzantine realm had almost reached Jerusalem (Read 2003:86). The Scandinavian warriors in the Byzantine army were gradually replaced by Anglo-Saxon soldiers in the mid 11th century (*Bra Böckers Lexikon* 25:73).

Contacts with the Arabic world are indicated even earlier by finds of Arabic coins from the late 8th until the late 10th centuries. These coins are most common in archaeological finds from southern Scandinavia as well as from Scania during this period (Hårdh 1976; von Heijne 2004). Archaeological material that might indicate contacts with the Byzantine Empire are more seldom discussed. A small amount of Byzantine coins from this period has been found, many of them in hoards (Hårdh 1976; von Heijne 2004).

FIGURE 2. The lamp. Size 98 x 65 mm. Photo: Evelyn Thomasson, Regionmuseet, Kristianstad.

FIGURE 3. The lamp. Photo: Evelyn Thomasson, Regionmuseet, Kristianstad.

Most of them can be dated from the mid 10th until the mid 11th century (*ibid.*).

The contacts with the Arabic and Byzantine worlds, as mentioned above, might be a reason why the lamp reached Scania during the Viking Age. Scandinavians could very well have visited the areas where the lamp was produced during a period of almost 200 years. It may have been brought home by someone who had joined the Varangian Guard. An alternative is that the lamp reached Scania together with the stream of Arabic silver coins from the late 8th until the late 10th centuries. This event must have been quite unique since no oil lamps, and no other Arabic objects, have been found so far. The lamp was surely a novelty in Viking Age Scania and also a souvenir from a foreign country. It must have been apprehended as something special and valuable in Viking Age and early medieval society.

The will of God

In 1095 Pope Urban II called the Christian world together to conquer Jerusalem (Read 2003:91ff). His motive for this was that "God wanted it". This was the starting point for the crusades, and the first crusade ended with the conquest of the Holy City in 1099 (*ibid.*:102). After the conquest of Jerusalem four states were founded in the eastern Mediterranean area by the crusaders. Towns and castles were built to keep power. The new states were feudal in nature but rather weak compared with the western European states which the crusaders came from. Sufficient numbers of soldiers were always lacking. The new Christian areas were not given up by the Muslims and the Christians had to fight to maintain their power (*ibid.*:107–335). New crusades were organised for a period of almost 200 years to keep power, but the struggles were all in vain. The fall of the town Acre in 1291 can be seen as the end of the crusades. The Muslims re-conquered the former Christian areas and the crusaders towns were ruined (*ibid.*:271ff).

Most of the crusades were organised from France but there were several other countries represented among the soldiers. Even Scandinavians joined several crusades. We know that a Danish prince Sven, probably the son of King Sven Estridsen, was on his way in 1097 to join the siege of Antioch in present-day Turkey close to the border with Syria. He travelled together with 1,500 men. Sven was delayed and his troop was attacked and all men were killed (*Nordisk Familjebok* 1918:937; Carelli 2001:248). Danish crusaders are also known from 1188 and 1191, and as late as 1232 (Carelli 2001:249).

The crusades lasted for about 200 years and there must of course have been several opportunities for crusaders to bring home a little oil lamp. We know that men from Denmark as well as other parts of Scandinavia were active and it is fully probable that the lamp belonged to one of them. We also know that this type lamp was out of production at this time but that didn't matter. The lamp was from a country far abroad and reminded the crusader of his events. The lamp of course impressed his relatives and friends. Surely it was both an antiquity and a souvenir.

Visiting holy places

Crusaders were one rather large group from Scandinavia, but several sources also mention pilgrims. Written sources document that pilgrims travelled from Scandinavia to Jerusalem, the pilgrims' primary goal (Carelli 2001:244). In the second half of the 11th century, in the famous work of Adam of Bremen, the sea route from Ribe in Denmark to Acre in present day Israel is described (Andersson 1989:176f). Adam obviously received his information from the Danish king, Sven Estridsen. A Norwegian king, Sigurd Jorsalafar, probably followed a route similar to that described by Adam. He left Norway in 1108 and travelled to the Holy Land via England and Santiago de Compostela

in Spain (*ibid.*:177). The king's surname means "traveller to Jerusalem" (Carelli 2001:246). An Icelandic abbot, Nikulás Bergsson of the Order of St Benedict, made a pilgrimage to Jerusalem via Norway, Denmark, Rome, Bari and Acre. From Bari to Acre he travelled by ship. In the 1150s he wrote the oldest known itinerary from Scandinavia, where he describes his travels (Andersson 1989:177f). We also know about the Danish king Erik Ejegod who died in 1103 in Cyprus on a pilgrimage to Jerusalem (Andersson 1989:197; Carelli 2001:245).

Pilgrimage developed during the 11th and 12th centuries (Carelli 2001:244) and during the early 12th century the larger centres for pilgrimage began to produce special badges (*ibid.*:248). These badges became very popular among the pilgrims as visible proof of the pilgrimage. No such badges from the Holy Land are known from Scandinavia. All of them are produced in Western Europe and Scandinavia (Andersson 1989:161). The pilgrimages were a personal sacrifice (Carelli 2001:244) and of course the oil lamp could be seen as a contradiction to sacrifice. Noblemen travelling to the Holy Land were used to comfort and of course they did not travel alone. There must have been many people escorting the pilgrims, and anyone could have been able to bring the lamp back home.

Modern travellers

There is always a possibility that the lamp was brought to Scania by tourists in the 20th century. Unfortunately, there are few statistics about tourists from Scandinavia to foreign countries but some tendencies are clear. Charter tourism started on a large scale in the 1960s but most travellers went to Spain, Italy and Greece (Fritidsresor 2003). Charter tourism to Israel started in the 1970s, but not to other areas in the eastern Mediterranean until much later. This opens the opportunity that tourists brought the lamp to Scania as a souvenir. On the other hand (and this is my personal opinion as a farmer's son) farmers before the 1970s always kept animals and seldom had any holiday. If they had any days off they did not go to Israel but to some relatives or a beach nearby. It seems unlikely that the lamp was brought to Starby by a tourist.

The second wish

In this part I wish to describe the archaeological context of the lamp and try to figure out what historical context made it reach Scania. This will be done by discussing archaeological and historical sources in comparison with the four historical situations described above.

Logically it seems unlikely that the lamp could have been brought to Scania by a tourist in the 20th century. The lamp was found in a field and it is a wonder that it wasn't broken by the plough. Since nobody on the farm knew about a missing oil lamp, we must believe that it actually was deposited a long time ago. There is always a possibility that the lamp belonged to somebody who lived on the farm a long time ago, who lost it. A fancy oil lamp from abroad would be kept inside the house, and who would lose such a thing 250 metres from their house? If it had been found close to the house this "losing" explanation would have been more plausible. It seems more likely that the lamp was deposited in the ground a long time ago, and perhaps the find spot was once settled.

The parish of Starby lies in the northwestern part of Scania and south of Rönne å which is the main river in this part of the province. The distance to the coast is about 12 kilometres. The parish church in Starby was built around 1200 (Åsbo Släkt- och Folklivsforskare 2004–2006) but has been rebuilt for several times. Starby was mentioned for the first time in 1404 (Starby parish, RAÄ:21), and there is also another village, Ugglarp (Starby parish, RAÄ:26), which might be of medieval origin. Otherwise there are no ancient monuments or finds from the parish which can be dated to the Viking or early medieval periods (late 8th to 11th centuries). This might be supplemented by the fact that there are no written sources which connect Starby with the Palestinian/Syrian area.

If we look at northwestern Scania as a whole, the picture is somewhat different. The connections with the area of interest during the first period discussed above might be seen in Arabic and Byzantine coins. Arabic coins are known from Barkåkra, Raus, Brunnby (three hoards) and Helsingborg (von Heijne 2004:217f), all dated between 892 and 954/55. The amount of coins is 288 and most of them can be dated to the latter part of the period. As mentioned above, Byzantine coins are less numerous than Arabic coins and only two examples are known from this area. A Byzantine coin is known from a hoard from Källna with t.p.q. 1042 and from Bjuv comes a single find of a coin dated to 1028 (*ibid.*). It is obvious that there were contacts, direct or indirect, between northeastern Scania and both the Arabic and Byzantine realms during the period of interest. This could indicate that contacts were more intense with the Arabic than the Byzantine area. On the other hand there is a chronological gap between the coins. Arabic coins dominate in the find material from Scania from the late 8th until the late 10th century, even if they occur in the find material until the late 11th or early 12th century (*ibid.*:215ff). All Byzantine coins from Scania can be dated from 976 until 1047 (*ibid.*) and are most likely to be connected with the Varangian Guard. That the oil lamp came to Starby with the flow of Arabic coins or was owned by someone in the Varangian Guard are two plausible explanations.

Crusaders were perhaps first and foremost recruited from the nobility. Many manors where the nobility lived are known from northwestern Scania: Kulla Gunnarstorp in Allerum parish, Krapperup in Brunnby, and a ruin of manor close to the church in Brunnby, Vegeholm in Strövelstorp, Spannarp in Ausås, Tommarp in Kvidinge, Rönneholm in

Rebbelberga and probably also one deserted manor in Norra Vram (Ödman 2002:38ff). This opens for the possibility that crusaders from northwestern Scania joined the crusades. However, no manor is known from the parish of Starby or in the immediate vicinity. It would have been likely that the oil lamp was found in a noble milieu if it was brought to Scania by a nobleman or his servants. There is always a possibility that there once was a noble manor in Starby but this is contradicted by the fact that medieval noble manors commonly are known either archaeologically or through written sources. Therefore it does not seem likely that the lamp was brought to Starby by crusaders.

The fourth group discussed here are pilgrims. If pilgrims came from northwestern Scania their presence might be seen in badges and the written sources. As mentioned above, no badges from Jerusalem are known from Scandinavia. The written sources yield no further information. No pilgrims are known from the area. Therefore it also seems unlikely that the lamp was brought to Starby by pilgrims.

So, finally, the main question remains: was the lamp a novelty, an antiquity or a souvenir? This brief survey speaks for the oil lamp reaching Scania either together with the flow of Arabic coins or as a object brought back home by someone who had joined the Varangian Guard. This is hard to prove but an archaeological excavation of the find place might shed light on this problem. This is a project for the future. The lamp was most certain a novelty since oil lamps are almost totally unknown in archaeological material from Scandinavia. The lamp was also a souvenir from far abroad and of a kind that nobody else owned.

The third wish

This third wish is personal: Lasse! I wish you a very pleasant 60th birthday.

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FAR AWAY PLACES

EVA SVENSSON

Plants as archaeological problems and possibilities

Plants as artefacts

IN AN ILLUSTRATED book for children from the early 20th century, *Blomsterfesten i täppan*, the author Elsa Beskow (1998) describes how anthropomorphic plants and flowers from different ecological settings, such as the forest, the garden, the meadow and the water, all celebrate the traditional party of Midsummer Eve. The plants are given human characteristics in accordance with their respective roles and appearances in the agrarian landscape. Their internal relationships and hierarchies are also decided from a human perspective, such as the conflict between the weeds, which are locked out from the party in the garden, and the plants of the gardens and the fields (Figure 1).

To Elsa Beskow plants and flowers were intimate and integrated parts of everyday life, but for most modern people plants belong to the garden, the flowerpots and nature. They are commodities that can be bought in various forms, gazed upon in different outdoor settings, and tended with care to add beauty to our lives. But in past times, and not that far back in time, plants of different kinds carried meaning, were loaded with magical qualities, and were used for a number of purposes such as medicine, cooking, dyeing etc., which is well known and documented from early modern times (Svanberg 1998; Tunón *et al.* 2005).

From an archaeological perspective plants are an overlooked phenomenon. We know that a number of plants were used for a variety of reasons, but we rarely encounter their remains in archaeological contexts. Or are we simply overlooking them? Do we lack the tools to turn plant remains into archaeological artefacts?

FIGURE 1. Plants of the meadow arriving at the party on Midsummer Eve. After Beskow 1998:7.

Plants at settlements

One of the first places to look for plant remains would be in macrofossil or pollen material from settlement contexts. At and around settlements, plants were used, consumed and also grown. And, of course, plant remains are often found in such contexts. But what sort of plants?

During the 1990s, together with several colleagues, I excavated four medieval settlement sites in Värmland in western Sweden: the castles of Saxholmen and Edsholm (Röjder and Schedin 2004; Pettersson and Svensson 1997, 2000), the farmstead of Skinnerud (Emanuelsson *et al.* 2003), and the small hamlet of Skramle (Andersson and Svensson 2002a). The localities were dated to *c.* AD 900–1250 (Skinnerud), *c.* AD 1250–1350 (Skramle, Period III), *c.* AD 1250–1300 (Saxholmen) and *c.* AD 1370–1434 (Edsholm).

The excavations were fairly extensive, covering large parts of the settlement areas, and included many samples taken for macrofossil analysis. At Edsholm the conditions for preserved macrofossil plant remains were very good, as the castle had been burnt down in 1434, and there were large quantities of carbonised macrofossil material. From Skramle pollen samples were also collected from the infield areas.

In spite of ambitious sampling, and in the case of Edsholm good preservation conditions, the results of the analyses were quite monotonous, limited primarily to cereals and flax. From Saxholmen there were also small quantities of juniper berries and hazelnuts, and from Edsholm a single seed of raspberry (Andersson and Svensson 2002b:70, 72 and sources cited there; Emanuelsson *et al.* 2003:53f and sources cited there; Engelmark 1997; Engelmark undated). It appears that porridge, bread and non-spiced food dominated the diet of both aristocratic and peasant households.

FIGURE 2. Why not? An assortment of healthy vegetables (not present in the macrofossil material). After Swanström 1999:154.

Perhaps such a dreary and boring diet was a particular phenomenon of the cold Scandinavian climate, and the results from these four sites may therefore be compared with two Dutch settlement sites: the castle of "Oude Huys" (Helmond) from the early 12th to early 14th centuries (Arts 2001) and the small hamlet of Huis Malburg from *c.* AD 1050–1225 (Oudhof *et al.* 2000). According to the respective non-cereal macrofossil material, peaches, plums, hazelnuts, walnuts and acorns had been consumed at Oude Huys, and peas, beans, strawberries, poppy seeds, dill and mustard at Huis Malburg. The macrofossil material from the Dutch sites thus indicate the presence and importance of gardens as sources for a richer, more varied, and spicy diet (Figure 2).

The Dutch material shows that the "vegetarian" side of the medieval diet could be more than bread and porridge. Although growing conditions in Holland were better than those of western Sweden, there is reason to believe that the people of western Sweden cultivated and consumed a greater variety of plants than just cereals, for example, turnips and cabbage. Also, people consumed plants for other than dietary purposes. However, at neither the Dutch nor the Swedish sites are there any indications of plants with non-food related purposes, such as medicinal plants. It is possible that the remains of such plants are less likely to survive in the macrofossil record, or perhaps we have been sampling the "wrong" contexts? We could try to look at the context where many such plants were likely to have grown, *i.e.* in the landscape beyond the settlements.

Plants in the landscape

From later periods we know that many plants, used for a variety of purposes, were collected in meadows, forests and other landscape settings (Svanberg 1998). Such use of the landscape goes beyond the traditional divide between what is labelled a cultural landscape and the so-called natural landscape on the other. However, there is a growing understanding of the mutual importance and interdependence of natural and cultural/historical conditions in the landscape. Of special importance here is the increasing awareness of what may be termed the biological heritage in the landscape (Emanuelsson 2003).

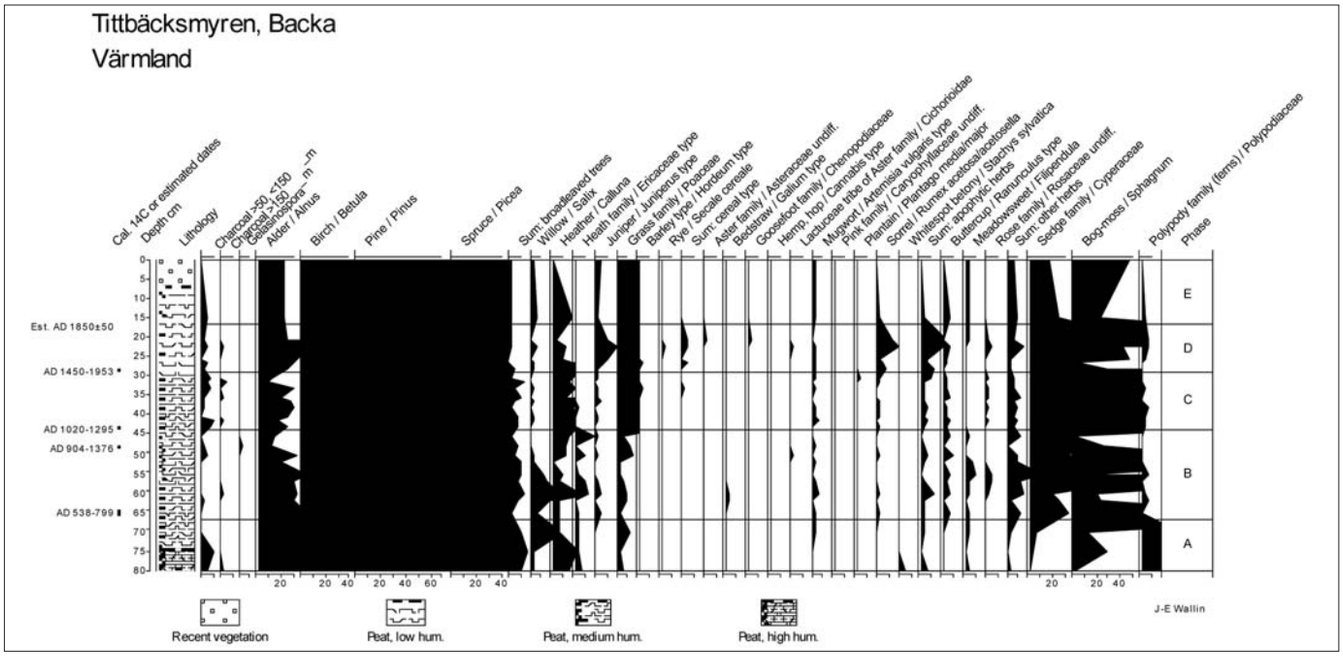

FIGURE 3. Percentage pollen diagram from the peat core from Tittbäcksmyren. Diagram by Marie Emanuelsson. After Emanuelsson *et al.* 2003:101.

Problems do however exist as regards how to analyse the human usage of wild plants in older times, when they do not occur as macrofossil remains at settlement sites. Pollen analysis would seem to be the best available method, highlighting vegetation history. Returning to Värmland and the above-mentioned farmstead of Skinnerud, or rather the farm's forested outland, a number of recently conducted pollen analyses are available for study.

The cores were sampled in mires in forested, hilly areas, without any ancient monuments indicating cultivation, settlement or meadows in the vicinity. However there was reason to believe that the mires had been used for haymaking in early modern times, and that this form of land use may have had its origins in medieval times. The pollen analyses were initially carried out in order to study the introduction of the practice of haymaking. When analysed the peat cores revealed that cereal cultivation on fertilised fields had been common, and that the forests had been used for grazing cattle in older times, whereas haymaking was a relatively recent phenomenon, in the majority of cases being introduced in early modern times (Emanuelsson *et al.* 2003).

From the perspective discussed in this article, it is wild plants used for various purposes that are of interest. A pollen diagram from one of the investigated mires, Tittbäcksmyren (Figure 3), is relevant to this discussion. The pollen diagram, as it has been interpreted from a land use perspective, shows that grazing and possibly haymaking were conducted in the area from around *c.* AD 600. Around AD 1200 the forest grazing was intensified and haymaking positively confirmed. About 200 years later cereal cultivation was introduced. These activities went on at the site up to recent times, but always conducted as outland activities, as there was no settlement close by. And nobody visiting the site today could guess that the dense forest and hilly terrain could hide an agricultural history.

With grazing, haymaking and cereal cultivation there followed other vegetation changes, although many of the plants represented in the pollen diagram were present even before the more permanent human impact on the landscape. It may therefore be discussed whether the plants should be considered as wild or not, and whether some plants with useful properties, in benefiting from human use of the landscape, were further promoted for collection.

Several of the species in the pollen diagram had uses known from early modern times. Willow, heather, juniper, bedstraw, mugwort, hemp, sorrel, meadowsweet and buttercup could be used for medicinal purposes both for people and animals, as spices, in dyeing, as food when necessary, and as raw materials in various products. Plants such as willow and mugwort also had magical properties (Svanberg 1998).

The pollen diagram does not show whether these plants were collected and used, only their presence. Also, a pollen analysis indicates only what was growing at a particular place during a particular period of time, and not the vegetation of a larger area. For instance, there were no traces of butterwort in the pollen diagram from Tittbäcksmyren, although small quantities of butterwort, an important ingredient for the production of sour milk, are often found growing by the mires in the area (Figure 4).

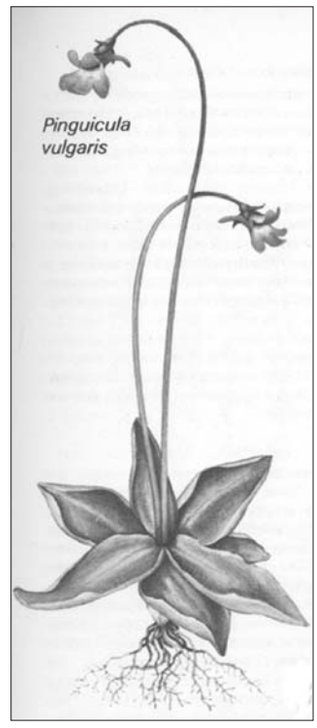

FIGURE 4. Butterwort, *Pinguicula vulgaris*. After Launert *et al.* 1983:155.

Another problem is that there is reason to believe that there were special places for collection of different plants. The collectors most likely went to sites where they presumed, by habit and tradition, the plants they were looking for were growing. This means that there were special "plant maps" in people's minds, an often overlooked landscape perspective. As many plants with a presumed use preferred growing conditions available in settings where pollen sampling would be difficult or impossible, pollen analysis has limitations when trying to study a landscape pattern of plant collection.

I would like to add an additional element to the methodological analysis of such "plant maps", namely the gender perspective. Whereas most of the ancient monuments, especially in forested areas, may be related to male activities, collection of plants was often a female task. By adding plants to the cultural landscape, women and their importance would become more visible (Svensson 2005:165ff).

Plants on the road

So far I have discussed problems in how to demonstrate the use of various plants in contexts where a certain usage might have been expected. But there are also examples of discoveries of the use of plants. A good example is the tapestry of Överhogdal that was discovered in north-western Sweden in 1910. In the 1990s the tapestry was radiocarbon dated to the 10th–12th centuries. Of interest here is that the figures on the hanging tapestry are woven in wool from Nordic sheep, and dyed in colours made by alizarin from madder, 'indigo' from woad, and weld (Figure 5; Oscarsson 1994; Butler and Nicholson 2001).

Madder does not grow in Scandinavia at all, whereas woad and weld are native to Scandinavia, but not to Överhogdal and the surroundings. Woad grew along the Baltic coast, and to some extent also on the west coast of Sweden, whereas weld can still be found in small quantities growing in the southern part of Sweden. The red, blue, yellow and green

figures on the hanging tapestry of Överhogdal were thus the result of trade/exchange based on plants.

Dyes, or plants for dyeing, must have been important commodities in both prehistoric and medieval times. But how were they grown, collected, processed and traded? Were there attempts to use local plants as substitutes for imported ones? In Sweden, for instance the bearberry, growing throughout the entire country, was used for dyeing (*Den virtuella floran*, *färgväxter*).

Although many plants were growing around settlements, there were always species with special qualities that could not be found amongst the local flora. Such plants could be objects of exchange. Plants for producing dyes and spices are only two examples that spring to mind, but there were certainly others.

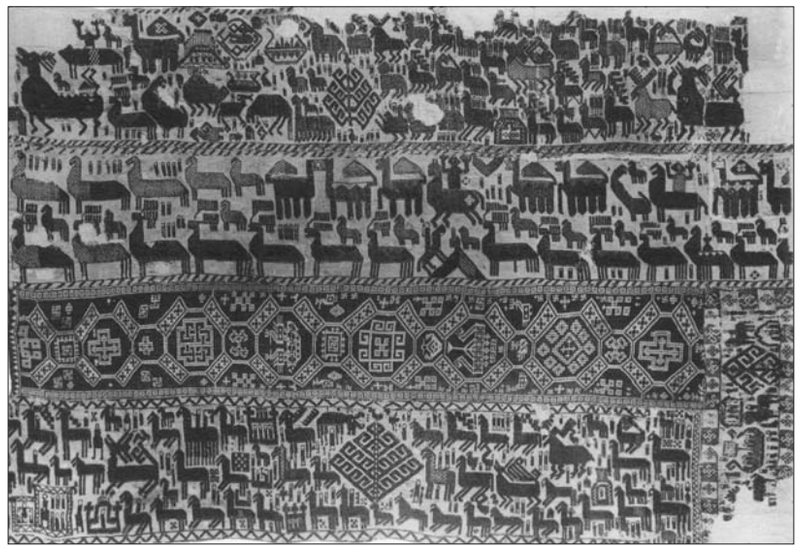

FIGURE 5. The hanging tapestry of Överhogdal. After Oscarsson 1994: inside front cover.

Plants as problems and possibilities

In this article I have discussed some problems connected with the use of plants in older times, and the problems of empirically studying this use. The methods available today are insufficient instruments when trying to address past relationships between people and plants. Still, I would argue that it is an important field of study. As shown by the examples I have discussed, important landscape and gender perspectives, land use, food culture and trade may be brought into focus if we could find ways of turning plants into artefacts.

Plants also carry the capacity to change our image of the past. We often think of prehistoric and medieval times as grey or colourless, with dreary and dull food, and full of hazardous diseases that people were unable to contend with, primarily due to the fact that there are few colours, tastes and cures left from prehistoric and medieval times for us to study. With the help of plants it may be easier to recreate the sparkling colours, occasional delicious meals and the hope of healing that existed in past times.

English revised by Graham Robins

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GRO MANDT

Messages in stone

Long-term tradition – changing meanings

THE PRACTICE OF carving and painting images on rock is usually associated with prehistoric times. There is general agreement that the thousand years old Scandinavian rock art tradition came to an end some time during the early centuries of the Iron Age – possibly at the same time as the introduction of the runic alphabet. The use of stone as a medium for communication, however, did not stop at this time. Both Bronze Age type rock carvings, mainly boats, and runic inscriptions occur on solid rock – occasionally even on the same panel – dated to the Early Iron Age. And the most frequent motif in Bronze Age rock art – the cup mark – appears both in Early Iron Age and Medieval contexts, on grave slabs as well as in mountain summer farm areas. Even in more recent centuries people have carved their symbols in rock: names, initials, years and dates and even animals, as well as more enigmatic patterns. While there is more or less consensus that the prehistoric rock images were made for magic or ritual purposes, the significance of the recent incisions is more ambiguous. Were they made for practical purposes only, such as for example boundary markers or road signs, or did they convey deeper and more complex meanings? Based on a peculiar little "carving" found in the vicinity of Bergen, I will try to elucidate some of the questions arisen by the recent incisions.

The "crown" at Tyssøy

Tyssøy is one of a string of small and large islands along the main ship's channel south of Bergen. On the western side of the island is a wide and sheltered harbour called Tyssøyvågen. A narrow inlet leads into the harbour from the south, and on the eastern side of the inlet several large rocks have tumbled down from the steep hillside. On one of these rocks the peculiar little "carving" is found. In the local community it is named "the crown" or "Tyssøykruna".

The figure is 20–25 cm. high and 8–10 cm. wide (Figure 1). The upper part consists of a double curve incised with relatively deep lines, while the lower part looks like a footprint with marked tows surrounded by a circle of short lines. The figure is, unfortunately, damaged by thick layers of white paint – probably applied locally in order to make it more visible. This complicates the identification of peck marks in order to separate man-made from natural furrows. However, an examination of the figure carried out in 1950, before it was painted, confirms the above description: that it is partly pecked, partly carved, and that it looks like at footprint with toes surrounded by a circle of "beams" (Slomann 1950).

FIGURE 1. The "crown" at Tyssøy looks like a footprint surrounded by a double line at the top and a row of short lines around the lower part. The white paint complicates the identification of peck marks. Photo: T. Lødøen.

The figure has been known in the local community at least as early as the turn of last century, when it was mentioned in writing for the first time (Bendixen 1901). The name "crown", however, has apparently not been attached to it until the 1950s (Slomann 1950; Liland 1957). One explanation for naming the figure a "crown" may be its triangular shape. Otherwise the interpretation of the "crown" is ambiguous. No parallels are known so far, and the dating is an open question. It was not until the past decade that a rather conspicuous interpretation was presented.

Based on a free-hand drawing of the "crown" made in the 1950s (Liland 1957:147) (Figure 2), and supported by the assumption that Tyssøy was a ritual place during heathen and Medieval times, "Tyssøykruna" was in the late 1990s explained as a manifestation of pre-Christian worship and cult (Sulebust 1997:37). Some years later this hypothesis was further elaborated. By means of a deconstruction of the free-hand drawing, it was claimed that the various elements of the depiction represented symbols known from Norse

FIGURE 3. The "crown" is incised on the large flat slab in the centre of the picture. The site can only be reached by boat, but due to the white paint the figure is fully visible from the sea. Photo: T. Lødøen.

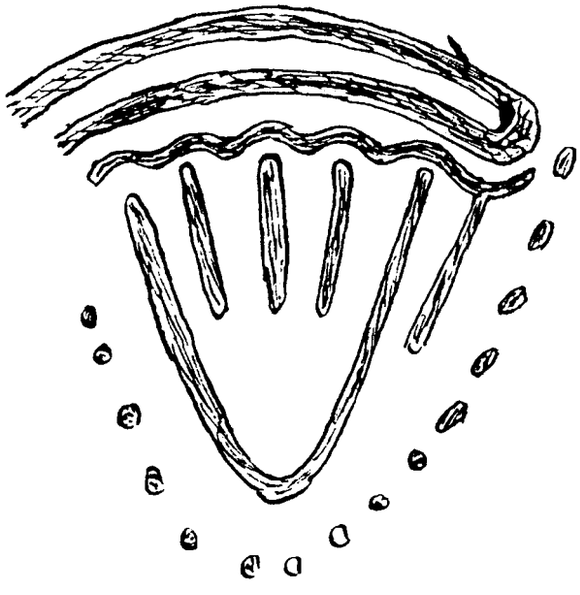

FIGURE 2. The free-hand drawing of "Tyssøykruna", made by a local historian in the mid 1950s (Liland 1957), differs a great deal from observations made on the site by archaeologists both in 1950 (Slomann 1950) and in 2005 (Mandt 2006).

mythology, and the well of Mimir, the Norns Urd, Verdandi and Skuld and Yggdrasil, the tree of life were identified (Lehmann 2001). Thus the figure was seen as a stylized version of the most holy ritual place in Norse cosmology, dating to the transition period between heathendom and Christianity *(ibid.)*.

In order to reach a more plausible dating and interpretation of the figure, I will on the one hand focus on its context – both the immediate surroundings at the inlet and the culture historical context of the island itself. On the other hand I will view the "crown" in a broader perspective in relation to other "peculiar" figures on stone.

Possible dating of the "crown"

The "crown" is situated *c.* 1.5 metres above sea level, on a large flat slab being one of the many fallen rocks on the eastern side of the narrow inlet (Figure 3). The figure was probably made after the rocks tumbled down – otherwise it would be difficult to explain where in the hillside above it might originally have been located. The time of the rockslide is not established. But traces of quarrying in the area may contribute to the dating. The bedrock is chlorite slate,

and a number of peck marks identified on the rocks at the inlet, are comparable to markings usually found in soapstone quarries. This indicates that prospecting or quarrying for soapstone has taken place at the inlet. The rocks situated above sea level – including the one with the "crown" – have probably fallen down in connection with the quarrying activities. Further inland on Tyssøy is a larger soapstone locality, bearing traces of being quarried for building material, most probably of Medieval date. It seems likely that the quarrying activities at the two sites have taken place at the same time. This indicates that the earliest possible date for the figure at the inlet of Tussøyvågen is the Middle Ages.

A glimpse of Medieval Tyssøy

The soapstone quarries are not the only traces of human activity at Tyssøy during the Middle Ages. According to written sources king Håkon V Magnusson founded a church here, dedicated to St. Ludwig, some time between 1305 and 1308 (Bagge 1976:171). Two large, flat stone slabs situated on a hilltop above the harbour are assumed to be the last remains of the church (Brekke 1993:274; Buckholm 1998:33). The stones were probably part of the western or south-western foundation wall, several metres of which was preserved as late as the turn of last century (Bendixen 1901:168). There is evidence that stones from the church were used for building purposes in recent times, thus indicating that the church was built in stone – probably in Gothic style due to the dimensions of the preserved stone slabs (Bendixen 1901:168; Buckholm 1998:33).

The church at Tyssøy is the only one in Norway dedicated to St. Ludwig, who was a French king, canonized in 1297 (Bagge 1976:171). In written sources the church is called "*capella*", indicating that it was not a parish church. Perhaps it was the King's own private chapel, an integrated part of a Royal Estate that is assumed to have been located at Tyssøy (*ibid.*). The tradition concerning a King's Estate at the island is also based on the remains of a boathouse at the harbour, known locally as "The King's boathouse" – "*Kongsnaustet*" (Bagge 1976:171; Brekke 1993:274).

Both archaeological material and written sources thus indicate that Tyssøy was part of the King's sphere of interest during the Middle Ages. The island's central location in the main ship's channel south of Bergen, combined with a sheltered harbour in Tyssøyvågen, might have been regarded distinguishing factors concerning a place to stay for the King on his travels between Oslo and Bergen (Bagge 1976:171). There is also the possibility that the King pegged his claim on the soapstone quarries at the island.

"Peculiar" figures in stone

Although no direct parallels to "Tyssøykruna" are known, I will look more closely into a selection of incisions in stone from later periods than the prehistoric rock art, in order to create a potential interpretive frame for the figure. In Norway such recent "carvings" are found in many places. They include a multitude of motifs, and the reasons for making them are probably just as varied. The most common motifs are personal marks, initials, names and years/dates. Even runic inscriptions are found, as well as symbols of an enigmatic character that are not always identifiable. The majority of the incisions cover the 17th to the 19th century, but even earlier incisions are found. The locations are as varied as the content of the incisions –occurring along the outer coast, in inland valleys and in sub-alpine areas. A brief survey of a number of recent incisions – mainly from Western Norway – will illustrate this diversity. Hopefully it will also present a clue to some common denominators that may explain their culture historical context – possibly even including "*Tyssøykruna*".

The earliest known historic incision in Western Norway is found at a small island called Hennøya, in Bremanger municipality, Sogn og Fjordane. The island is located in close vicinity to the large rock art site Vingen dated to the Early Stone Age. Along this coast the weather is often rough, especially on a stretch of open sea west of Hennøya. On the eastern side of the island, however, is a small sheltered harbour, from earlier days classified as a harbour of refuge. At the beach is a large boulder strewn with a number of personal marks, names and years, together with nine runic inscriptions which Aslak Liestøl has dated to the 13th century (Liestøl 1957). The combination of runes and Latin letters confirms the long-term use of the harbour.

At a number of sites along the coast of Western Norway Latin letters and historic dates occur at the same rock as prehistoric rock carvings. One example is Ausevik in Flora municipality, Sogn og Fjordane, where names, initials and dates from the 18th and 19th century are incised close to and in between rock carvings from the Stone Age (Hagen 1969, Plate X). According to local informants the rock art panels were "in the old days" used as a resting place for fishermen waiting for shoals of herring to enter the fiord.

Another example of re-use of a site – probably in connection with exploitation of resources – is found at a small island called Turøy at the outer coast of Hordaland. A sloping rock known as a good place for fishing salmon is strewn with 20–25 cup marks, Latin letters and other symbols (Geber 1996) (Figure 4). Even another fishing place along the same stretch of coast is equipped with an incision. At a small island called Søre Skjæret a swastika-like figure marks a spot where there is tradition for setting a salmon trap (Shetelig 1936).

A large group of incisions – the earliest probably from the 15th and 16th centuries – is associated with the traffic along the coast. These are depictions of compasses – in Norwegian called "*kompassroser*". They are found all along the coast of Southern Norway, in particular in Rogaland, Aust- and Vest-Agder and Telemark counties. They are between 20 and 70 cm. wide, and have different symbols for marking the

FIGURE 4. Turøy is a small island situated northwest of Sotra, one of the larger islands in the archipelago outside Bergen. The incision appears on a sloping rock on the western side of the island, *c.* 10 metres above sea level, including 20–25 cup marks, Latin letters, crosses and other symbols. Photo: P. Fett.

cardinal points. Often letters and dates/years are incised around the compasses. They are made by pilots on high points, at lookouts and harbours, and used for locating ships in distress at sea (Wikander 1992).

Recent incisions in rock are not solely a coastal phenomenon. Even along the fiords, in inland district and in higher altitudes such "scribbling rocks" (*krotingsberg* or *skrivarberg* in local dialects) are known. They occur both in farmyards, along footpaths from the lowland up to grazing areas, and on mountain summer farms. A few examples from Sogn og Fjordane and Telemark counties can illustrate similarities as well as the multiplicity of this material.

In Hyllestad, a rural area in the outer fiord district of Sogn og Fjordane, two sites can serve as examples of "scribbling rocks" in higher altitudes. One of the sites is located in a summer farm area, *c.* 300 m. above sea level. By a lake on the path to a summer farm is a rock where crosses, initials and dates – the earliest from 1840 – are incised. Even in more recent times it is reported that there has been a tradition for pecking initials in this rock (Bygnes 2001 a). Another site is located in an outlying field, close to a cattle track from the farm up to the grazing area. On a spot with a wide view of the valley and fiord below, there is a crag incised with cup marks, lines and crosses (Bygnes 2001b).

In a couple of small rural communities in the north western part of Telemark "scribbling rocks" appear both in a farmstead, a summer farm and by a path to a mine. One of the sites is found at Håtveit, an old farm with a wide view over the surrounding countryside. On a sloping rock between some houses dated to the 1740s, are a number of incisions including cup marks, initials, years, and a spiral- or ring-shaped figure (a sundial?). The initials and dates can probably be ascribed to a senior civil servant who owned Håtveit in the mid 1700s (Bakken 1978:273).

Another site with "scribbling rocks" is located in a summer farm area by a lake called Tjønnstøyltjønn. On several wide sloping rocks a multitude of letters, initials, years/dates, hand- and footprints and a variety of geometric patterns, such as circles, ovals, squares, triangles etc., are incised (Figure 5). According to local informants some of the letters can be recognized as the initials of people who owned the summer farms in earlier generations (Mandt 2006). In a neighbouring area a small "scribbling rock" is situated along a path leading to a prospect for copper mining. Some initials and the year 1810 are incised in a sloping rock with a wide view of the valley and the lake below (Mandt 2006).

The "scribbling rock" tradition

The above brief survey confirms that people have put their marks on rock for many centuries after the prehistoric rock carving tradition had come to an end. The incisions on the "scribbling rocks" cover a long time span, from the 1200s and to the mid or end of the 1800s. In a number of cases the recent incisions appear to have been placed on the same rocks as for example cup marks – thus indicating re-use of the site at least from Medieval times, in some cases even earlier.

The cup mark is the longest living rock art motif, having been used through several millennia both on rock art sites and in grave contexts from the Late Stone Age to the Early Iron Age (Innselset 1996), and even on Christian burial stones from the Middle Ages (Mandt Larsen 1972). Cup marks were probably also made in the mountain summer

FIGURE 5. Several "scribbling rocks" are found in a summer farm area called Tjønnstøyl in the northwest part of Telemark. The incisions include a wide variety of motifs, from initials and years to more enigmatic representations. Based on the years depicted the incisions cover mainly the 1700s and 1800s. The footprint rendered above may be of some interest in relation to the "crown" at Tyssøy.

farm areas during Medieval times, thus representing a continuation of the earlier cup mark tradition introduced by the pastoralists who started to use the grazing areas in the sub-alpine region around 2,000 BC (Innselset 1996). Maybe the cup marks should be seen as a link between the old and the new incisions on rock – not only in the mountain grazing areas, but even on the "scribbling rocks" elsewhere in the inland and at the coast.

While variations in shape and choice of motifs on the "scribbling rocks" are mainly due to chronological differences, certain common stamps are visible in the locations of the sites. A great number of the rocks are situated along traffic arteries. On the coast they are found by harbours and good fishing places, and inland along paths to summer farms or mining prospects. They also occur in farmyards or in good grazing areas, and many rocks distinguish themselves as lookouts with a wide view of the surrounding landscape – the valley or the ship's channel.

The incisions appear to mark areas where people were going about their daily affairs, places where they moved about a lot, maybe in connection with fishing, tending the animals, keeping lookout for ships in distress. The "scribbling" could also – or at the same time? – be the result of leisure time activities, on Sundays or when resting from work, such as described by Stig Welinder in Nyberget in Dalarna (Welinder 1992). The incisions were perhaps even meant to confirm the ownership of or the right to use valuable resources in the area, such as fishing grounds, pastures, quarries, good harbours.

Interpretation of *Tyssøykruna* in light of the "scribbling rock" tradition

Although the incisions drawn attention to above do not constitute a complete material for comparison as to the interpretation of "Tyssøykruna", they present a starting point for a more plausible – though less imaginative – explanation than the one based on the deconstruction of a rather fanciful free-hand drawing, identifying it as a stylized version of Norse cosmology (Lehmann 2001).

The earliest possible date for the "crown" appears to be the Middle Ages, due to its association with the soapstone quarries. This date is in accordance with the time span of the "scribbling rock" tradition – stretching at least from the 1200s and to the later part of the 1800s. Although no direct parallels to the shape of the figure have as yet been found, the above survey of the locations of incised rocks and the assumed reasons for the "scribbling" – seen in relation to

the Medieval activities at Tyssøy – may contribute to an interpretation.

The strategic location of Tyssøy in the main ship's channel south of Bergen, the sheltered harbour in Tyssøyvågen, and the indications of a Royal Estate at the island with all the activities this involved – including the soapstone quarries – constitute a back cloth for explaining the small incision at the inlet of the harbour.

A comparison with the locations of the "scribbling rocks" demonstrates that a variety of reasons may have instigated someone to peck or cut the "crown" at Tyssøy. It may have been to inform seafaring people about the safe harbour – or on the contrary to warn them not to trespass on private property. Or it may have been to indicate an important resource – the soapstone quarry. Perhaps the figure was a personal marking for the stonemason, or it may have been an indication of the ownership or the right to use the place and its resources. There is, of course, also the possibility that the figure was in some way related to the King's privileges on the island, including his potential claim on the quarries. This may actually be the original reason for the local naming of the figure as a "crown". It is, however, difficult to see the small and crudely made figure as an official symbol of the King's presence on the island. The ultimate interpretation of "Tyssøykruna" therefore has to remain an open question in this connection.

Acknowledgment

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MÄRTA STRÖMBERG

Archaeological studies in Switzerland in the late forties

Travelling on a small scale

IN 1948 SWITZERLAND was chosen as the destination for my first journey abroad, lasting about four months, which was a relatively long period of time for such a trip. Compared with Sweden Switzerland is a small country with disparities in landscape and nature on the whole. Concerning prehistory we notice both great differences and some similarities. However, for various reasons it was considered suitable for my studies to visit this particular country.

Because of the war damage on the continent it took some time for us to organize various journeys or smaller excursions in a successful way. Even though Switzerland was not involved in the war it was surrounded by countries with partly destroyed societies which, of course, obstructed contacts during the first years after the war.

Now, many years later, I have read my diaries from this year and meditated on my experiences and the importance of my own background in the west and the south of Sweden when travelling in a continental area like this. Altogether, for me it also has been a kind of "history of archaeology" to look back on the forties and observe the degree of change of knowledge and ideas concerning prehistoric times.

Background

During the Second World War (1939–1945) opportunities to go abroad were very scarce. Especially for us young students at the Swedish universities, it was a harsh reality not to be able to visit at least neighbouring European countries for studies and at the same time have a chance to meet other young people. I came to Lund early in the forties with the ambition to study history, Scandinavian languages, literary history and some other subjects. However, in the meantime I discovered one more extremely interesting object of study, namely archaeology, which was later included in my Master of Arts (1946).

After so many years of isolation we all longed to go abroad as soon as possible. On the other hand, we also wanted the opportunity to invite students to take part in special activities in our own country. And it was almost an adventure to attend the lectures of professors from various foreign universities, who were often already well known to us from their publications.

My first teacher in archaeology was John-Elof Forssander. Since 1938 he had been Professor of Prehistoric and Medieval Archaeology and Director of the Historical Museum of the University of Lund (LUHM). In his lectures he exhibited a capacity to speak about all the prehistoric periods in a most fascinating way, with the main focus on contacts in various directions. He regarded archaeology as a decidedly international science (Althin 1954:45ff; Stjernquist 2005: 32f). After more than a year he and I had a discussion about my continued studies and how to get a position at a museum or, in the long term, at the university. A short time later I heard of his sudden death, not yet 40 years old. It was a real shock to me because of my natural expectations of a long time with him as a prominent tutor and also because of his great friendliness. If I had to choose only two of his many publications they would be firstly *Der ostskandinavische Norden während der ältesten Metallzeit Europas* (Forssander 1936), an important achievement in which the author puts Scandinavian material in relation to continental finds. The second would be the comprehensive article "Irland – Oseberg" (Forssander 1943), which I heard delivered as a series of lectures. I found this subject especially interesting because of the stylistic analysis of a type I was not used to at that time.

In January 1946, about two years after Forssander's death, Holger Arbman came to Lund as the new professor and director of the museum. Now it was possible for me to continue my university education. Arbman was a specialist on the Viking Age, but as a former antiquarian at the Museum of National Antiquities in Stockholm (SHM) he inspired all of us to embark on different well-organized research projects. With his frequent international contacts from pre-war days, when many researchers visited Stockholm, he had colleagues and friends in various countries. Furthermore, over the years he had travelled a lot. Naturally we could benefit from his experience as well as from his imposing knowledge and wealth of ideas.

For Forssander field archaeology was an important instrument for achieving more reliable results concerning various problems. However, his plan in the late thirties to carry out excavations of Mesolithic and Neolithic sites in the Ringsjö area in the central part of Scania could not be realized. In 1946 Carl-Axel Althin, reader at the Institute, took up this project again, "the Ageröd Investigation". Several young students – I was one of them – together with older researchers took part in this in many ways successful project with its methodological reorientation (1946–1949).

It was difficult for Althin to get a permanent appointment at the University of Lund or the SHM in Stockholm. Therefore, after a few years, he had to go over to another type of work and was able to complete only one of the publications he had planned (Althin 1954). During about the same period (1946–1950) another great Swedish project was carried out. This time the aim was to investigate a Migration Period settlement at Vallhagar on Gotland, and the leader was Mårten Stenberger in collaboration with the Danish archaeologist Ole Klindt-Jensen. Students from several countries as well as scholars with different specialities took part in the excavations. Two of them also visited Ageröd for a long time. The results of this very well organized project were published in two large volumes (Stenberger-Klindt-Jensen 1955 I–II).

Ageröd and Vallhagar are mentioned here because they are good examples of field archaeology soon after the Second World War, where participants from many countries could meet each other just as we all wanted. For me it was an important experience before I started my own travelling.

Organizing the study tour in Switzerland

When planning my journey abroad outside Scandinavia I discussed different alternatives with Holger Arbman. In his opinion Switzerland would be the best choice because I had already prepared further studies concerning the Late Neolithic and Early Bronze Age in south Sweden. Therefore it would be excellent for me to have a chance to look at the material especially from the Late Neolithic Horgener Culture in Switzerland. Arbman knew that Professor Emil Vogt in Zürich had a profound knowledge of this culture. He had also found parallels to some pottery in south Scandinavia. It would be a good starting point for me even if I was not convinced of a close connection between the Swiss and the Scanian material. I wrote him a letter and asked him about the possibilities of travelling around in Switzerland in order to get a general view of the museums and look at some ancient monuments as well as places where famous prehistoric finds had been made. A few days later I received an answer from him with the information that I was very welcome to study in Zürich. He would help me to plan the months in Switzerland in a many-sided way. In springtime 1948 I was granted a travel scholarship and could then plan my study tour in more detail.

Finally, it is necessary to say that for me and for Arbman there was also another very important aim of this journey, namely to orientate the traveller "mentally", even if we did not use that word. I arrived in Switzerland with some knowledge of the prehistory of this country and the cultural development from one period to another but knew very little about the ideological relationship between people living in different kinds of landscape. Furthermore, I knew almost nothing about the Swiss inhabitants or how they lived their lives in the late forties.

Meeting with Emil Vogt

Before I left Sweden I had informed Professor Vogt of the day of my arrival at the Landesmuseum in Zürich. Early in the morning he was there, having arranged a room for me to rent in the central part of the city and prepared a place of work in the museum to make it easy to study whenever I was in Zürich during this long period. Then he spent about two days instructing me in how the different parts of the museum were organized and the relation to the other museums in Switzerland. He had no up-to-date guide book of the Landesmuseum but he gave me an old one which had been produced twelve years earlier but nevertheless could be of some help (Direktion Zürich 1936). In the guide book he is called "Konservator" (= curator). Later he became director and professor.

Vogt was very proud to be able to show me the photo archives, chronologically arranged by himself. The groups of photographs were divided according to their find-places in alphabetical order within every single canton in Switzerland. In his opinion it would be quite impossible to work with prehistory without this system. He thereby declared the arrangement at the Archaeological Institute in Basel of no value! In Landesmuseum you can also study the reports and the correspondence in the same museum building. Furthermore, every artefact (except the old collections) has been given its own number. This information was interesting to me since I had different experience from Sweden, where we use one main item for a collection of artefacts from, say, an excavation and then a subordinate series of numbers or letters. And we do not have our catalogues classified according to provinces in the sense he meant. I presume that Vogt at that time – long before computers – had good reasons for his type of classification of the Swiss material.

One day he showed me finds from a newly excavated site from the Bronze and Iron Ages, also including material that was not studied enough to allow conclusions about its origin or age. Vogt planned to continue the investigation the following year when he knew more about the different layers. He told me that the Swiss archaeologists do not use the system of co-ordinates as we were already doing in Sweden because of the difficulty of drawing limits in a small area with very thick layers and many great stones. Concerning the stratigraphy, it is often impossible to separate the different layers from each other. Instead they preferred to work with "fields" as a more useful method for mutual numbering. He admitted that this way of working was subjective.

As I understood it, Vogt was very well-informed in all the prehistoric and also later periods but specialized in the Neolithic and Early Bronze Ages, perhaps chiefly in the Late Neolithic material. For many years he tried to establish a chronological sequence between the various cultures. In Zürich he gave me a lot of offprints – and later he sent me more, some of them with profiles or schedules (for instance Figure 1 from an early excavation in the border district

between Switzerland and Liechtenstein; Vogt 1938:1ff; 1945:151ff; 1951; 1964:8ff; 1967:1ff). The first article was well-known to me because I had read it in Lund before I came to Zürich. The title is "Horgener Kultur, Seine-Oise-Marne-Kultur und Nordische Steinkisten". Vogt tries here to solve the problem concerning the origin of these Late Neolithic culture groups by comparison with Scandinavian finds from stone cists in Denmark and Sweden, especially some of the pottery.

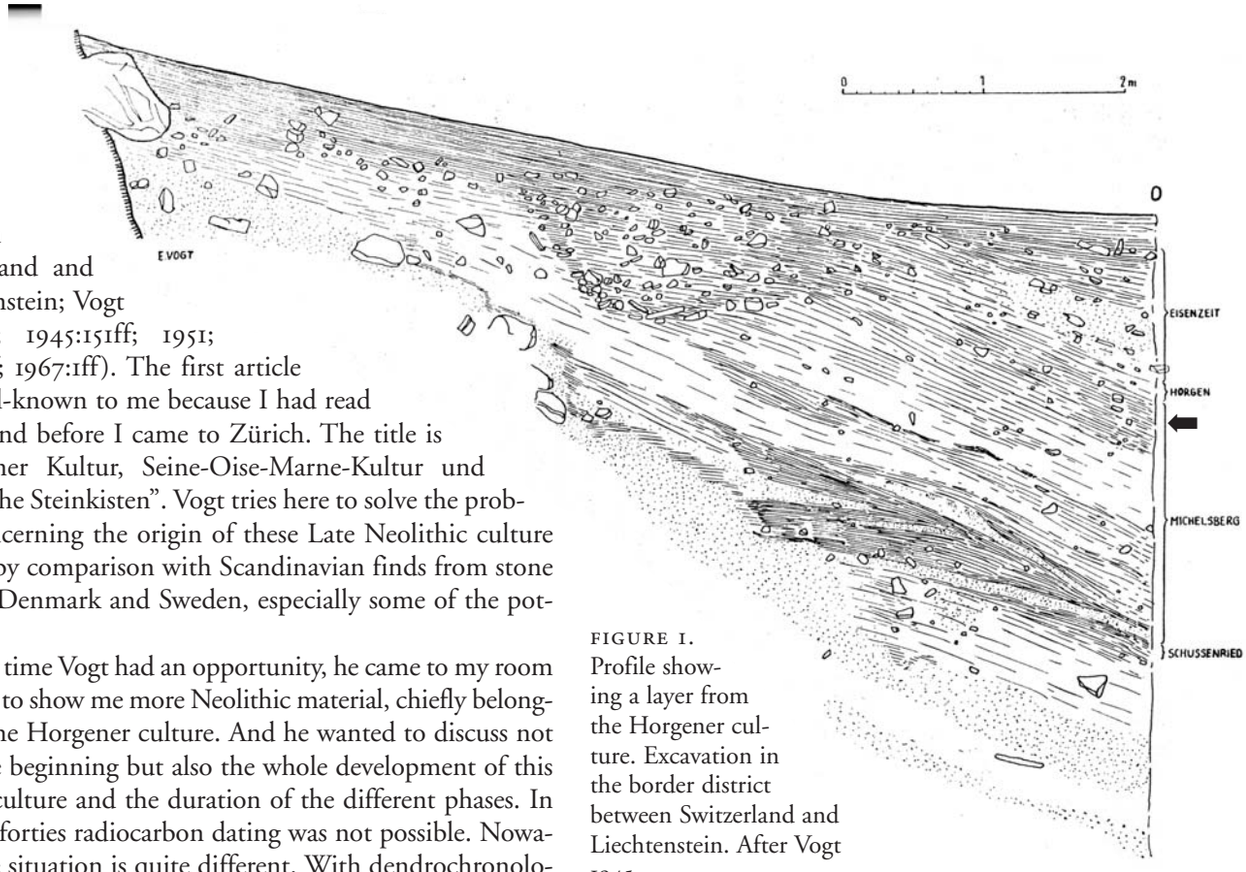

FIGURE 1.
Profile showing a layer from the Horgener culture. Excavation in the border district between Switzerland and Liechtenstein. After Vogt 1945.

Every time Vogt had an opportunity, he came to my room in order to show me more Neolithic material, chiefly belonging to the Horgener culture. And he wanted to discuss not only the beginning but also the whole development of this special culture and the duration of the different phases. In the late forties radiocarbon dating was not possible. Nowadays the situation is quite different. With dendrochronology combined with C14 dates, the archaeologist was able to answer at least some of Vogt's questions (cf. for example Ruoff and Gross 1991:401ff).

In the museum I saw a great number of complete vessels found in lake dwellings from various Neolithic periods and also from the Bronze Age. Vogt had studied and written articles about them. From his point of view the character of these sites could be explained in the change of the water level of the lakes. Originally the buildings were situated on dry land near the beach but later they were flooded by the lake and thus many kinds of material in the lake dwellings are very well preserved in the peat (Vogt 1951; cf. Baudou 1994:368).

It took me a long time to penetrate the study collection, where I also found some material moved from earlier exhibitions. Everything was collected in chronological sequence. For practical reasons I started with periods of special interest to me. However, I realized that now I also had an opportunity to learn a lot by looking carefully at other kinds of material which are not represented at all, or very slightly, in Sweden. In certain cases I noticed more cultural differences than expected, probably because of various influences from neighbouring territories.

For me it was a great surprise when, during one of my first days, I discovered that so many artefacts, both in the new exhibition and in the study collection, were plaster copies. Though I had heard about it I had not realized the great number of them. I asked Professor Vogt why it was so distinct in the Landesmuseum. He told me about the rules in Switzerland, where the cantons, in principle, had the right to keep the originals, while other museums could get copies. Therefore he had planned my itinerary around in the country in a way that made it possible for me to see at least some of the originals.

Visiting other museums and some excavations

In Switzerland there are three different types of landscape: the Jura Mountains in the northern and western part of the country, the Mittelland in the central part and the Alps in the southern and eastern parts. Only the two first were practicable to me. Vogt selected 20 of the numerous museums in almost half of the 26 cantons (Figure 2 with areas visited). Some of them have great collections, the remainder smaller exhibitions. In this article I cannot mention all of them but they have in common that almost all finds from their own cantons are originals while many other artefacts are plaster copies. Some of the museums are characterized by professional leadership. In many museums the exhibitions are old-fashioned, but I also saw extremely modern examples.

During this travelling period I took the train to the different museums and then in most cases back to Zürich for further studies and discussion with Vogt and sometimes with visiting archaeologists. A couple of times I spent one

FIGURE 2. Map illustrating areas visited in Switzerland in 1948. 1. Zürich. 2. Schaffhausen. 3. Luzern. 4. Biel. 5. Neuchâtel. 6. Bern. 7. Lausanne. 8. Vevey. 9. Genève.

or two nights in the same town as the museum. Switzerland is divided into four speech areas. The majority speak German but several also speak one or two other languages. By travelling in that way I met new people every day, and I was surprised by their kindness. Many of them told me about their lives in their own dear canton as well as, with some hesitation, in Switzerland! And women complained about not having the vote.

In Schaffhausen I met Dr W. U. Guyan (a friend of Professor Vogt). He was a natural scientist but also well-informed about the different Neolithic cultures. Visiting his museum was a superb experience. The exhibition was arranged in an extremely modern and beautiful way. On the other hand, the collections were small and the archaeological classification elementary compared with the situation in the Landesmuseum.

Professor Vogt had recommended me to go to Luzern, even if the head of the museum was not an archaeologist. However, I met Dr Verena Gessner, well known to me from Zürich, where she had taken her doctor's degree in decorated Bronze Age pottery from Swiss lake dwellings (Gessner 1948). She told me how difficult it had been to collect her material in the canton. She was forced to visit no less than 80 places! The exhibition was very old-fashioned, with grey walls and high showcases, but parts of the material were interesting to study, especially the pottery and some flint artefacts.

In Biel I found a museum with quite modern exhibitions in beautiful showcases with Neolithic and younger material, all well-known to me. A few hours later I took a train to Neuchâtel, where I had to stay overnight. At the entrance to the museum I came into contact with an architect, who had carried out excavations in a lake dwelling in the neighbourhood. He opened the museum to me and told me a lot about the material. Everything was immensely up to date but not so easy for me to grasp. Fortunately, I was given permission to look at the study collections in the cellar, where I could identify the different Neolithic culture groups. Later in the day I visited the lake dwelling and was informed about the site of the excavation the following year. On a certain occasion I had the opportunity to visit the famous La Tène.

Bern has a museum with great collections. Professor O. Tschumi was the director. When I arrived at the museum he immediately started a long unforgettable lecture about Swiss prehistory, sometimes slightly out-of-date but still it was interesting to be a listener. After this ceremonial reception he was very kind and helpful to me. The showcases were beautiful but the exhibition old-fashioned and most of the material mixed from different layers. I had to speak French almost all the time in Geneva and some other towns in the south-western part of the country.

I could have described my visits to other museums (for example Sion, Lausanne and Basel) but in most cases the exhibitions were of the same kind as those earlier described. I understood that not even in a country such as Switzerland had it been possible to restore all the museums during a short time because many of them had no professional directors.

Now it remains to give a short account of two of the excavations I visited, the first together with Professor Vogt. The site is named Vindonissa, which is a Roman habitation with several structures and the only one of this kind in Switzerland. The leader was Dr Ettlinger, and she was part of a team of students and some other collaborators. With my experience from Ageröd, where we measured every single artefact in three dimensions, the excavation method in Vindonissa was really not a good example. I asked Professor Vogt why they worked so carelessly, and he admitted that he himself would not excavate in that way. But an explanation could be that they were familiar with the layers and most types of material, for instance terra sigillata sherds, and therefore it was not necessary to keep more. I could take some sherds with me home to Sweden! It was not unusual to sort out parts of the material, at best after some kind of registration. Anyhow, visiting Vindonissa was really something to remember.

The second excavation took place in the French-speaking area. From Geneva I travelled by train to Vevey and then to Collombey. Then I had to walk uphill to find the right place. When I arrived at Barmaz I asked where I could find Dr Marc R. Sauter. Laughing, they pointed high up a tree and told me that he was taking photos from there! It was a site with several small Neolithic stone cists containing well-preserved skeletons, very carefully prepared. Even if this part of the excavation area appeared to belong to an earlier phase than the Horgener culture, it was interesting to me to look at the fieldwork and primarily to get to know Dr Sauter.

Concerning the existence of a Horgener culture in this south-western part of Switzerland Vogt – in a much later article – questions the distribution of this culture in some areas (1967, fig. 3). In my Figure 3 I show this schedule again in order to demonstrate how difficult it must have been to draw reliable conclusions from a great number of assemblages in this country.

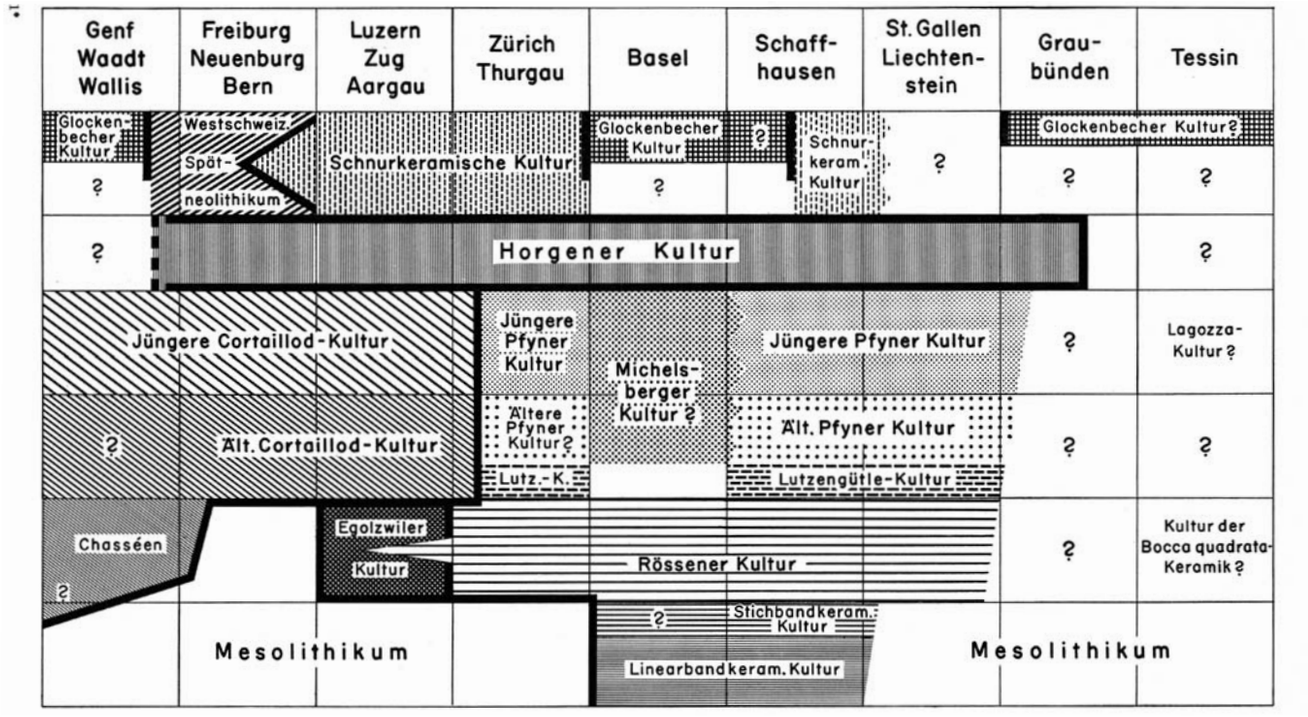

FIGURE 3. Schedule demonstrating the complicated distribution of various Neolithic culture groups. After Vogt 1967.

Leaving Switzerland with pleasant memories

My studies in this country were very favourable to me. I had orientated myself with continental archaeology and was able to do almost everything I had planned. When I needed help it was easy to ask and get positive answers. Above all, I had regular contact with Vogt. He was an open-hearted, friendly man, who always wanted to discuss various problems, and he did not like persons with private collections, who refused to show him artefacts of special interest to him. He called them "silex fanatics".

One of my last days in Zürich I was invited to a meeting ("a small symposium") – and a good meal – with him and Grahame Clark from Cambridge. Vogt made a farewell speech to me and wished me welcome back in two years to the 3rd International Congress in Switzerland. Back in Lund, I wrote an article about some Late Neolithic vessels of typical "Horgener" character in Scania (Magnusson [Strömberg] 1949:269ff).

Finally, in my three diaries I have documented every day with all kinds of information and experiences, but in a small article like this I had to make a selection. Colleagues, friends and family were very grateful for all the coffee parcels and other desirable things I had sent to them from a rich country!

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BERTA STJERNQUIST

Glimpses of an archaeological journey through sixty years

Introduction

THE TITLE OF this volume, On the Road, gives occasion to comment that the journey has been interpreted as a research method. Carl von Linné, who travelled very much, stressed the importance of travel in papers and in the speech with which he started his activity as professor in Uppsala in 1741 (Sörlin and Fagerstedt 2004:40–41). The intention of a research journey can, however, be different.

In this connection the intention is to characterize my work in archaeology during a time span corresponding to Lars Larsson's sixty years. The activity of this span is considered as an archaeological journey from the spring of 1947, when Lars Larsson was born and I took my licentiate degree, until his sixtieth birthday today. The start of my journey in 1947 is in that way well defined. It is, however, convenient to take consideration as well my stay at the Swedish Institute in Rome in 1946 because of its function as a preparation for my archaeological activity. Owing to the limited space in a brief paper, some events of importance for my archaeological research are selected and presented as stations on the road.

The basic studies

The first station on my road was a journey to the Swedish Institute in Rome. I had received grants for studies there during the first half of the year 1946. At Christmas time '45/'46 there were still no trains and no flight connections to the south of Europe. It was necessary to go by boat. We were some holders of scholarships who got travel connections with two of the Swedish Lloyd's cargo ships. My ship was a small one which after the war was one of the first boats to cross the mined area of the English Channel, provisionally swept. After an interesting trip we arrived safely in Genoa and went by bus to Rome. The stay at the Swedish Institute consisted of studies in classical archaeology and ancient history, with the topography of Rome at the centre. Excursions to archaeological sites and museums were also included as well as collaboration with Italian scholars and scholars at the Institutes of other countries.

It is worth mentioning that a vacation at Easter was spent on a trip to Sicily where nobody from the Institute had been during the war. The method of travel at that time in Italy, devastated during the war, was primitive trains everywhere. It was, however, possible to become acquainted with the classical remains such as the temple of Segesta in the wilderness and the charming Syracuse with its Greek theatre. My two companions and I also had the opportunity to visit by boat the bamboo wood of the River Ciane (Kyane).

The journey to Italy and the stay at the Swedish Institute were very successful for my research. I had an overview of the classical material and research, which I could use in the work with my doctoral thesis about the cemetery at Simris. My interest in the early Iron Age on the continent was also awakened and the first material for my studies on the *ciste a cordoni* collected. At the end of the stay I had the opportunity to travel by motorcycle together with a companion over most of Italy visiting historical monuments. It was difficult to find petrol for the vehicle but we frequently got it free of charge at the petrol points of the American forces, then in the country. The journey to Italy was a starting point for several of my scholarly works. I returned to Sweden at the end of June via Paris. At that time communications by air had started.

The next station on my road was my trip to the British Isles in 1947, invited by the British Council to take part in an exchange of four students. After crossing the North Sea in stormy weather we arrived at London where we had a week of studies at several museums. A visit to a session of the Parliament was unique and required a special permit at that time. Rupert Bruce-Mitford guided us at the British Museum and presented the finds from Sutton Hoo, recently unpacked after an evacuation during the war. The first publication of the find was of great interest.

The next point in England was a week at the annual meeting of British archaeologists at Salisbury, an impressive town with the cathedral at the centre of a large lawn. The stay was very fruitful because of its function of mediating contact with so many researchers working within the same subject. Christopher Hawkes with his first wife Jaquette and Gordon Childe were among them. The programme included several excursions to archaeological monuments, above all Stonehenge, which was demonstrated by R. J. C. Atkinson and discussed in detail.

The stay in England comprised some time at Cambridge, Oxford and Canterbury, with excavations and studies at museums. The time at Cambridge was very noteworthy with excavation at one of Grahame Clark's projects not far from the town. It was interesting to learn about his excavation methods. He also gave us systematic tours of libraries

and monuments. Our friendship for life was formed at that time, as well as the influence he has had on my archaeological research, with its economic approach as an essential component.

Another especially noteworthy point during the stay in England was a visit to Hadrian's Wall. We started at Newcastle, where I. A. Richmond met us, and moved along the wall, on foot and by car. The programme was very successful, with demonstrations and discussions of the structures and the geographical situation. The excursion stopped at Corbridge for studies of the museum and the numerous Roman remains.

My stay also included a visit to Scotland. Robert Stevenson, the head of the Museum at Edinburgh, demonstrated the collections and took me around the delightful countryside. We were interested in the same problems which promoted friendly contact over a very long time.

Early research projects

As the next point on my archaeological journey I have chosen a rather long trip along the Limes made in 1953 as preparation for my doctoral thesis, published in 1955 (for publications see the bibliography in Hårdh *et al.* 1988).

An overview of the Roman material and of the finds of the mixed Roman-Germanic culture along the Limes, the boundary line of the Roman Empire, was needed to understand the finds from the Simris cemetery with its soldier's equipment of Roman character. I was invited by Joachim Werner to Munich to present at his higher seminar my Simris material, excavated some years previously. Thus, I decided to travel along the Limes in that connection to study the large find collections at all the important forts and museums.

I travelled by train with some stops on the way in the north of Germany, at Schleswig, Stade, Harburg, Hamburg, Kiel, Lüneburg and Hanover, all with large museum collections of importance for my studies. I discussed my problems with Hans-Jürgen Eggers at Hamburg and in Kiel with Klaus Raddatz, a young assistant to Sprockhoff at that time.

Before my visit to Munich I went to Frankfurt for some days to study relevant literature in the excellent library of the Römisch-Germanisches Kommission. There I met Thea Elisabeth Haevernick for the first time and was introduced to her glass problems, which was important for my subsequent research. After a short visit to the museum collections at Frankfurt, the journey was directed to the Saalburg, the reconstructed fort. Thus, I was at a central point of the Limes. The studies of the fort and the collections took several days. Finds from many citadels such as Zugmantel, with equipment of Roman soldiers were studied in detail. Hans Schönberger, the head of the Museum, came and entrusted me with the key to the fort so that I had free access to the collections and the library. Thus, I closed the gateway of the fort in the evening and went to the old house nearby where I stayed. Schönberger asked me to write a paper on my material with Roman connections for the Saalburg Jahrbuch. I wrote about the disc-shaped mountings of the leather straps of the swords (see vol. XIII, 1954).

The stay at Munich with the collections at the museum was very successful, particularly the discussions about my problems at the Archaeological Institute. Hermann Müller-Karpe and Georg Kossack were members of the seminar and very interested in my material. After that occasion I had scholarly contact with them continuously: with Kossack the whole way via his professorship in Kiel and later in Munich and with Müller-Karpe until his special position editing the "Prähistorische Bronzefunde". At the international congress at Rome in 1962 he came to the Swedish Institute for animated, even loud, discussions with Einar Gjerstad about the time of the foundation of Rome, which was a speciality for both of them.

After Munich the journey continued along the Limes with detours to Augsburg, Stuttgart and Strasbourg with large archaeological collections from the Roman colonization. Other museum collections were studied in Speyer, Worms, Bad Kreuznach, Bingen and Koblenz as well as the very fine material from the fort of Niederbieber, accessible at that time in Neuwied. It was quite an experience for me to be able to work through all these assemblages with very informative material from the Roman conquest.

Another detour from the route went to Trier on the Moselle, the Roman town of Augusta Treverorum, with many structural remains and with an excellent collection of weapons and other Roman equipment.

Mainz was a centre on the Limes with two museums. The collections there and at Wiesbaden nearby were significant for the Simris studies and needed much time. Material from Hofheim and Holzhausen, the well-known forts, could be studied in the museum at Wiesbaden. The next stop was devoted to Cologne and Bonn, other centres on the Limes. The objects of the museum in Cologne were displayed at Düsseldorf where I went. The large collection of glass at that museum, for instance, was a great experience.

After a stop at Krefeld for studies of the find material there, from Gellep and elsewhere, with a large collection of glass, the route led to Nijmegen and Leiden in Holland, where I concluded the Limes trip with intense studies of these museums where I found connections to the Simris finds. After that I returned to Sweden via Munster. After all these studies I felt acquainted with the Romans and their areas in central Europe where I had a background to my Simris material.

When I worked at the Swedish Institute in 1946 and at museums in Italy I became interested in the special form of bronze vessel which is called *ciste a cordoni*. Their name, which is Italian, is due to the design with smooth horizontal strips around the body. These containers were probably some kind of status symbols with a religious slant.

This type of vessels are, remarkably enough, included in

a hoard found at Hassle, Glanshammar Parish in the middle of Sweden. I intended to write a monograph about the *ciste a cordoni* in order to illustrate all the unsolved problems. The research about it necessitated an overview of the material and the cultural circumstances of the Hallstatt and La Tène periods, that is, the late Bronze Age and early Iron Age on the continent.

The classification, production and distribution of the *ciste a cordoni* were central questions. The process of distribution could be a general problem. Thus, the detailed examination and drawing of these bronzes, published in two volumes in 1967, required very much travel in Europe, especially in the middle and southern parts of the continent. Some points were central in this network of museums, such as Vienna, Bologna, Florence, Rome, Ancona, Padua/Este, Trieste, Ljubljana, Budapest and Zurich. They were visited several times and were starting points for studies in museums situated in the vicinity.

It is impossible to treat all the trips. Instead I have chosen two from the years 1956 and 1962 and mention another from 1965. These journeys show the conditions for travelling research at the end of the 1950s and the beginning of the 1960s.

A pioneer journey for these studies was made in 1956. The route went by train via Linz to Vienna, where the Naturhistorisches Museum and other museums have a very great number of finds from Hallstatt and other sites with finds of the Hallstatt culture. I returned several times to work there. Karl Kromer, the expert, helped me and was after that a very good friend. At this first visit to Vienna I also met K. Willvonseder, who informed me about the museums in Austria. He invited me one evening to a performance at the Opera, just opened after the restoration after the destruction during the war. The next stop on the route was the Museum Joanneum at Graz with *ciste a cordoni* and plenty of other finds to analyse.

The trip continued to Trieste, a very beautiful town with an imposing view over the sea and landscape. I was very warmly received in the Museo Civico di Storia ed Arte and had a lot of work to do. Thus, I had to return after some years. From Trieste I made a detour to Aquileia to look at the museum and study the trade situation of this famous site. The collections of glass and amber were very impressive with vessels and figures of different colours and in mosaic. A large collection of cut glass for inlaying was included.

A night train took me from Trieste to Rome. I stayed at the Swedish Institute and made the first systematic studies of the *ciste a cordoni* and the background in the museums there, studies which were continued when I returned in 1962. En route to Florence a stop at Chiusi gave an opportunity to study the strange face urns. The Museo Archeologico in Florence had large collections significant for my problems. My colleague and friend Paolo Graziosi at the Archaeological Institute mediated the contact with the museum. I was given a free hand to work through the material in the cases. For instance, I was able to take samples for analyses of the metal ornamentation on pottery for a paper which was published later on. After some days of work the route continued to Bologna where I started my studies in the Museo Civico. The visit there was, however, very short this time. I returned in 1962.

In 1962 I came by train to Bologna. The Museo Civico had large collections from many famous cemeteries in the vicinity (San Vitale, Benacci, Arnoaldi, Certosa, Giardino Margherita, Battistini, Melanzani, de Luca, etc.). I could work and take photographs as much as I wanted. One of the scholars who helped me very much was Giovanna Bermond Montanari at the Soprintendenza alle Antichità, since then a very good colleague and friend.

The journey from Bologna went directly to Ancona where very interesting *ciste a cordoni*, for instance from Cupramarittima, were excavated by the head of the museum, Giovanni Annibaldi. Many of the *ciste a cordoni* from the district of Ancona have an unusual and very rich decoration. I was able to study the bronzes and other finds in the museum. I made also a brief detour from Ancona to Pesaro, where *ciste a cordoni* from Novilara, some with ornamentation, were housed. After these studies I took the train over the mountains to Rome where I stayed at the Swedish Institute for some time.

The museums in Rome, the Villa Giulia, the Pigorini, the Antiquarium on the Palatino and the Musei dei Conservatori, were studied intensively. All these museums contained find complexes with bronzes, house-urns etc. A large amount of finds derived from the well-known Etrurian sites of Tarquinia, Vulci, Vetulonia and Populonia and from sites in the vicinity of Rome. I had a short trip from Rome to Naples for studies of some *ciste a cordoni*, short owing to an earthquake there the day before with the risk of aftershocks.

During the stay at Rome I took part in an international archaeological congress, where I gave a lecture concerning the *ciste a cordoni* with an opportunity to discuss the problems.

The journey continued from Rome to Padua with a stop at Florence. In Padua I was invited to stay at the Soprintendenza alle Antichità, where Giulia Fogolari helped me very much. I had, for instance, access to a large library. I used the very good accommodation as a starting point for studies not only in Padua but at several museums in the vicinity as well. The most important was Este with enormous collections of *ciste a cordoni* and other bronzes, pottery vessels etc. which I had to analyse. I returned there several times on other trips. I had a day of recreation in Venice and then went to Trieste to finish my studies on the material from Santa Lucia and other sites.

After this I returned to Bologna for some work at the museum. The end of my journey this time led via Milan to the Museo Civico Archeologico, Como, together with Ferrante Rittatore Vonwiller, Milan, who guided and informed me about the finds he had excavated or studied.

The third trip, this time by air, started in 1965 in Vienna, where intense studies at the museum awaited me and continued to Belgrade and above all to Ljubljana. The museum there had a large amount of material including *ciste a cordoni*. Stane Gabrovec, a very good colleague and friend, organized a bus trip for me to Pula, which was difficult to reach at that time.

The archaeological museum for Istria at Pula had collections not only from the Roman period but also *ciste a cordoni* and other bronzes. The visit to Pula also included a tour to the Roman remains with the beautiful theatre situated with a fine view over the open sea. The return to Ljubljana led via the well-known Fiume with its Roman traditions.

New aims and orientation

The problems of the projects discussed mostly concerned culture areas, culture connections and distribution, which involved a great deal of travelling. This culture-historical approach was criticized in the 1960s by leaders of a new approach, the New Archaeology, above all Lewis Binford and researchers around him in the USA. This approach influenced my research and had the result that new problems became central. Over a number of years material had been gathered for an analysis of Iron Age settlements from different parts of Scania, southern Sweden. I had excavated the settlement of Vä in 1945–46 and published it in 1951. The most important settlement, however, situated at Gårdlösa in the south-eastern part of the province, was excavated over many years (see Gårdlösa publications 1981 and 1993 and Röekillorna 1997). When working with that material, the desire arose to enter deeply into the framework of settlement analysis. One result was my paper "Archaeological Analysis of Prehistoric Society", 1971, with a model for analysing the site as a social system, studying as far as possible the activities within the settlement unit and its connections.

This new aim and orientation caused travelling to the USA for contact with representatives of the new approach. The first time I went there was in 1973 and I returned on some occasions for studies and lectures. My paper from 1971, discussed in the *Norwegian Archaeological Review* 1972, had received comments by Kwang-chih Chang, William A. Longacre, Raoul Naroll and Bruce G. Trigger.

The journey in 1973 took me to archaeological institutes and museums where I met many of the researchers working intensively with the new theoretical ideas and discussed the problems concerning settlement patterns and the methods for analysing them. I may mention Chang and Irving Rouse at Yale, Gordon Willey at Harvard, Robert Braidwood at the Oriental Institute at Chicago, Robert Whallon and Henry T. Wright at Ann Arbor, James Hill and Timothy Earle at the UCLA and William Longacre at Tucson. I had good contact with Lewis Binford after his visit to Lund for lectures later on.

I stayed rather long at Harvard and at the Department of Anthropology at Tucson. At Harvard I had the opportunity to conduct intense studies of archaeological literature. Hugh Hencken in the Peabody Museum there with whom I had corresponded concerning assemblages of *ciste a cordoni* from Magdalenska Gora, the collection of the Duchess of Mecklenburg-Schwerin, showed me the finds and discussed my publication of the *ciste*.

Longacre at Tucson, who had invited me to give a lecture, arranged a very fine programme for me. In that way I had contact with Michael Graves and many other researchers working with theoretical problems and with the material from Grasshopper Pueblo, a research project about the settlement which they had at the Institute in cooperation with James Hill at the UCLA. It also involved a field school. It was very interesting to hear about his project concerning pottery inspired by the large assemblage of pottery. He planned to investigate primitive pottery making at Kalinga in the Philippines, a project which he carried through during many years.

I visited many colleagues at Berkeley whom I had met previously, for instance Glynn Isaac and Desmond Clark, working with palaeolithical problems. Furthermore, I studied at the Lawrence Berkeley Laboratory which is well worth mentioning. A group of researchers with Frank Asaro as leader worked with analyses of pottery at a high level with the intention of illustrating the production. They had a project with material from Palestine and Cyprus. It was interesting to hear that the Cyprus pottery belonged to Einar Gjerstad's investigations.

This first trip to the USA was followed by others. In that way I had occasion to present my research on the Gårdlösa settlement and of the spring-cult at Röekillorna in lectures which I delivered at some institutes such as the Department of Art and Archaeology, Princeton, the Department of Anthropology, Brown University, the Department of Anthropology, Minneapolis and the Institute of Anthropology, Berkeley.

Relaxation from the intense studies during the trip to the USA included, among other things, timeless stimulating experiences such as visits to Niagara Falls, Grand Canyon, the Rocky Mountains and the forests with monumental trees: the tallest in the world (Redwood, *Sequoia sempervirens*), the largest (*Sequoiadendron giganteum*), the oldest (Bristlecone pine).

From the end of the 1970s processual archaeology was criticized by Ian Hodder, Christopher Tilley and others. This post-processualism was based on an ideology which concentrated on human beings and their mentality. It is possible to illustrate Tilley's ideas with the aid of a model published by the philosopher Peter Gärdenfors, which describes the mentality of human beings as an inner and an outer landscape. It gives a rather good understanding of post-processualism (Gärdenfors 2005; Stjernquist 2005b, Stjernquist 2005c). Tilley's ideology and the model will be taken up in another connection.

International cooperation

Some part of my travelling depended on international cooperation, very important for researchers. Thus, I travelled quite a lot for the International Union for Prehistoric and Protohistoric Sciences. I was a member of the Executive Committee for ten years, which involved a meeting every year. I was elected at Mexico City in 1981 and left at Bratislava in 1991. Between these two dates we had many very interesting meetings at places which led to long journeys such as Florence, Bucharest, Madrid, Paris, Nitra, New Mexico, Dublin and Ceuta (Morocco). The international congresses every four or five years also required much travelling. Jacques Nenquin, secretary general for the congresses, organized the meetings and presided over the work in an excellent manner. He became a very good friend.

Concluding comments

The title of this paper indicates that only some parts of the travel during these sixty years have been presented. Many other publications and activities, for instance Uppåkra studies in the last few years, have resulted in much travelling, but it was necessary to restrict the account. This presentation shows, however, the working process of research during the circumstances of the 1900s. It shows at the same time the reality of Carl von Linné's pronouncement concerning travel as a method.

Note

A detailed map is needed to follow the travels. It is assumed that the reader will use such a means of assistance. The account is partly based on my travel journals with notes and drawings.

English revised by Alan Crozier

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OLE GRØN & MICHAIL G. TUROV

Resource "pooling" and resource management

An ethno-archaeological study of the Evenk hunter-gatherers, Katanga County, Siberia

Introduction[1]

THE FOCUS OF this paper is the role of the domesticated reindeer in the hunter-gatherer economy of the Evenk in the Jerbogachen area of Katanga County in the northern Irkutsk province of Siberia. One main objective is to demonstrate that their resource utilisation is so complex and flexible in relation to the models normally employed in hunter-gatherer archaeology that the term "resource-management system" would appear more correct. A second aim is to provide an example of dynamic wealth-related variation in the economic strategies and settlement patterns employed by neighbouring clans belonging to the same cultural group. A third point is to underline that even though some Evenk groups are able to accumulate wealth to a degree that does not correspond to our ideas of mobile hunter-gatherers, such strategies may be directly rooted in the management strategies they apply to their hunting resources.

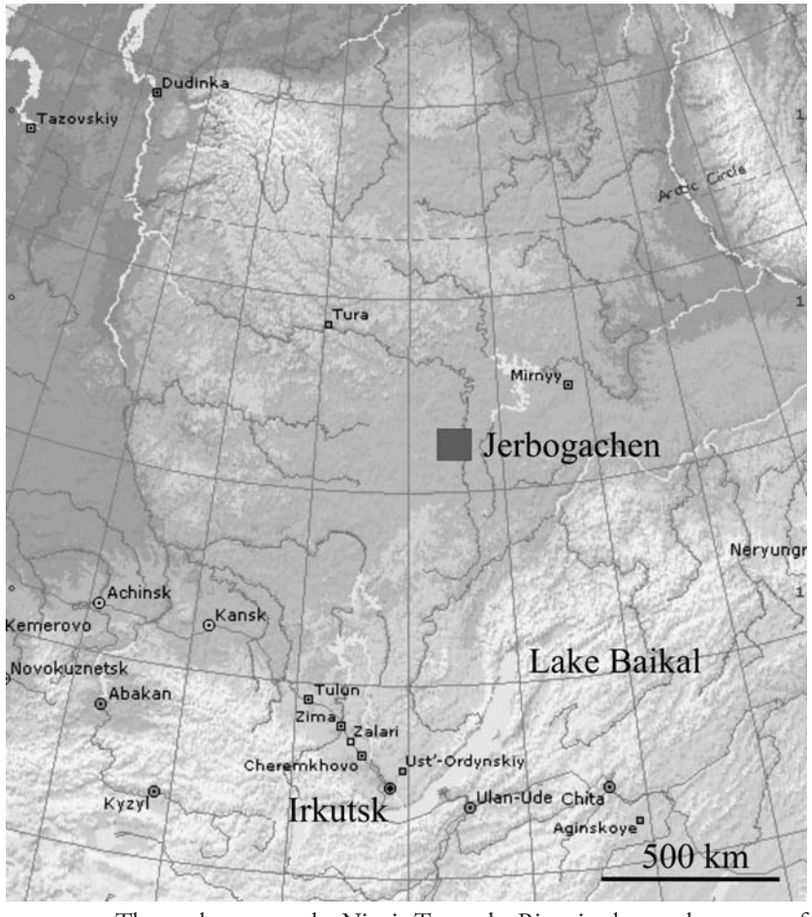

FIGURE 1. The study area on the Niznie Tunguska River in the northern part of Irkutsk Province.

The Jerbogachen area (Figure 1) is a hilly lowland area with altitude variations of only a few hundred metres. It varies from more hilly tracts to large swamps. The vegetation is taiga-forest dominated by larch and pine. The old forest is open and light, with a thick layer of lichen on its floor. Areas burnt by the regularly occurring forest fires take about 50 years to regenerate. Because it is mainly the forest floor that burns, and the lichen takes a long time to regenerate, these areas can be difficult to cross with reindeer in the winter. The young tree vegetation can for a long time be dense and difficult to pass through until it develops into open forest with larger trees again.

There are not – and have never been – many wild reindeer in the area, even though it provides ideal grazing for this species. The E-W orientated tributaries of the N-S running Niznie Tunguska may make areas more distant from the latter more easily accessible to the migrating reindeer. The main hunting resource in the area is a large population of moose (elk) that concentrate around the rivers, larger tributaries and lakes, where they prefer to forage on willow and (in summer) seaweed. They dive to gain access to the latter and can stay totally under water up to five minutes. If an over-population of moose develops around the large swampy river beds, some of the animals – mainly young bulls – are forced to subsist on less favoured vegetation types in the drier and less attractive areas between the large rivers.

A typical Evenk clan in this study-area consists of from 3–4 families with no sub-division, up to about 10 families that typically are sub-divided into 3 sub-clans. The smaller clans normally form strong alliances of the same size as the large clans. The Kaplin clan (Figure 2) is the only large clan in the study area. In the first part of the 20th century it consisted of about 8 families organised in three sub-clans and controlled an area of about 20,000 square kilometres. Normally each large clan or each alliance of smaller clans had its own leader and shaman, and sometimes a smith or a harness-maker as well.

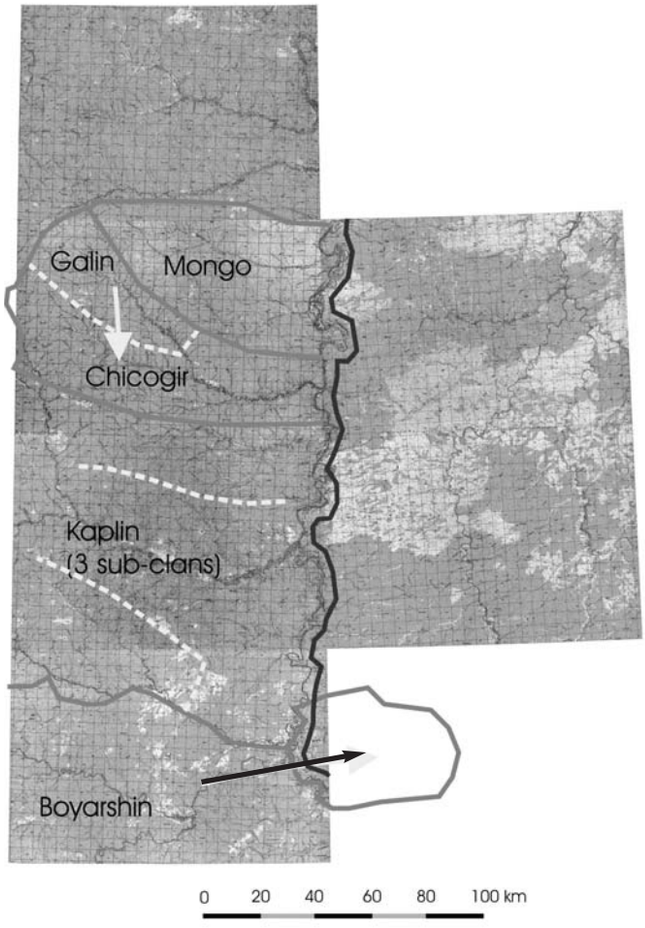

FIGURE 2. The clan territories with the names of the clans in the Jerbogachen area as they were in the early 20th century and most likely with smaller differences further back in time. The central river running S-N is the Niznie Tunguska.

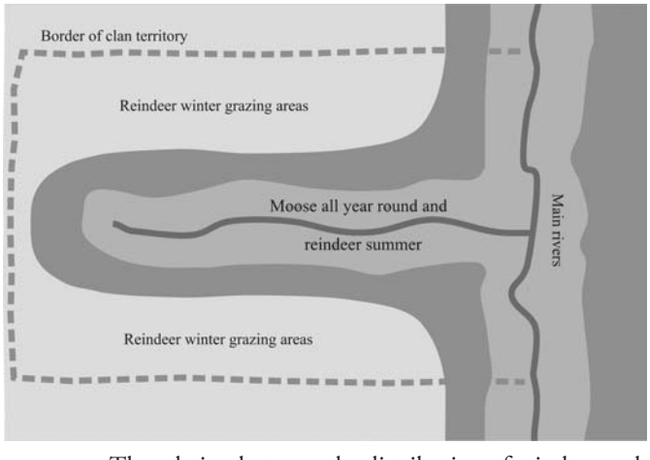

FIGURE 3. The relation between the distribution of reindeer and moose (elk). In the winter – the main hunting season – the two species concentrate in complementary areas.

The clan territories are the basic territorial units in the Evenk Culture. Each large hunter-gatherer clan or alliance of smaller clans had in its territory a sacred assembly site where the whole clan met in September before the autumn hunt and in April-May after the hunting-season was over. This is still the case with a few of the more traditional clans. Unlike the hunting and gathering Evenk, the larger pastoralists had and have their assemblies in January and around July – among other things because they are busy taking care of their animals during the rut in September-October. Several clans used to hold their assemblies together, switching between their assembly sites. Such meetings with all the traditional elements are known to have been going on in secret up to the late 1980s in the Jerbogachen area and are apparently still held on a reduced scale. The families (households) hunt in the family hunting-territories within their clan territories. The family hunting-territories can change from year to year. Due to the lack of wild reindeer in the study area, the Evenk hunter-gatherers there do and did mainly subsist on moose, a little wild reindeer, freshwater fish, birds, bread, berries and a large number of other things of minor importance (Shirokogoroff 1929:26–42; Anderson 1991).

The domesticated reindeer in the Jerbogachen area like to stay on the open river banks in the summer, where they for a large part live on grass. In the winter half-year, the main hunting season, they and the few wild reindeer that are in the region during this period prefer the dry areas between the larger rivers, where there are large amounts of lichen they can feed on (Figure 3).

That the main hunting-season is in the winter, and mainly in September-October, is due to the fact that the animals are easy prey when they mate and are still fat for the winter. In contrast to the reindeer, the moose bulls do not acquire a bad taste when they are in rut. Therefore the autumn hunt does not focus on the females, as is the case when the target is reindeer. The meat of the animals killed is frozen as provisions for the remaining winter period. From a nutritional point of view, a large intake of fat during the winter makes good sense, because it changes the human metabolism so that the body can better cope with low temperatures (Rodahl 1954; Grøn 2005).

Hunter-gatherers, and hunter-gatherers and pastoralists

It is difficult to make a precise distinction between the Evenk hunter-gatherers who use reindeer for transportation only and those who are small pastoralists. The two groups form part of the same society, and families and clans can change from hunting and gathering to pastoralism and vice versa. However, a number of features are common to those who according to Evenk concepts are hunter-gatherers with domesticated reindeer. They generally have between 15–20 and 70–80 reindeer per household. They live mainly on game and a few vegetable resources gathered, whereas they

do not eat their domesticated reindeer, except in very special ritual or extreme economic circumstances. Normally these animals are buried when they die (often hung in a bag from a large tripod). These Evenk use the small amounts of very fat milk of their reindeer in the summer half-year, but this is more a luxury than an important resource. The hunters who have no domesticated reindeer do well without the milk. Today, all the Evenk who live a more or less traditional life-style in the Jerbogachen area are hunter-gatherers, either hunting on foot without reindeer or with herds of 20–70 per household.

Evenk society is strictly stratified. Wealth is to a high degree redistributed within the clans, so that it is generally more correct to speak of wealthy clans than of wealthy households. Wealth is mainly measured by the number of domesticated reindeer and to some degree by the size of the households, the quality of tent covers, clothes and other equipment. Hunters with no domesticated reindeer are regarded as poor. Hunters with about 20 per household are neither poor nor wealthy. Hunters with 60–70 are wealthy. Households with more than 80–100 domesticated reindeer are regarded as pastoralists. Contrary to the hunters they consume their domesticated reindeer.

The possession of domesticated reindeer is attractive, but not without recognised negative side effects. As one informant said: "if you own more than 60 reindeer they control your movements". What he meant was that in good resource areas and attractive micro-climates hunter-gatherers can stay for long periods in the same base camp. Permanent hunter-gatherer "villages" are mentioned by many of the early Siberian travellers. Krasheninnikov, for instance, mentions permanent villages on the rivers in Kamchatka where the summer and winter dwellings of the families in some cases could be seen to be located just beside each other (Krasheninnikov 1972:1ff). If you have many reindeer you are, however, forced to move all the time to provide grazing for them. How often depends on the number of reindeer, the quality of the territories and other factors. But the main tendency is indisputable. Reindeer pastoralists with several hundred animals have to move at least once a week in the summer. Those with about a thousand animals move every second/third day.

Resource management strategies in the Jerbogachen area

The situation in the Jerbogachen area is extremely interesting, because the hunter-gatherer families with domesticated reindeer in the winter half-year, their main hunting season, must go to the areas between the large rivers because of their reindeer. These are areas complementary to where their primary game, the moose, concentrate (Figure 3).

That the clans in the Jerbogachen area who had domesticated reindeer in the early 20th century and most likely further back in time went to the areas between the main rivers and larger tributaries, which were far from the best hunting-areas for their primary game, the moose, in the main hunting-season, the winter half-year, would at first sight seem strange. The trick was, however, that they let an overpopulation of moose build up in the areas around the larger rivers by systematically killing the wolves and avoiding hunting the moose there. In the hunting season they subsisted on the animals that were squeezed out from these areas and forced to live in less favourable ones. For hunters relying on bows and arrows it has not been unimportant that they were mainly confronted by young and inexperienced animals. Experienced moose are said to be one of the most difficult animals to hunt. When a moose moves in the landscape, it often moves in circles, crossing its own track repeatedly to see if it is being followed.

The old hunters say that in the early 20th century there were wolves only on the large central rivers. Later in the century they spread even to the smaller rivers. The reason for that is probably that the significant increase in the size of the herds of domesticated reindeer encouraged by the Communists formed the basis of an expansion of the wolf population that was impossible to regulate in the traditional way. The response was systematic shooting-off of the wolves from helicopters. During and after the collapse of the Soviet system, there was no economy to continue this type of regulation, and the wolf population has exploded. This has caused a still ongoing reduction of the size of the reindeer herds, which will probably lead to a situation where it will again be manageable to keep down the number of predators through ordinary hunting.

An apparent side-effect of this "pooling" strategy is probably that where other Evenk groups consistently use reindeer skin for their winter clothes, the Evenk in the study area use wolf-skin and when this is not sufficient replace it with dog skin. Wolf-skin is considered to be better than that of dog because it is the lighter of the two. Moose fur/hide is very thick and unsuitable for clothes (apart from soles), but in the study area it is still used for winter tent covers, whereas reindeer skin was/is used in most other areas.

The moose populations in the area were enormous, and it was normally no problem to obtain the 7–8 moose each household needed per year to live comfortably. Through the 20th century Russian hunters invaded the areas around the main rivers and took over considerable parts of the Evenk clans' "breeding-grounds" along the larger rivers. With the increasing commercial meat-hunting these hunters have been engaged in during the breakdown of the Communist system and the following turbulent period, the large moose population has been considerably reduced. Today, the clans often have problems providing enough moose meat for their own consumption in the reindeer winter-grazing areas and have to subsist on fish.

Clans without reindeer for transportation have no reason to go to the good reindeer winter grazing areas away from the larger rivers. They stay on the main rivers where their

FIGURE 4. A very good hunting dog recently buried in a traditional human grave – a wooden box on poles – at the Verknie Kachuma River in the territory of the Chicogir clan (see Figure 2).

game is. Their base camps will mainly be where rivers join, because "that gives access to more meat", as one informant stated. Hunting is normally carried out immediately around the rivers (not only in this study-area but also where the Evenk hunt wild reindeer). This makes it easy to transport the meat to the camp. Where two rivers join, there will be three "hunting-corridors" joining in one point and the two of them facilitating downstream transportation of game by the canoes used in this area. The catchment area of a site is thus not a circular zone around it, as suggested by the site catchment model (Vita Finzi and Higgs 1970), but consists of the easily accessible areas around it where the animals concentrate. The hunters can easily travel 30–40 km. or more from their base camp to get access to especially attractive resources.

Clans without domesticated reindeer could according to informants live the summer half-year in one base camp on the Niznie Tunguska or one of its larger tributaries and during the winter hunt on the larger rivers in their territory. In the village of Terteia in the centre of the Kaplin clan's territory on the Terteia tributary to the Niznie Tunguska (Figure 2), all families but one are today poor according to traditional Evenk standards (having no domesticated reindeer) and hunt on foot. The foot hunters hunt around the smaller tributaries in this area in the winter and live in Terteia Village in the summer half-year, fishing in the river.

The history of the village of Terteia is interesting, because it shows how the high level of mobility that the prestigious possession of reindeer herds demands could be avoided by the owners. The Kaplin clan was well off with regard to reindeer back in the 19th and early 20th centuries. The clan members, however, did not want to move as often as necessary. They had less wealthy Evenks to take care of their reindeer within the Kaplin territory, whereas they themselves lived in a permanent camp with 8 tents where Terteia village was later built, subsisting on moose-hunting and fishing in the extremely good moose areas along the swampy banks of the Terteia River. A permanent camp in this connection does not mean one that never changes, but one that moves within a very restricted area – a few kilometres up or down the river – when the old settlement becomes too "dirty" and "smelly". This can be from every half-year to every third year. The Kaplin territory occupied about 20,000 square kilometres, which is large, but not unreasonably large for 8 hunting-families. The large reindeer pastoralist clans, of which some in the early 20th century are said to have up to 10,000 animals, needed considerably larger territories.

Similar patterns are reported from other areas and groups and may be of some age. High mobility is generally regarded as a negative side effect of wealth. Those who practise it, however, often speak of it with pride. One senses from the old informants that among the Evenk there were and still are very different attitudes to herding at a considerably higher level than that which is necessary for transportation.

The domesticated reindeer and resource "pooling" strategies

It can be difficult to understand why the Evenk hunter-gatherers in the Jerbogachen area "invest" work and effort in building up herds larger than the minimum required for transportation about 20 animals per household. These animals do not serve as a food resource, apart from the milk they provide in the summer half-year, and they force the families to move approximately every other week during the summer and force them during the hunting-season to stay

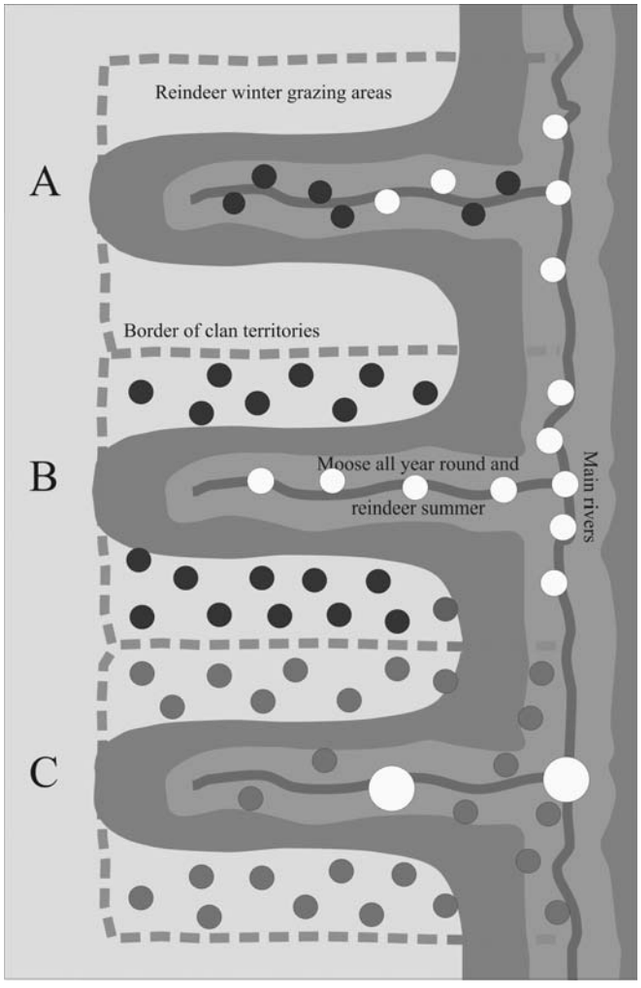

FIGURE 5. The three different subsistence strategies discussed above. A – Evenk hunting on foot. B – Evenk hunters using domesticated reindeer for transportation. C – Evenk owning larger reindeer herds taken care of by "poor people", whereas they themselves live in a more or less permanent base camp. Small white dots are summer base camps, large white dots are all-year base camps, grey dots are winter base camps. Black dots are summer and winter camps of Evenk "servants" from other clans.

away from the parts of their clan territories where the largest moose-population is found. It is interesting that several of the Evenk were shocked when asked why they had more reindeer than needed for transportation. First they explained that the animals gave them meat and fur. Confronted with the fact that that was actually not the case because they did not eat them, they explained after some thought that the animals are their "treasure". This seems to be partly symbolic, as a sign of the families'/clans' wealth, and partly economic, because the animals can be sold for money or eaten in a situation where everything else fails. But the treasure that takes so much effort to build up can in no time be devoured by wolves and other predators, die from disease, or be severely decimated in other ways.

Building up a "surplus" of domesticated animals could be inspiration from a capitalistic system. However, it can also be seen as a traditional element in these hunter-gatherers' traditional resource-management repertoire. They let an over-population of moose build up in the areas ideal for moose and protect it from predators as they make "no-hunt" breeding grounds for the economically important sable. Sable traps are only set on the tracks where they are easily accessible to the hunters. The large areas between the tracks serve as breeding-grounds where an over-population can build up. The young surplus animals will several times a year migrate out in waves to find free territories and are then easy to trap.

In Australia a similar strategy has been recorded where the main areas of some game animals are no-hunt areas protected by taboo (Strehlow 1970). Apparently, one should be more aware of "pooling" strategies in hunter-gatherer resource management. It would not be surprising if they are more widespread than thought at present. This, however, raises the question of what the difference is between a conscious management of the populations of moose and sable and agricultural management-thinking normally ascribed to the so-called "Neolithic" societies. And what about the "domesticated" reindeer that are actually able to disappear with the wild reindeer when these migrate? Their attraction to their human masters is mainly based on the smoke the latter provide them with in the summer half-year as defence against the mosquitoes. Who gets the better deal? Is that domestication? Is the pooling of domesticated reindeer related to the pooling of the game animals?

In the authors' opinion this is in reality a non-problem created by our preconceived ideas about what hunter-gatherers are and what hunting is. A better expression is "collaboration". The Evenk hunters collaborate with some animals. They collaborate with their hunting dogs. Good and intelligent hunting dogs are regarded as equals by their human masters to such a degree that they are buried in traditional human graves. Such dogs are actually thought to be re-incarnations of human souls (they have three souls like humans, where ordinary dogs only have two as is normal for animals). Ordinary hunting dogs are not buried like humans, but can be killed and buried with their masters. Bad hunting dogs and aggressive dogs are killed and their fur used for winter clothing.

Figure 4 shows the grave of a very good hunting dog that belonged to one of the hunters of the Chicogir Clan, Viktor Chicogir, who has poor sight, which is a handicap for a person subsisting on hunting. The thick lenses of his spectacles tend to become misty in the winter. The buried dog was able to hunt moose on its own and to lead it to the settlement where they lived, so that its owner could practically shoot at close range from his tent. The good dog was killed by a bear and buried like a colleague and friend (Figure 4). Viktor is not very satisfied with his new hunting dog, which is far from as bright as its predecessor.

The Evenk negotiate (through ritual) about collaboration with the spirits controlling the land and hunting luck. The whole Evenk relation to nature can be seen as a network of

negotiated collaborations. They provide their "domesticated" reindeer with smoke and obtain transportation from them. They feed the spirits and get their acceptance and support. This spectrum of collaborative approaches spans from some that look less to some that look more "Neolithic".

Dynamics and advanced strategies

The data from the Jerbogachen area are important, because they reveal the high priority the Evenk give their domesticated reindeer. In areas where the Evenk hunt wild reindeer which operate in the same areas as the domesticated reindeer, this would not have been so obvious. Surprisingly, the role of the domesticated reindeer as symbols of wealth appears to be as important as their usefulness for transportation. Their role as economic value/savings should in practice not be over-estimated, because the Evenk generally are unwilling to part with their animals unless this is unavoidable.

It is obvious that the Evenk hunter-gatherers do not live in an egalitarian society. The maintenance of a larger herd of domesticated reindeer than necessary for transportation is burdensome, but serves as an important display of wealth and status. If a clan possesses so many reindeer that it can afford to have others take care of them, a display of high status can be combined with a significant reduction in its mobility.

It is important to understand the dynamics of the Evenk resource strategies. The Evenk were, and some of them still are, able to switch between the three basic strategies described here (Figure 5). It is also important to understand that the patterns described are being varied and transformed so as to fit best the area where they are applied and the actual situations they are used in.

The Evenk strategy spectrum includes a large number of elements that can be combined in numerous ways. The content of this strategic toolkit is not static. New elements are continually developed, tested and added if they prove useful. There is an ongoing discussion between the hunters about tricks and methods. In 2003, for instance, one of the hunters in the Jerbogachen area had found out that old ketchup bottles were good as bait for the curious sable. This practice was soon assumed by several of the other hunters. This may well in time change the sable's attitude to ketchup bottles and reduce the value of the method. Then new approaches will appear: an ongoing process.

Such a dynamic attitude to the environment as well as the mastering of complex resource-management systems is important for successful lives as hunter-gatherers in the Siberian forest biotope. The modelling of exploitation areas such as the site-catchment model does not take into account the use of breeding-grounds, the effect of topographical features, micro-climates and other micro-environmental features or the quite large distances at which hunters can operate from their base camps (Vita Finzi and Higgs 1970; Grøn *et al.* in press). Unfortunately, the often simplistic modelling applied in archaeology to the prehistoric hunter-gatherer societies tends to serve as a circular enforcement of an underlying concept of them as being "primitive" – even though the term "primitive" is not used directly anymore.

Hunter-gatherers living a relatively sedentary life and managing and manipulating the resources in ways that make them more or less "Neolithic" in an archaeological sense should not surprise archaeology today. But apparently it is important to bring in fresh data to facilitate the development of better interpretations of the prehistoric hunters that lived in forest biotopes than of those from equatorial and polar deserts.

Note

1 The ethno-archaeological research in Evenk hunter-gatherers presented here has been carried out as part of initiatives from the Ethnographic Context Module within the Baikal Archaeology Project supported by Major Collaborative Research Initiative grant no. 421–2000–1000 from the Social Sciences and Humanities Research Council of Canada and the Norwegian Research Council.

The Evenk clan leaders Lasar Petrovich Chicogir and Viktor Mitrofanovich Chicogir and the members of their clans are thanked for supplying information and help during the authors' trips to the Jerbogachen area.

Information in this paper that is not covered by references to other publications is based on the authors' own observations.

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TORSTEN CAPELLE

Pazyryk – now and then

FIGURE 1. The Pazyryk valley in 2002. Photo: T. Capelle.

THE KURGANS OF Pazyryk in the upper Altai mountains became famous worldwide more than fifty years ago as the "frozen tombs of Siberia". The publications by the excavator Rudenko delivered a complete documentation of their appearance, construction and inventories. When the author of this paper visited Pazyryk in 2002 he did not only get an impression of how the place looks today, but he even got interesting unpublished information about the exceptional excvations themselves. They must have been a real adventure.

Even nowadays it is not easy to approach the kurgans of Pazyryk, but in Scythian times it must have been nearly impossible, at least with carriages. Situated at an altitude of more than 1,500 m. above sea level the place lies sheltered by mountains far away from the regions used by the nomads. The tombs dealt with in this paper may have been erected there to let the ancestors stay near the sky.

Today the Altai – the name means *golden mountains* – is mainly divided into two parts. The lower part is the Region Altai, a Russian district characterized by steppe. The higher part is the Autonomous Altai Republic (Oblast) within the Russian Federation, where the people have their own language. It is a Turkic language which is believed to have come there in the ninth century. These Altaians still regard themselves as aboriginal horse-breeders in their way of life as successors of the Scythians, who lived there 2,500 years earlier. The barrows lie in the eastern part of the Autonomous Republic about 140 km. northwest of the Mongolian border and about 170 km. north of the Chinese border.

Further smaller parts of the Altai belong to Kazakhstan, Mongolia and China. The Region Altai and the Altai Republic voluntary joined Russia in 1756 to escape from the Chinese.

The excavations carried out in the burial mounds of Pazyryk by Sergei Ivanovich Rudenko just after the Second World War rapidly became famous worldwide. The kurgans were called *'the frozen tombs of Siberia'* because after the burials the grave-pits were filled with melting water that subsequently froze. So the excavated grave-goods and the inner

FIGURE 2. Pazyryk barrow 3 in the year 2002. Photo: T. Capelle.

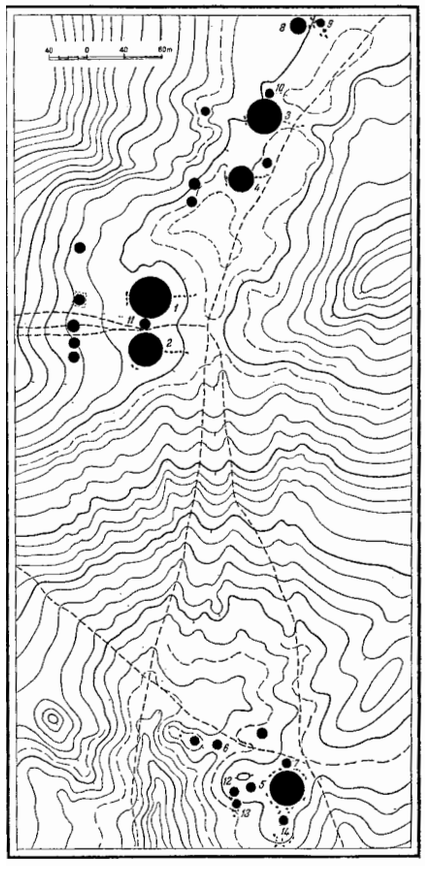

FIGURE 3. Plan of the barrows in the Pazyryk valley, after Rudenko and Thompson 1970.

structures, protected by a timber filling and a large stone package, became included in the permafrost.

Of course the conditions for the excavations were extremly difficult. But Rudenko and his team managed to save all the wonderful objects, made of organic materials – with their colours still appearing fresh. All the surviving material from Pazyryk has been deposited in the Hermitage Museum in St. Petersburg but only few pieces are on display. The excavator delivered a complete documentation of the constructions and the preserved inventories of the graves, but nowhere does he describe in detail how the ice in the shafts really was melted or removed without doing any harm or damage to the finds. The Russian publication appeared in 1953 (Rudenko 1953). A revised English text was edited in 1970 by M. W. Thompson (Rudenko and Thompson 1970). The facts from the excavations mentioned in this paper are based on the English edition.

The kurgans are situated in a shallow valley far away from any modern settlement, surrounded by grandiose mountains topped with snow even in summer. No wonder that the writer Colin Thubron (Thubron 1999 chap. 4) was fascinated by the remote region and gave a detailed description of the place near the sky.

The deserted place known to the local people by the name of Pazyryk lies about 15 km. up the Ulagan valley nearly 2 km. from and 150 m. above the river Ulagan on the left, and nowadays it is accessible by a cross-country vehicle

FIGURE 4. Pazyryk barrow 2 in the year 2002. Photo: T. Capelle.

through the "golden gate" blown into a rocky mountain in the twentieth century. The flat Pazyryk valley itself (Figure 1) is divided by a lateral low moraine. The first four barrows lie in the upper part while the fifth is situated near the outlet of the Pazyryk valley about 450 m. south-south-east of the first group and below it (Figure 3). The numbering of the tombs records the sequence in which they were excavated. Barrow 1 had already been excavated in 1929 by M. P. Gryaznov, who lit a fire directly on the ice to make it melt. Number 2 to 5 of the cairns were excavated by Rudenko in the years 1947–1949.

During the excavations Rudenko was sometimes joined by his wife who was a skilful artist. She produced many coloured drawings of objects to get the fullest possible record of the majority of them still during the fieldwork, as well as sketches which picture daily life in and around the camp. She also made a 16 mm. film as a document of the campaigns. Today the water-colours (only some showing finds are published) and the film are kept in the local museum in Barnaul, but they are not on display and they have never been. The author of this short paper had the opportunity to see both in return for some lectures given there as well as having the chance to make a trekking tour to Pazyryk itself. He was told he was the first archaeologist from western Europe to visit the place and not even the colleagues from Barnaul accompanying him on the trip had ever been there before.

Most astonishing was and still is the fact that neither the Pazyryk valley nor the sunken graves themselves in their original condition in the time the barrows were constructed belonged to an area with permanently frozen soil. So the main question was, how the permanent refrigeration arose that led to the remarkable preservation. The burial shafts must have been dug into unfrozen soil and the refrigeration must have occurred some time afterward.

It may be that some of the ice was produced shortly after the burials took place. But most of the ice was formed as a consequence of the plundering which must have been done by newcomers when the people responsible for making the barrows had left the region. The tombs had thereby been so heavily ransacked that in the opinion of the robbers they must have looked almost entirely emptied. But fortunately they left a lot of remarkable refrigerated objects most noteworthy for the archaeologist.

The craters dug by the robbers changed the thermal conditions within the graves and allowed the filling of the whole burial chambers with water which later became ice as the cold winter air had more direct access. But neither the builders nor the robbers had any intention of creating these peculiar conditions. The more or less refilled cairns of stone maintained the refrigeration. The stones acted as isolation. The depth of the shafts and the size of the cairns saved the tombs from the short thaw in summer.

We do not know of course what ever the robbers took away. But comparing with more recent excavations they must have been confronted with heaps of elaborately worked gold objects. They only left what seemed useless or what they could not carry away. Apart from some intact horse trappings and a lot of organic materials they merely left scraps of metal.

At the bottom of the shaft each of the large barrows had a log chamber at a depth of about at least four metres. The dimensions varied from eight to thirty square metres and the height from 1.2 to 2.0 metres. The upper parts of the tombs were filled with layers of logs and some rocks. They were covered by earth mounds and a thick stone packing. These are still visible today (Figure 2).

The logs used are larch, a hard heavy and very resistant material. When it is floated it does not sink but stays with the main part just below the water surface. These used logs

show that when the graves were dug the vegetation was very similar to that of our day and that no essential change has taken place within the last 2,500 years. Small park-like larch woods or slight clumps of larch still predominate in the neighbourhood. Hundreds of these trees with a diameter of 20–35 cm. were employed in the structures.

During the excavations the logs were slowly removed and thrown aside. Many of them are still lying around (Figure 4). The dry and cold climate has preserved them in such a good condition that they can be used even nowadays for housebuilding or at least for making barns. Rudenko and his team used these ancient logs in quite a different way. They had no intention to spare them. The unpublished film mentioned above as kept in Barnaul shows the logs being used as firewood. They were sawn into pieces and burned to heat water in large cauldrons. The hot water was poured directly on the ice to melt it. Without doubt this was a very drastic method which was adopted thus. But it worked by using and disturbing prehistoric logs for the research of prehistory and this was indeed an early form of special water-archaeology.

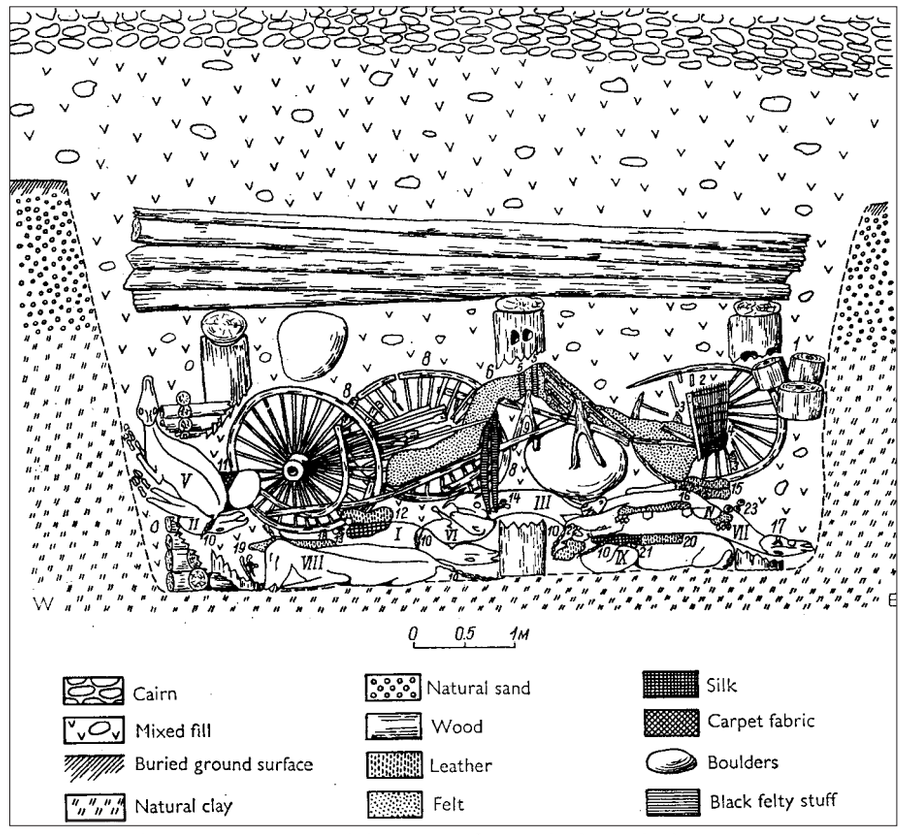

FIGURE 5. The carriage in Pazyryk barrow 5 after Rudenko and Thompson 1970.

Another curious action to be seen in the film happened during the excavation of barrow 5. In the chamber there stood a large elaborate carriage (Figure 5). The wheels had an enormous diameter of 1.8 metres. This carriage could not have been used in the area. It must have been dismantled to bring it up into the mountains. In the same way the excavators managed to bring it to the surface again: The film shows a member of the team enter the chamber, loosen a nave, draw off the wheel, shoulder the whole wheel at once, climb up a ladder and bring it out. This very drastic method would surely not be applied in our days. But nevertheless the complete wagon is now on display in the Hermitage.

Fortunately research goes on. So the dating meanwhile has been revised. By dendrochronology the sequence of the burials already was seen by Rudenko. Barrow 1 and 2 were the first and built in the same year. Seven years later barrow 4 followed, thirty years later barrow 3 and eleven years later barrow 5 was the last. The best dating evidence came from barrow 5. So the group spanned a period of half a century. The absolute dating was more problematic. Normally it was thought that the kurgans had been erected round about 400 BC. Modern research has now made this more precise and the actual dates for three of the kurgans according to radiocarbon dating and the dendrochronological scale, are as follows (Marsadolov 1997):

Pazyryk 2: autumn 455 BC
Pazyryk 1: autumn 454 BC
Pazyryk 5: spring 406 BC.

Now the deserted place looks as if the excavators left some weeks ago but in fact they did so more than half a century ago. Time seems to stand still in this remote area. Nothing has changed due to the climate where no mould arose and due to the larchwood used. Only in kurgan 2 (Figure 4) have there grown some small birches.

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ATHOLL ANDERSON

Colonial illusion and reality at the end of the Old World's road

IN THE EARLY 1980s Lars Larsson visited Otago University in Dunedin, New Zealand, the southernmost university in the world. He was especially interested in the ethnography of Maori hunting and gathering, so I took him to see some of the archaeological sites on the nearby coast, particularly a fort, called Mapoutahi, situated on a rocky point, where we gathered some mussels for tea. Mapoutahi was one of a string of forts built by the Ngai Tahu tribe (in which I have some ancestry) along the east coast of the South Island in the 17th and 18th centuries during a period of clan warfare amongst southern Maori, whose territories extended over most of the South Island of New Zealand and its immediate offshore islands.

These lands were near the end of the road for human colonisation of the Old World. Near, but not quite at the end. There are also islands further south, between New Zealand and Antarctica, that were discovered and re-discovered and upon which colonisation was attempted. The largest of them are the Auckland Islands (Figure 1), for which there is now an episodic history of colonisation extending over 800 years. It began about 500 years before the Ngai Tahu migration, when some earlier southern Maori reached Sandy Bay, on Enderby Island, the northernmost of the archipelago, where they lived for an indeterminate time during the late 12th and 13th centuries. The brief archaeological investigation of this initial colonisation has recorded small sites that consist mainly of earth ovens surrounded by middens of sea lion and fur seal bone, bones of many sea birds, notably albatrosses and penguins, and a small amount of fish bone and shellfish (Anderson 2005).

How and why this early Maori settlement ended is unknown. It might have been abandoned in favour of return to New Zealand; it may have experienced insuperable difficulties of subsistence; it might not have been possible to maintain a breeding population, even supposing that one existed in the first place. Such uncertainty is inevitable in evaluating archaeological cases of failed colonisation. In order to try to understand better why colonisation does not always succeed, it is useful to turn to historical evidence, and in this case there were several failed attempts to colonise the Auckland Islands in the 19th century. They were a Polynesian colony, 1842–1855, an official British colony 1849–1852 (the Enderby colony), and a series of late 19th century attempts at pastoral farming. I shall review the conditions which the colonists expected, then the state of the colonisation attempts, and lastly the reasons why colonisation failed and their resonance with episodes of historical colonisation elsewhere. I trust this will interest Lars, who is both an inveterate traveller and, if I understand him correctly, a Scanian colonist in Sweden!

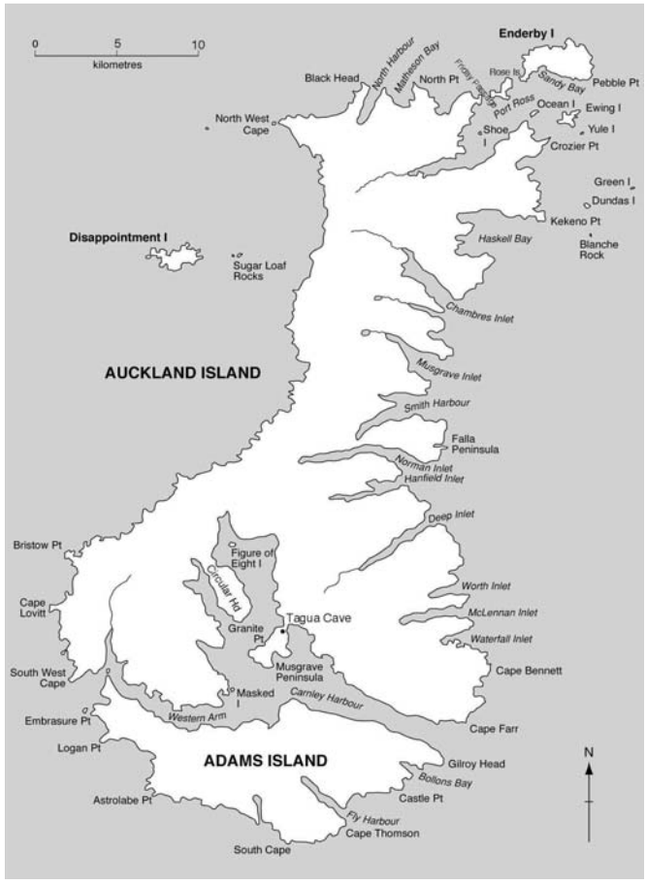

FIGURE 1. The Auckland Islands. Colonisation occurred in Port Ross and Enderby Island at the north.

Illusion

Migration, colonisation and other forms of human mobility are frequently influenced by illusion, that is, by a misapprehension of the real state of affairs at an anticipated destination. We have no idea why prehistoric Maori voyagers pushed so far south into the heavy seas and cold winds below New Zealand, nor precisely why the 19th century Polynesian colony was established (below) but the illusion

surrounding historical attempts at European colonisation is clear enough.

Initially, the islands were regarded favourably for their bounty of seals, and then as a harbour for whalers. One of the latter, Captain Benjamin Morrell brought his ship to anchor in Carnley Harbour in January 1830, and took his sick men on deck, "to enjoy the salubrity of the air, the beauty of the scene, and the delicious fragrance wafted to us from the neighbouring groves … Nature reigns here in all her virgin charms, unrifled, unpolluted" (Morrell 1832:358). He might have been forgiven such sentiments after a long passage in the southern ocean, but a week later, and after some explorations on land, his enthusiasm remained undiminished (Morrell 1832:361):

> All the hills, excepting a few of the highest, are thickly covered with forests of lofty trees, flourishing with such extraordinary vigour as to afford a magnificent prospect to the spectator … The quality of the soil on this island is sufficiently indicated by the uniform luxuriant growth of all its productions. Were the forests cleared away, very few spots would be found that could not be converted to excellent pasturage, or tillage land … [there is] … strong, heavy, luxuriant grass…[and]… this extraordinary strength of vegetation is no doubt greatly assisted by the agreeable temperature of the climate, which is very fine.

After praising the birds, fish and shellfish, Morrell (1832:363) concluded;

> On the whole I think that Auckland's Island is one of the finest places for a small settlement that can be found on any island in the southern hemisphere above the latitude of thirty-five. Every valuable animal would thrive here, such as bullocks, horses, sheep, goats, hogs, foxes, rabbits, geese, ducks and poultry of all kinds … Grain, fruits and vegetables of all kinds (excepting the tropical fruits) could be made to flourish here with very little labour … at the head of each [harbour] is a beautiful valley extending inland, admirably calculated for the site of a village.

Captain Sir James Clark Ross, leading the British Antarctic Expedition, visited the Auckland Islands in 1840 and wrote a favourable report which, upon his return to England in 1843, became widely known. It was particularly influential in the decision by Charles Enderby to set up a colony in Port Ross soon afterward. In his later report, Ross (1847:129), commented upon the excellent harbours, plentiful wood and water, the great expanse of land and the proximity of the islands to the main sailing route across the southern ocean. He approved the nascent Enderby plan and declared that out of whaling, colonisation would grow.

Charles Enderby's plans (1849) referred also to other reports from 1840 on the Auckland Islands, by officers on the United States Exploring Expedition under Commodore Wilkes. They described forest everywhere, with

FIGURE 2. Sea lions under forest on Auckland Island. Photo: A. Anderson.

trees up to 70 feet (23 m.) high, an abundance of birds of all kinds, very abundant fish and rocks covered in shellfish. Turnips, potatoes and cabbages were growing near some huts that had been erected, again in 1840, by the French Expedition under Admiral Dumont D'Urville.

In 1850, after the colony had been established and Enderby had inspected the islands, he continued to wax enthusiastic (Dingwall *et al.* 1999:233);

> The soil is everywhere rich beyond description and with a depth of 7 to 9 feet; it is covered with vegetation from the water's edge to the summit of the hills … although there is much wind and rain at the Islands, as might be expected from their latitude and situation, there is also much fine weather.

Another senior officer of the colony, William Mackworth, agreed (Dingwall *et al.* 1999:233), and after suggesting that many hundred head of cattle could be pastured on Enderby Island alone, he observed of the islands generally;

> Having, then, abundance of wholesome water in every direction, an exceedingly rich soil, and a climate equal hitherto to March and April in our own country, I doubt not that the land will be considered most valuable by agriculturalist, and other, owners.

Even when the Enderby colony was failing, enthusiasm for colonising the Auckland Islands remained. A visitor in 1852

FIGURE 3. Port Ross from Enderby Island. Photo: A. Anderson.

noted that, "the farms, and there are several, are everywhere failures," but concluded; "there is no doubt that in the Auckland islands … cattle, sheep and pigs could be pastured to a large amount; and they would (and will as it is, if not killed by the Maoris) increase enormously." He also observed that, "Mr Enderby is as madly enthusiastic as ever on the subject of these miserable islands, and is as anxious to go down again" (Malone 1854:73, 76). It was upon such optimism that later pastoral colonisation was attempted.

Reality

When colonists landed in the Auckland Islands, they soon perceived the difference between illusion and reality. The Auckland Islands are indeed relatively large (62,600 ha) and situated 460 km. south of New Zealand in mid-latitudes, at 50° South. However, in the southern hemisphere, that latitude is at the mid-point of the subantarctic bio-climatic zone. The Aucklands have a mean annual temperature of 8° Celsius, with not much variation in it, persistently strong westerly winds and frequent precipitation on up to 300 days a year. A low, tangled, wind-sheared, forest (Figure 2), reaches only 50 m. above sea-level and beyond it are subalpine heaths to 450 m. a.s.l. and then fellfield to the mountain tops at about 700 m. a.s.l.

The islands had been re-discovered, by Europeans, in 1806 (Captain Abraham Bristow, in the *Ocean*) and there were no signs of habitation. Sealing occurred 1807 to about 1830, and some sealing gangs spent months in the islands, planted vegetables and hunted the pigs descended from those released by Bristow. The feral pigs, and rabbits and hens released on Enderby Island in 1840, were useful for visitors and parties of shipwreck survivors, some of whom spent 20 months in the islands before being rescued. Attempts to actually colonise the islands began, appropriately enough, by Polynesians.

Polynesian colony: In 1843, a group of 23–40 Maori who had recently migrated to the Chatham Islands, and their 25 Moriori (native Chatham Island) slaves, commissioned the brig *Hannah* to take them to the Auckland Islands, with the intention of beginning a new colony there. The reasons for their move are not clear, but Matioro, their main chief, had been on sealing expeditions and knew the Auckland Islands to be uninhabited (Shand 1893). He might also have wanted to escape the censure of missionaries in the Chathams for keeping slaves, or the consequences of his clan's attack on a French whaleship, the *Jean Bart*, at the Chathams in 1838 (Malone 1854:61). Several of the Polynesian colonists were dismayed at the conditions on the islands and returned in the *Hannah*, but most of them were determined to stay. They occupied several settlements in Port Ross, according to their allegiance with the competing chiefs Matioro and Manature. There was occasional violence including a gunfight between Matioro and his opponents that led to several deaths. Otherwise, the colony was occupied in its gardens of potatoes, turnips and cabbages, and by hunting, fishing and shellfishing (Shand 1893).

Enderby whaling base and colony: In December 1849 three whaling ships arrived in Port Ross (Figure 3), carrying 70 colonists. The Auckland Islands had been leased by the

British Government to the Southern Whale Fishery Company who were to set up a base for whaling and a supporting settlement to begin farming. This was an official colony, with its own Lieutenant-Governor (Charles Enderby), a Government House, Magistrates Court, School and so on. It was the smallest, most remote and, as it turned out, the shortest-lived of British colonies. As a base for whaling in southern waters it operated with only moderate success, and as a shore whaling station it was singularly unsuccessful; only one large whale was killed (Dingwall *et al.* 1999).

As a farming settlement it was equally unsuccessful. The cattle and sheep disappeared into the unfenced bush and could not be mustered, so they were simply hunted and shot when meat was needed. Feral pigs were available, but as they fed mainly on dead seals, sea birds and seaweed, they were unpleasant to eat unless caught alive and fed on vegetable food for some time. There were unavailing attempts to catch rabbits, the local fish were found to be full of small worms, and gardening was largely unproductive. The colonists had about 2 ha in gardens. Cabbages grew well, but turnips matured at the size of radishes and potatoes were tiny. On at least one of the three years potatoes failed entirely. Sometimes the colonists had to seek food from the Polynesians (Loveridge 1995).

The constant wind and rain drove some colonists to despair and often to drink, and drunkenness was a major problem when the whaling ships were at anchor. Keeping law and order was a continual difficulty. Initially, convicted miscreants were sent to live in the Maori settlements until a jail was built, but later the prisoners burnt down the jail. Eventually, amongst recriminations between the Lt. Governor and the Company officers, it was agreed to end the colony in 1852. Most Europeans and Polynesians returned to New Zealand. The remaining Polynesian colonists were taken back to the Chatham Islands in 1855 (Shand 1893; Dingwall *et al.* 1999).

Pastoral farming: In 1874 the New Zealand government leased land to a farmer with the intention that he should supply provisions for shipwrecked mariners. Unfortunately, all his cattle escaped. The farmer was reduced to eating seals and had to be rescued. In 1894–95, the Auckland Islands were divided into four pastoral farms. One was taken up on Enderby Island, but it soon failed. In 1900, George Fleming established a farm at Carnley Harbour and landed 2,000 sheep. All of the sheep died and Fleming forfeited the lease in 1910. A later attempt at farming also failed and the islands became a nature reserve in 1934. They have retained that status and recently were added to the World Heritage List.

Reflections

Why did the attempted colonies fail? A distinction should be drawn between Polynesian and European settlement. Matioro and some of his people decided to leave when they knew the Enderby Colony was to close, and that they would lose the supplies and employment to which they had become accustomed. Yet, others did not want to leave in 1852 and remained another three years until their relatives in the Chathams chartered a ship, sailed to the Aucklands, and persuaded them to go, taking with them the bones of their dead (Shand 1893). The desire to continue the Polynesian colony was strong, as H. T. Kemp, Native Secretary, observed in the winter of 1848, "It is doubtful I think whether these people could be induced to abandon the island" (in Loveridge 1995:24), despite his dim view, through European eyes, of people dressed in seal skins and living in apparent squalor.

In fact, there is reason to think that in subsistence terms, at least, the Polynesian colony could have continued indefinitely. The population was healthy and thriving on a wide range of resources, including seals, fish, shellfish and seabirds, such as albatross, penguin and shearwater chicks. Polynesians knew about some plant foods suited to difficult times, including the pith of the tree fern *Cyathea smithii*, the root of the "Maori onion", *Bulbinella rossi*, which grew on higher ground, and the root and leaves of a native member of the carrot family, *Anisotome* sp., one of the common "megaherbs" around the coast. Maori were accustomed also to eating their dogs and, indeed, their slaves. They were also more assiduous and accomplished gardeners than the Europeans.

Failure of the European colonies resulted, at the most fundamental level, from a gross misunderstanding of the capacity of the Auckland Islands to sustain agricultural settlement. Nineteenth century European perspectives on the islands emphasized their mid-latitude position, deep soil and flourishing vegetation, but each of these was deceptive. Translocating latitudinal expectations about climate from the northern to the southern hemisphere does not work because there is almost no heat sink provided by substantial land area in the higher latitudes of the southern hemisphere. In the 45–60° degree latitude band lies the greatest land area in the northern hemisphere ($25 \times 10^6 km^2$), and the least in the southern hemisphere, indeed in the world as a whole ($1 \times 10^6 km^2$). This is the great West Wind Drift region where almost no land obstructs constant circulation of wind and water around the globe. Coupled with a 40 % greater cloud cover at 50°S than 50°N (Woodward 1987), the impact of solar radiation on growing seasons and climates on the few islands in these latitudes is much less in the southern hemisphere than it is in the equivalent northern hemisphere latitudes. Consequently, while the Auckland Islands are at the equivalent latitude of the Scilly Isles (50° N), off southern England, they are more equivalent bioclimatically to the Faeroes (64° N).

The belief in rich soils was equally mistaken. Their great depth is not of sediment but of peat and there is almost no soil development. Only in small patches along valley bottoms were there some weakly-developed alluvial soils, and

again on Enderby Island where deflated dunes had spread a thick layer of sand above the peat along Sandy Bay and up the hillsides nearby. It was in this area that rabbits, sheep and cattle survived best, but it was less than two km^2 in area. Peat is inadequate for tuber gardening and, as it was habitually wet, a poor environment for sheep, which suffered badly from foot-rot. The vegetation, too, had little to offer. There were almost no straight trunks suitable for fencing or building. Apart from the leaves of some megaherbs (*e.g. Stilbocarpa* sp.) eaten from sheer necessity by shipwreck survivors and scurvy sufferers, Europeans knew of no native food plants. The heath and tussock that covered most of the islands provided very poor browsing for stock and no basis for their long-term survival.

Conservative practices were another problem. Europeans were much more fastidious in diet than Polynesians and almost never exploited the rich reserves of seals, birds and fish which would have provided a broader choice and nutritionally essential fats and oils. Their attempts at pastoral farming seem to have detracted from the necessary effort to maximise the productivity of gardening. Social practice was also not conducive to the success of the Enderby venture. Europeans seem to have been disinclined to learn anything from the Polynesians who had been settled already for 6 years before them, and generally treated them indifferently. Two chiefs were appointed as constables, and some Polynesians were employed to supply firewood and water or to help build roads, but they were forbidden to hunt pigs unless ordered to do so by the Company leaseholders. The Polynesians established a new settlement near the European colony in Erebus Cove, evidently to seek better contact, but Europeans, seeing that Maori often carried arms, feared attack, though for no evident reason. Within the European community, there were also difficulties. The colony was top-heavy with officers of one kind or another, and they maintained in work and leisure the social distances of English convention, despite the small size of the community.

Lastly, the failure of the main commercial rationale for the colony, its involvement in whaling, was to some extent predictable. Whaling in New Zealand waters occurred mostly after 1820, and whaling ships averaged about 150 per year from 1830 until 1840 when a steep decline set in. Whaling from shore stations began in 1827 and operated around the New Zealand coast until about 1850 (Richards 2002). Initially, the main target species was the sperm whale (*Physeter macrocephalus*) but as its population had declined appreciably in New Zealand waters by the 1830s, attention turned to the southern right whale (*Eubalaena australis*). This slow, baleen species bred in bays and harbours, including in Port Ross, and was easy to catch. The catch rate declined from 1400 a year prior to 1842, to 440 a year up to 1851 and from then on only about 10 per year (Richards 2002). In short, the whaling industry was already in considerable decline at the time the Enderby colony was established.

The history of Auckland Islands' colonisation will be readily perceived to bear similarities to many other such cases, of which the Norse Greenland colony is a good example. Opinions vary as to why that eventually failed, and quite probably the fundamental problems were climatic as, in a different way, they were also in the Auckland Islands. That aside, the difficulties imposed by increasingly maladapted agriculture, unwillingness to adopt a more suitable subsistence mode, as exemplified by the local Inuit, commercial difficulties and the problems of long-distance supply, and the disproportionate influence of a conservative ecclesiastic tradition, are all features that resonate analogically in the present case (*e.g.* Keller 1991; McGovern 2000). The great Darien disaster that almost bankrupted Scotland, the Jamestown settlement in Virginia, Roanoke in North Carolina, and many other cases in point are easy to find.

Yet, if in one sense, the history of Auckland Islands colonisation is a chronicle of serial failure, in another it records a kind of success, for it illustrates the repeated manifestation of that quintessential and utterly indispensable human prerequisite for travel and migration, optimism. No colonisation would be attempted without it, now or in the past.

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ANNE CARLIE

A journey through the Sahara Desert

From Tunis to Abidjan in Volkswagen buses from the mid-1960s

Introduction

AS A YOUNG student of archaeology in Lund at the beginning of the 1980s, I had the opportunity to work for Lars Larsson in different projects. My first proper job as a field archaeologist was in the Skateholm Research Project, where I participated in the excavations of Mesolithic burials. Another project called "Forntid i Nutid" was a communication project dealing with experimental archaeology, that the University ran in cooperation with the adult educational association Vuxenskolan and Skånes Djurpark. Those were instructive days, when Lars generously shared his huge knowledge and curiosity with us, while the projects simultaneously offered many opportunities for exciting experiences and encounters. During these years I also experienced more personal sides of Lars, for example his enormous stubbornness, but also his interest in sharing new archaeological discoveries with the general public, which he does so well because he has the common touch.

Another way to explore the world we live in is travel, which I know that Lars is very fond of. I therefore would like to thank you, Lars, by sharing some personal memories from the big journey of my life in the snowy winter of 1978–79. I was nineteen years old, and on the point of taking the first step into adulthood, when I had the opportunity to join a three-month long journey to western Africa. It was through my sister Eva, who at the time was studying nursing in Kristianstad, I learned of a group of young students and teachers from Lund, planning a expedition through the Sahara to the desert town of Tamanrasset in southern Algeria. The instant I heard of this adventurous journey, I knew I had to go along.

Preparations before the desert

It was a varied team of people who gathered in the autumn of 1978 in a garage in the Scanian countryside, to repair, paint and equip the vans. The plan was that all were to travel in similar yellow-painted Volkswagen buses. This turned out to be a clever move, as it helped us several times to relocate each other when one or more vehicles disappeared from the main group.

All together, the group comprised nine vehicles, eight of them Volkswagen buses and one former military vehicle of the type "Valp". With one exception, the buses were models from the mid-1960s, with a divided front window, no seatbelts and a six-volt electric system. The buses were in many ways well suited for desert travelling, with the air-cooled engine placed in the rear and an air filter which could easily be changed and cleaned of sand. To improve the cooling of the engine in extreme heat, we had in addition put on extra "wings" next to the air intakes on both sides of the vehicle. Finally, each bus had a proper roof-rack, to hold cans for extra water and petrol, sand ladders and sand mats etc.

FIGURE 1. Map showing our itinerary through the Sahara in 1978–79.

The buses, which were to become our homes for some time, were equipped with plain "sofas", provided with blue cushions, which could easily be taken apart and converted into sleeping places for the night. All the vehicles were given more or less personal or imaginative names. I myself travelled with *Drivhuset* (the "Greenhouse"), which got its name because of the many small extra windows in the roof. The other buses were named Torken, Bananen, Sara, ALWen, Burken, Lilla My, Gnistan and of course Valpen.

Departure

On one of the last days in the month of October 1978, it was time for departure. Seven buses and some twenty-five expectant travellers came together this chilly morning outside the Helsingkrona students' club in Lund. The remaining vehicles with travellers were to join the group further on. Most of the participants were from Lund or Malmö, but some came from Gothenburg, Uppsala and Umeå. Several in the team were into natural science, with geology and biology as their principal subject. Among the participants were speleologists – cave scientists – some of whom had experience of a similar journey to the one we were to make. I particularly remember that some students in the team were to do field surveys in Tamanrasset, mainly studies of geological formations. In the group there was also a limnologist, who was going to study frogs. However, most of the team, myself included, joined the journey because of the adventure.

FIGURE 2. Caravan driving in the desert. Photo: Anne Carlie 1978.

For my part, I was hoping to experience real cave art. I had read the French archaeologist and ethnologist Henri Lhote's book on cave art in the Sahara, and was deeply fascinated by the rich rock art preserved out in the desert, with pictures of peoples and animals that once lived in the region. The most numerous paintings are found in the mountain district of Tassili n'Ajjer, belonging to the eastern parts of the Ahagger Massif. Tassili n'Ajjer means "The River plateau" in the Tuareg language. Nowadays, the district with its fantastic wind- and water-eroded rock formations and more than 15,000 known prehistoric paintings and carvings, is classified as a national park and is on the Unesco's World Heritage List. True, our journey went to the western parts of the Ahagger Massif, but perhaps some traces of rock art could also be found in this area (Figure 1).

Among sand dunes and Arab people

The first part of the journey went through Europe, across the Alps to Genoa in northern Italy. From here we travelled by sea with the ferry to Carthage in Tunis at the beginning of November, and then continued down into the central Sahara – a journey of more than two thousand kilometres running through extensive desert areas of stones, rocks and sand. Nowadays, the Sahara mostly consists of greatly eroded primary rocks covered by limestone and sandstone. Here and there, the desert is broken by dried-up river beds, salt lakes and oases where springs gush in the open. Thus, it is at the oases one finds the only permanent settlements in the Sahara. Our destination was the desert town of Tamanrasset in south-eastern Algeria, located in the western parts of the Ahagger Massif, geologically characterized by young volcanic rocks.

From Tunis the journey first went down to Enfida north of Sousse, and from there further on to Kariouan, Gafsa, with a short stop at the salt lake of Chott El Djerid. After having filled our supplies in the shady oasis of Tozeur with its fresh spring water and date palms weighed down by fruits, we continued further into north-eastern Algeria and *Le Grand Erg Oriental* – the big eastern sand desert. Here, in the area around the town El Oued we met for the first time huge dunes of reddish sand. After Touggourt the landscape changed and the sand dunes gave way to the barren and inhospitable stone desert (Figure 2).

The 16th of November: Just after sunrise we reached the sleepy town of Ouargla, where we went out to buy bread. When we arrived most of the shades were still down, but as the morning sun rose higher over the roofs, the chilly shopkeepers appeared at their shops. After a quick breakfast on a windy plain, our journey continued through a monotonous stone desert towards Ghardaia. In the afternoon we drove into El Golea, a shady oasis surrounded by the mighty stone plains of the Sahara. After some searching, we found a small market place where we could buy fresh vegetables. We saw dark-skinned Arab men in white clothing, headgear and wide trousers walking about among the small sheds. When the men met they kissed each other on the cheeks (Figure 3).

The 17th of November: The wind is blowing across lifeless desert plains. I feel a whirlwind of sand flickering in my face and shut my eyes tight. Although the sun has already disappeared behind the distant blue horizon, its red-yellow gleam still reflects in the veil-like clouds. We have travelled far today, but then we have been driving all day. We left at sunrise, in the chilly morning hours, and drove all morning through a harsh stone desert. We had a flying lunch and continued towards In Salah, where we arrived in the afternoon. The town was in decay some years ago, but has since

FIGURE 3. Resting in the shady oasis at El Golea. Photo: Anne Carlie 1978.

been rebuilt. The town consists of plain buildings made of some kind of brown sun-dried clay well enclosed in sand. The wind was blowing constantly and sand whirled in everywhere; my teeth squeaking; my scalp itching. Some parts of the road were almost covered by sand dunes, yet we managed to negotiate them. In the evening we camped next to a dried-up river bed, a "wadi". The wind was howling outside, but in the bus it was warm and comfortable.

The 18th of November: There was a nasty wind in the morning, as we crawled out of our warm sleeping bags. We took plenty of time to eat a tasty breakfast, consisting of two litres of condensed milk and the bread from In Salah (which we suddenly discovered contained numerous small black flour beetles; (not so bad to have some extra animal protein!), some Finnish tinned cheese, Algerian apple marmalade, some rather fresh tomatoes and a tiny slice of butter. At about ten o'clock we finally left and drove through a fantastic landscape until midday. Distant blue mountains rose on either side of the road, running straight as an arrow into the remote unknown. We had a short stop, got out of the van and climbed some small rocks. We caught sight of a tiny black beetle swiftly struggling over the hot surface of the sand. The journey continued and we passed the most extraordinary landscape. Giant stone boulders, in the most peculiar formations shaped by the wind, lay scattered over the seemingly infinite plain. Then, the desolate and naked plains spread out again until the mountains once more rose like giants on the horizon. The heat had become more intense as we reached Arak, a badly run-down petrol station with a dilapidated café. The petrol salesmen in their brown linen trousers and dirty jackets calmly attended us at their hand-pumped tank. Several in the group decided to take a cup of coffee at the café, which had no less than five waiters, but only one tiny table!

The road started to twist up between the black walls of the mountain, which seemed to crumble at the slightest external strain. After a light lunch in the insufferable heat we continued upwards. We came across some apparently homeless dromedaries, who ran away in fear on their long staggering legs. The rest of the afternoon I sat behind the wheel until we camped next to a wadi at half past five, surrounded by strange rock formations. We were now less than 300 kilometres north of the town of Tamanrasset, which meant that we had only one day's journey left.

The desert town of Tamanrasset

Tamanrasset is situated in the mountain massif of Tassili du Hoggar. It is the southernmost town in Algeria and also the main town of a department almost as big as France. The native population consists of Tuareg, who have traditionally supported themselves as camel-herding nomads. However, the Tuareg have for centuries plied long-distance trade across the Sahara. Also, the Tuareg are called "Blue-men" because of the dye that comes from the indigo-coloured veil that the men wear over their face. The women do not wear a veil and have more freedom than Arab women. The Tuareg people trace their descent on the mother's side and it is the women who are responsible for passing on the tribal traditions to the next generation.

In the 1920s a grave-chamber containing a female skeleton was found in the oasis of Abalessa west of Tamanrasset. The woman was wearing several pieces of jewellery, among them a necklace, a bracelet and a gold ring. Tradition has it that the grave belong to the Berber princess Tin Hinans, who ruled over the kingdom of Tafilalet in south-east Morocco, but who left to become queen of the Hoggar mountains.

The 19th of November: We woke up to a calm morning. The morning was spent driving the final stretch to Tamanrasset without stopping. The landscape was rather dull, with small sand plains surrounded by mountains. Now and then we passed a small Tuareg hamlet with houses built of red-brownish clay and yellow-green grass. The children stood waving next to the road, skinny and dirty in their fluttering linen clothing, and with their school bags under their arms. We passed giant heaps of oil barrels, which were probably used during the construction of the road, and several clusters of cheerfully waving workers dressed in military uniforms.

Finally, we arrived at Tamanrasset at half past one, but of course were stopped at a military checkpoint just outside the town. As we got into the town we were confronted with the sight of native people dressed in fluttering clothing of the most colourfully dyed linen, headgear of white linen and well-worn dusty leather sandals. After the empty wide open spaces of the desert, Tamanrasset was almost like a tourist resort. There was an airport – admittedly, a rather small one – two hotels, one tourist information office, some small cafés, a bank, two petrol stations and a market place. And

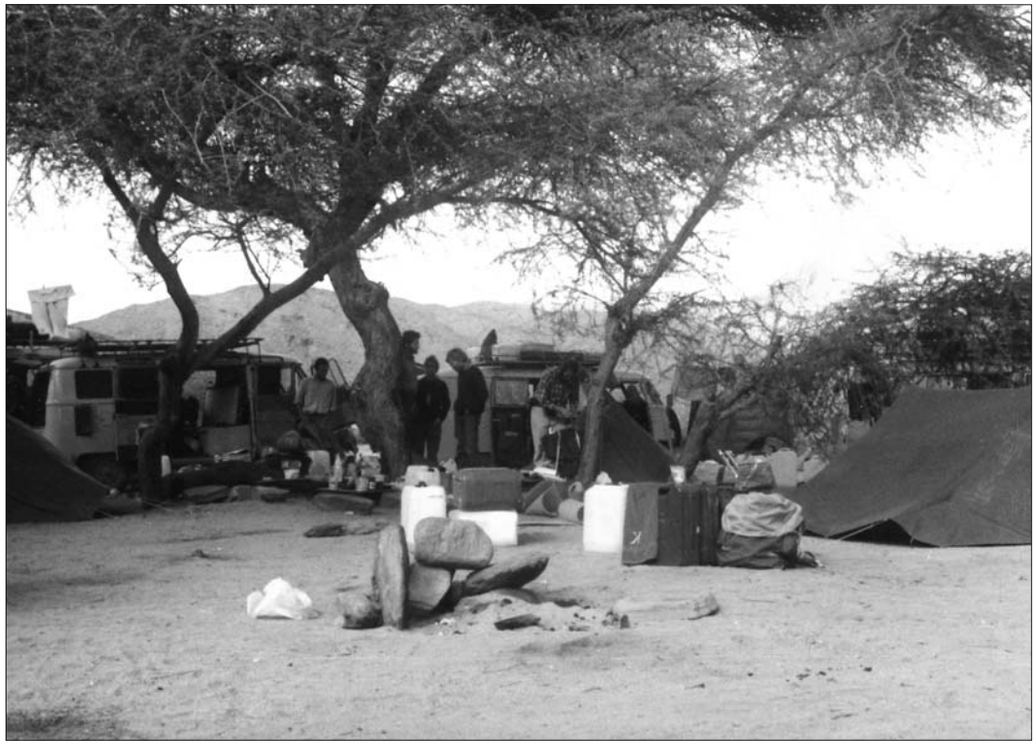

FIGURE 4. The camp site outside Tamanrasset. Photo: Anne Carlie 1978.

of course a supermarket! We headed straight there to shop, but the assortment was not the best. Dusty shelves were either empty or filled with different kinds of cans. However, we managed to get hold of some cheese and butter.

Now we have found a camping site for the night – below some mountains in a rather green area. It is getting dark and the chilly desert wind is passing over the dry dusty ground. How nice to cuddle in a warm cosy sleeping bag (Figure 4).

The trip to Assekrem

The 26th of November: Today we left for a trip into the mountains to visit the hamlet of Assekrem and the hermitage of Charles de Foucauld. Just outside Tamanrasset our yellow Volkswagen buses were stopped in two police controls only a few hundred metres apart. After having shown our papers we were allowed to drive on and found the road sign to Assekrem without further complications. But, where was the road? We drove for another kilometre or so, but with no results. So, we had to go back, and there some half kilometre before the sign we found the dirt-track. How typical! The first part of the trip went through a rather flat terrain. The track was sometimes gravelled, sometimes sandy, nevertheless, we managed to keep a fairly constant speed. Soon, however, the landscape got hilly. The track wound its way between thousands of boulders. Now and then, there were steep slopes with bad surfaces. We had to lower the speed, but could at the same time enjoy some fantastic views of deep stone-filled wadis with patches of green. At half past five we camped next to a small wadi, in which the water actually rippled among the black-washed boulders. A solitary palm tree grew next to the water. We discovered traces of people who had camped there previously. Besides some small stone circles, which had probably been used for keeping the tent cloth on the site, there were also traces of chopped logs and branches. Here, in this small paradise, we made a warming fire, enjoying the red-yellow crackling flames in the evening darkness. Underneath innocent stones we found both scorpions and spiders.

The 27th of November: After a peaceful morning we were on the road at about eleven o'clock. We passed a Tuareg hamlet with huts built of mud and grass. Dark-skinned children immediately came running towards the buses, waving and laughing, with their angry barking mongrels close at their heels. We stopped and got some colourful leather items in exchange. Now the landscape grew even more hilly. The stony track would sometimes wind upwards only to plunge downhill at the next moment. The vehicles skidded in the loose sand of a wadi and soon giant basalt rocks with hundreds of hexagonal pillars rose on both sides of the track. The air became chilly as we constantly reached higher altitudes. We approached the 2,000-metre limit. In the afternoon we arrived at a site with rock paintings. The paintings, however, were blurred in fainted colours. I discerned a solitary male figure painted in a bright red colour, but nothing else. The trip continued and the climb became strenuous. The buses were creeping up the hillside in first gear. "Gnistan" had some troubles with the engine and we had to get out and push to help the vehicle up the hill.

FIGURE 5. A brief stop on the Assekrem tour, enjoying the landscape. Photo: Anne Carlie 1978.

Finally, at five o'clock we arrived at Assekrem and the small cottage of the French hermit Charles de Foucauld. Foucauld was a former officer who in the mid-1880s, at the age of thirty, had a religious conversion. He joined the French Trappist Order, and after his ordination settled at Assekrem in 1901, close to the highest peak of the mountain massif Tassili du Hoggar, at an altitude of 2,918 metres. The Trappists distinguished themselves by strict ways of living, characterized by fasting and silence. Foucauld spent his remaining life in the mountains until 1916, when he was killed by Tuareg. Later on, several congregations were established, among them the Little Brothers of Jesus and the Little Sisters of Jesus, which also have representatives in Sweden.

The hermitage turned out to be a really cosy cottage, built of stone and mud. The entrance to the cottage was rather dark and to the left, behind two richly coloured blankets, was a small chapel with shabby goatskin rugs on the floor, gleaming in the reddish candlelight. Next to the chapel was Foucauld's small library. But it was getting dark and we had to begin the descent. Once back at the rest hostel below the mountain peak, we carried our gear and sleeping bags into the house. This was the first night since our departure we stayed indoors. We had a small room with lots of mattresses on the floor. The next day we would be heading back to the campsite at Tamanrasset (Figure 5).

Trials through the desert

The 2nd of December: Departure from Tamanrasset. The asphalt have ceased and now there is only the dirt track – in the shape of deep wheel tracks – to follow through the sand.

The 4th of December: The wind is blowing constantly and everything in the vehicles is now covered with a fine layer of sand – food, equipment, books, maps, water cans. The track is in bad state – sometimes like a washboard, sometimes just loose sand. We maintained a good speed all morning and half of the afternoon, at about 60 kilometres an hour, and passed no fewer than twenty-eight vehicle wrecks. We met three trailers that were stuck in the sand. The drivers told us that they were heading for Agadez, where the authorities had been installing electricity for the past few years, because of the extensive coal mining in the region.

The 5th of December: We slept outdoors that night under a starlit sky. The air was still warm as I crept into the sleeping bag. We left the camp at about nine, but did not get more than about three kilometres before we were stuck once again in the loose sand. Reluctantly, we jumped out of the buses. Then suddenly a trailer with two Tuaregs arrived, who gladly helped us with a pair of strong sand ladders. With combined forces we succeeded in getting free quickly. Then followed some good advice concerning driving in sand: Speed up towards the difficult passage and keep as high a gear as possible. Keep a distance to the vehicle ahead, and in case it gets stuck, stop your vehicle with a comfortable margin. If a vehicle does get stuck, everybody should not rush out to help, but only those driving in the nearest vehicle. Dig out the wheels both in the front and in the rear and place the sand mats or sand ladders in front of the rear wheel. Then you are ready to push!

We made the rest of the way to the customs station before the border with Niger almost without complications. At four o'clock we reached the petrol station and the customs, but did not get any further because the customs officers insisted on searching two of the vehicles. Unfortunately, two of the buses did get through the customs, and so we were separated once again. A group of Norwegian people in huge buses, whom we had met several times during our journey, had also reached the custom station, and so suddenly there was a huge group of Scandinavians camping in the middle of the Sahara.

The 6th of December: The customs officers allowed us to pass after some minor formalities. After short drive into "no man's land" we came upon the rest of the group who had just woken up. We continued through the sandy terrain. The vehicles wove ahead in wheel tracks with a depth of one metre. Suddenly *Drivhuset* started to leak petrol and the brake shoes got burning hot. The guys managed to fix the leaking tube, but the brakes had to be disconnected so they would not be worn out. Anyway, it was all right driving without brakes. We arrived at the Nigerian customs station, a green patch in the middle of the desert. There was a small spring with warm water, some thirty degrees, sprinkling from a metal tap. How wonderful to wash and get clean!

As the custom officers had a siesta until four o'clock in

the afternoon, we had time to wash, cook and repair our dear *Drivhuset*. Finally, at half past five we were finished and could continue our drive into Niger. Now we were some twenty kilometres across the border. It was evening and the buses were parked in the traditional circle. Between the vehicles one could see lines of drying clothes, glowing paraffin lamps, plain tables with food and people sitting talking. It was completely calm. The sky was a wonder of starlight. The air was warm. Now, we only had to decide which road we should choose for the next day.

Vehicle troubles

The journey through the desert was a strain on the old vehicles, and after we entered Niger the journey was recurrently marked by stops because of troubles with engines and lack of petrol.

The 7th of December: Burken's engine has seized. A valve is broken and has to be changed. The back seat of *Drivhuset* broke as the van drove into a big pit. Thank God we got an extra wooden board from Torken and were able to repair the seat.

The 8th of December: Burken's engine still gets hot after the repair. "The air cooler", I heard someone grumble. "We have to change the entire engine."

The 9th of December: Burken's engine died once more, as the air filter was totally blocked with sand. We decided, as a preventive measure, to clean the air filter in all the other vehicles. Engine failure again, as we stopped to help a Land Rover crammed with Nigerian people, which seemed to have run out of petrol. Then, it turned out that Torken and Drivhuset had run out of petrol as well.

In spite of all the practical hardships we managed to drive the last part of the way through the sand desert down to Agadez, situated in the central part of Niger.

The 11th of December: The atmosphere here in Agadez is much nicer than in Tamanrasset. The Tuareg people in their dark fluttering dresses mix in the market swarm with the colourful and motley costumes of the Hausa people. The women of the Hausa people are often very beautiful and seem very much aware of their status, as they proudly walk about with their heads high, in tight dresses, big head-dresses and jingling earrings. People seem so happy and open, laughing. Yet, they are also very pushy with their goods, which they try to sell to naive tourists like myself.

The 12th of December: Once again back on the track towards the town of Zinder, situated some twenty kilometres north of the Nigerian border. The landscape was gradually changing from steppe to savannah. The track was rather good the first eighty to ninety kilometres, but then it grew worse. In some parts where the road was in particular bad shape, we could not drive more than thirty kilometres per hour. We passed some grazing dromedaries of the motley lowland type, sometimes gathered in a herd, sometimes riding animals with Tuaregs in black and blue costumes, rocking back and forth in their beautifully adorned saddles. Then we passed a herd of zebus – a rather heavy animal with very long curved horns. At six o'clock we camped next to the track. A skinny Tuareg, dressed in blue, appeared from nowhere. He gave us a goat's bone and received a plastic can with water, some biscuits and two blankets in return.

The 14th of December: The landscape is getting more densely populated and we can hardly drive more than a kilometre without passing small hamlets of straw huts with plaited roofs. Thin dark-skinned men, women and children are sitting in their small booths, selling sweets, peanuts, cigarettes and small round biscuits. Some people are dressed in native clothing, while others wear flowery or checked shirts of western type. We arrived in the afternoon at the town of Zinder, which has a distinctly western character, with several petrol stations, supermarkets, streetlights and the blessed asphalt. Hopefully, we have left the dirt track behind us for good!

The end of the journey

From Zinder the journey continued to the city of Kano in Nigeria, where the group had a general meeting to draw up the plans for the home journey. By now, many of the participants were rather tired and longing to get home. In Kano we split into two groups. The first group decided to investigate the possibilities of travelling by cargo boat from Lagos to Europe. The other group chose to continue the journey, first passing the capitals of Niamey in Niger and Ouagadougou in Upper Volta (now Burkina Faso), and from there turning westwards to Ghana and the Ivory Coast, to try and arrange travel home from there. For my part, I choose the later alternative and we had an eventful trip with many memorable adventures. From Ouagadougou, where we celebrated New Year, the journey continued through Ghana, via Tamale over the Black Volga and onwards to Ivory Coast and the coastal city of Abidjan, where we arrived on the 12th of January 1979. In Abidjan we eventually sold three of the remaining four buses and travelled in small groups by air back to Sweden via Rome and Paris. Only two participants managed to drive the entire long and adventurous journey through the desert and back to Sweden. The vehicle they were driving was our dear *Drivhuset*, which after some ten flat tyres and various other minor mishaps returned home with a worn-out engine.

English revised by Alan Crozier

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CAROLINE ARCINI

Meeting the Essejas

A childhood dream fulfilled

MY GRANDFATHER COULD never have anticipated what the consequences would be when he bought me the children's book *Viggovam in the Long House*. The book is about a small Indian boy and his brother when they become aware for the first time of one of the festivities of their tribe. My interest in the Indians of America then became much deeper than could be foreseen. At that time I was too young to read myself, but later when I got older my choice of literature was mainly travel books. My early contact with the explorer Rolf Blomberg kept my childhood dreams alive, and when I was twenty-one years old I had saved enough money to realize them.

On a barge along the Rio Madre de Dios

The year is 1981 and three old barges that have retired from their work on the French rivers now have more marvellous watercourses to conquer, when they take us along one of the large tributaries of the Amazon, the Rio Madre de Dios. We are going to the Indian village of Porta Chuelo Alto. The barges that are wrapped together to make a large wide boat named *Francia* are overloaded with people, chickens, pigs, parrots and a donkey. I myself am travelling with an Aymara Indian from the highlands (Altiplano). It is in the middle of the day and the sun is shining, it is hot and the humidity is very high. Suddenly people rattle saucepans and a nice fragrance spreads over the travelling group. A man comes out of the galley to announce that lunch, *almuerzo*, is served. We walk to the kitchen to line up, but stop when we see what people have on their plates. Even though it smells delicious for a hungry stomach, it looks like vomit so we decline with thanks. Instead we eat some of the fruit and bread that we have brought with us. The others, however, seem satisfied, they are talking, laughing and the noise is deafening. When they have finished eating they make themselves comfortable. Some spread out their mattresses and put up mosquito nets and I remember thinking, they are probably going to travel all night. We find some big sacks to sit on. It is not very comfortable but we are not going to travel that far. We have been told that we will arrive in the afternoon. As usual the boat is late, you get the feeling that time is not very important. It is already four hours behind schedule and there is still no sign of the captain, and people are still arriving at the boat as if there were no fixed time for departure. The Indians, however, do not seem to bother about the delay. And really, why should I bother? I am certainly not in a hurry. However it seems that even though I have been travelling around the country for four months, I never get used to the constant delays.

Suddenly the engine starts and the boat leaves the shore. It is getting darker, and we now understand that we will arrive in the middle of the night, rather than three o'clock in the afternoon, as we were told. A lamp is lit just over the place were we are sitting, and it is nice to be able to see everything. People are sleeping in hammocks, on thick mattresses or just on a pile of potato sacks. The bad thing about the lamp is that mosquitoes are drawn to the light, get burned and fall down on your face. I put my anorak on and pull the hood over my head. Hours pass and the only thing to be heard is the thudding sound from the engine. It is two o'clock in the morning when we ask the captain when we will arrive at Porta Chuelo. A man next to the captain answers in a rather rude voice that we have already passed the village. Angry about not being told, we ask the captain to turn the boat and take us to the village. He shakes his head, he can't do that as he is already several hours late. Instead he stops the engine and steers the boat to the shore. Two narrow boards are used as a gangway into the night-black jungle, and we are requested to take our things and leave the boat. We have no lights with us and soon the light from the boat has disappeared into the dark jungle. We are alone.

Strangers received as friends

In front of us lies the deep black jungle. When you get used to the dark you see a lot of small bright points of light shining for just a few seconds. They are small beetles and the air is full of them. The shore we are standing on slopes abruptly down to the river, and suddenly in the light of the moon we see a very weak light and shadow of a small boat lying along the riverbank. Without thinking, I start to call for help in my own language and suddenly a man comes out of the boat and shines a torch towards us. "Who are you?" he says in Spanish, and my travelling companion explains the situation. The man from the boat climbs the less abrupt part of the shore and comes to our rescue. He tells us that there is a small village straight in front of us in

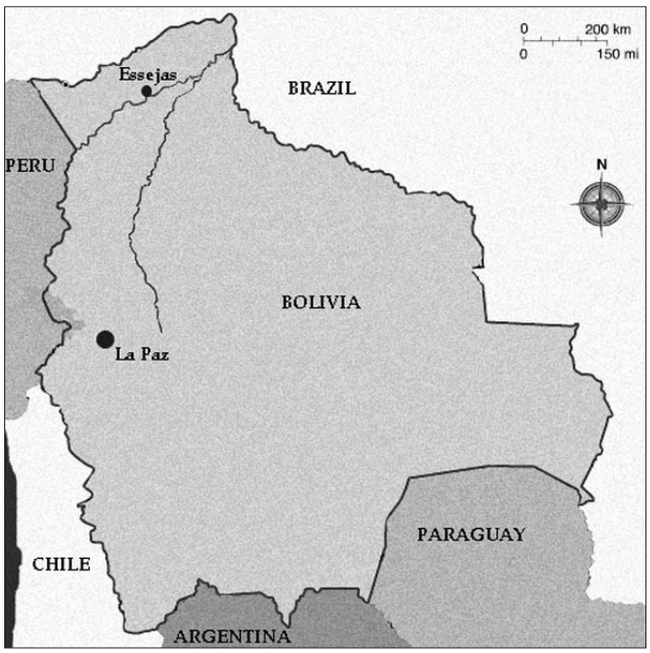

FIGURE 1. Map showing the land of the Essejas.

the jungle. With him lighting the narrow path we soon reach some houses. He calls out to those who live in the nearest house. Suddenly I see some young boys standing in the door. The man from the boat probably explains the situation and the boys look at us and laugh. They show us an empty house, and tell us that the family that own this house are not using it at the moment so we can take it. We enter the house but only for a few seconds. It seems that the house, which is made of bamboo like all the houses in the village, has been uninhabited too long and the ants have taken over. I find my legs covered with these large biting creatures. I run out of the house screaming. They show us another house without ants, and two boys from the village give us a mattress made of bamboo. We have put up the mosquito net and lay some of our clothes on the bamboo to make the mattress more comfortable. I am so tired that I fall asleep at once.

This is the start of a ten-day visit to the Essejas, a small group of inhabitants in a part of the Amazon basin in north-eastern Bolivia (Figure 1). Twenty-five years ago the Essejas, which in their own language means "We who talk" were a small group of people that tried to adapt their original way of living in a very rapidly changing environment. Because of exploitation of oil and natural gas their previous lifestyle was obstructed. They are not allowed to move around in the jungle as they used to, although they need to move their plantations which have now ended up a large distance from the village and become difficult to use. Meeting the Essejas offers a lot of joy but also sadness. Even though I am a stranger and a European they receive me with great warmth but also with a great deal of curiosity.

Like monkeys in a cage

The sun has already risen and I hear people talking in a language that is unfamiliar to me. I open my eyes and find the house completely surrounded by Essejas, both adults and children, looking at us. Some of them have loosened up the bamboo poles, and like visitors in a zoo they stand there looking at the strange new animals in their house. For several minutes I lie still just looking at them. My grey-blue eyes look into their dark brown ones. I smile and they smile. I lift the mosquito net to get up, and as if by a magic, all the Essejas have disappeared. I leave the house in the hope of meeting the villagers, but it takes time before they show up. The children are the most curious, and happy faces look out of open bamboo doors everywhere. After a while a young man who also speaks some Spanish makes contact with us. He explains that most of the men in the village have gone by boat to the nearest town to sell vegetables and fruit. They have been gone for two days and will come back later that day. He ask us if we need anything, and we tell him that we need water, and a fire to be able to cook our breakfast. With us we have brought dry soup, salt, sugar, maize flour and cinnamon. The man instructs a boy to fetch some water, and then shows us one of the houses that is used as a kitchen. Three thick logs form the fire-place. It has been used earlier this morning and the coal is still burning. He pushes the logs nearer each other and blows. Large flames lick the black parts of the logs, and the fire comes alive. The boy returns with water. He hands me a metal pot filled with water. I look into it, the water is very dirty and small insects are swimming around. The man can obviously see that I am not satisfied and tells the boy to fetch new clean water. Now both children and women have left the houses, and we find ourselves surrounded once again. Some of the children climb a mango tree, shake the branches and the whole ground is full of ripe mangos which they invite us to eat. During the day they get more used to us and tell us about their village. It is called Porta Chuelo Alto, and further down the river there is another village named Porta Chuelo Bajo. It is really hot and we walk down to the river to take a bath. The boat and the man that helped us the other night have gone. The water in the river is not clear, it has a yellow-brown colour and it is warm. The children are very curious and from a distance they follow us to the river.

Later that day the men in the village return from the town, and among them there are others that speak Spanish. At first they adopt a wait-and-see policy, but after a while they come and tell us a lot about their life. They have not always been living here at this place. When they were younger their village moved from place to place, but then the oil companies came and they were forbidden to move around. They have fought a lot and many of the men were killed. Women lost their husbands and children their fathers. In the village they now had big problems since there are not enough women compared to the number of men.

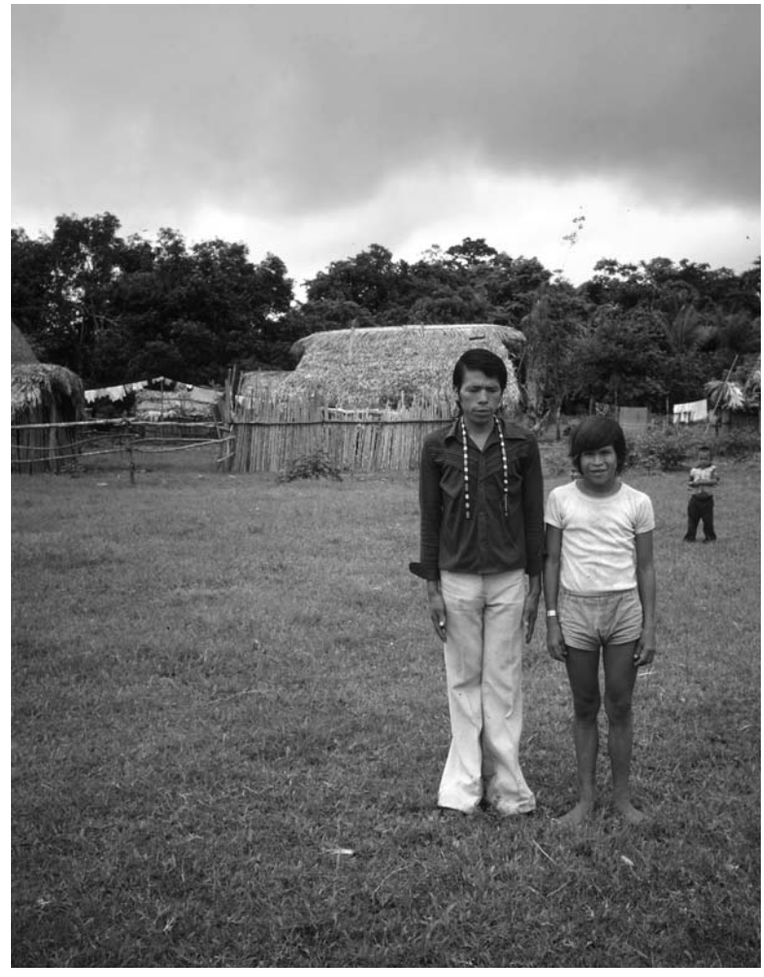

FIGURE 2. A boy and a man from the village. The man is dressed in a woman's shirt with a snake around his neck. Photo: Caroline Arcini 1981.

FIGURE 3. An Esseja girl inviting us to taste the grilled caiman. Photo: Caroline Arcini 1981.

FIGURE 4. My grey speckled chicken "Cachina paqua". Photo: Caroline Arcini 1981.

FIGURE 5. A strong blow and the Brazil nut is divided into two. Photo: Caroline Arcini 1981.

Young men have to couple with old women and therefore many of them do not have any children. The man we talk to have twelve children but ten of them are staying with relatives, couples without children of their own. To have control of the village, the oil company has sent missionaries to stay with the Essejas, and in one part of the village there is a building made of concrete, the home of the American missionary family. The house looks abandoned and we are told that they have not been there for several years. Strangely enough, for some reason they came to the village at the end of our stay.

Not missionaries – what a relief

The next day several of the villagers join us by the river. At first they just watch us but later the whole village comes to swim and the children play in the water. It is nice by the river, although some kind of biting fly bothers you as soon as you come out of the water. The man who speaks Spanish tells us that we should be careful, because there is a fish in the river that bites, especially if you have wounds. We do not have any proper bathing suits with us and therefore swim naked. We notice that the Essejas are confused. The man that speaks Spanish explains to us that the missionaries have told them that it is a sin to swim in the river without clothes. However since we manage to explain to them that we do not believe in God like the missionaries, they happily take off their clothes and jump into the river.

Days pass and we understand that the Essejas are really uncomfortable with the missionaries, and it takes time to convince them that we are not missionaries. After a few days, however, they seem more relaxed and happy. We have been very careful in our encounter with them and not asked them if we could take any photos. However they have seen us using the cameras to take photos of animals and flowers, and one day they ask us to take a photo of them. Not all, but many of them line up in front of the village. Some of the men have dressed in clothes that they have bought in the nearest town. One of them is very proud when he shows us a snake that he has caught and puts it around his neck. It looks as if he is wearing a colourful tie (Figure 2).

A caiman for breakfast

Later that day when we are cooking our dinner, a soup made of yucca, a girl comes to the kitchen with a caiman. She is carrying the small crocodile on her shoulder. Her father has been out fishing and he also managed to kill a caiman. The girl just put it between the logs in the fire. The hard skin of the animal itself works as a boiling pot. The flames lick the skin that becomes black and fragile. After a while she takes a knife and opens it. Inside there is white meat, quite soft. We ask if we may try it and she invites us to have a taste (Figure 3). It doesn't taste very much. I fetch the salt we have brought from the highlands, sprinkle it on and it becomes much more tasty. The rumour about the salt, a product worth its weight in gold in this damp saltless jungle, spreads very fast and suddenly a lot of people enter the kitchen to taste the caiman with salt. They take a piece of meat, lick their fingers and put them in our bag with salt. Everywhere there are happy, smiling faces looking at us. Along with fish, caiman meat is a good complement to a diet mainly based on vegetables and fruits. Since they are not allowed to move around in the forest as they please, there are not many animals left to hunt in the region. To compensate for this, the petroleum explorers have given the Essejas both pigs and cows. However the Essejas are not interested in these domesticated animals, and when the animals die they just throw them in the river.

Cachina Paqua and a marvellous cup of chocolate

One day the Essejas tells us that they want us to meet the chief of the villages. He lives in a separate place between the Porta Chuelo Alto and Bajo. With large machetes in our hand we clear a path through the jungle. The mosquitoes are very active and I put on my black anorak. On our way we visit another family that has their house on the path to the chief. The man in the family is not Esseja, but his wife is. He talks about life in the village and how he ended up there. Outside their house there is a beautiful cacao tree covered with orange-coloured cacao fruits. We are invited into the house to drink freshly made cocoa. Of course they make the cocoa with all the fat left, and for a chocolate fanatic like me, it smells marvellous. They show us how they make the chocolate. They open the ripe fruit and inside there are small seeds covered with a fresh, sweet, white flesh. They put the flesh into their mouths, suck and then spit out the seeds on a cloth. When the seeds are dry they roast them in a pan until they turn the brownish colour of chocolate. Then they grind them and whip the grounds with water and sugar. A freshly made cup of chocolate with all the cacao butter floating like small islands on the top smells delicious for an inveterate chocolate addict.

The daughter of the family is tending the hens and chickens, giving them food and water. This chicken, she says, showing me a tiny grey speckled one with large legs, has no mother and has therefore become tame (Figure 4). She asks me if I would like to hold it and puts in my hands. It seems comfortable, closes its eyes and falls asleep. The girl tells me that she wants me to have it. Ever since I was a child I have wanted to have a chicken, but this gift was a total surprise to me. Without any thought of the consequences for the journey, I accepted it.

The chief of the village and the Brazil nut tree

With my new friend the chicken Cachina Paqua, which means chicken in Esseja language, we walk along the path to pay a visit to the Esseja chief. The path is dense and the Essejas really need to use their machetes to cut our way through. Finally the jungle opens up and we can see a cluster of bamboo houses. The men from the village where we are staying explain who we are to a man who apparently is the chief. At first the chief looks at us in a suspicious way, but after a while he welcomes us and introduces us to his family. Even though I suspect that he knows that we don't speak his language, he only speaks in Esseja. However with gestures, sign language and with help of the other Essejas we manage to understand something. Suddenly he takes us by the hand and walks towards the jungle. The trees around the glade are the highest I have ever seen. He stops by one of these huge trees and points up into the sky to the large coconut-like fruits, hanging at the top of the tree. Now we also see that the ground around the tree is full of this type of ripe nuts. We pick some, and return to the houses. One of the women takes a nut, puts it on the ground and with her machete she makes a vigorous cut and divides it into two pieces (Figure 5). Inside it looks like an orange with several brown segments, nuts with their own shell. It is fresh Brazil nuts. With a stone we smash the hard shell and can then consume the nuts, which taste fantastic. It is really a special feeling to sit here in the Amazon basin eating Brazil nuts together with the chief of a local tribe.

Porcupine quills and ants on a thread

One afternoon when we return from our daily swim in the river, some of the villagers are sitting in small groups outside their houses. The women are doing some sort of plaiting and one small group of men are making bows and arrows. They look at us in their special way, as many times before, and when we look at them they just start to laugh. Without saying anything, just looking at us the men make it very clear that they do not want us to touch the arrows or the bows. A day later we ask them if it is possible to buy or trade a bow and arrows, but it is not. However, they are interested in trading and show me some other things. They are necklaces made of parts of animals. One necklace is made of porcupine quills. It is not easy to wear but beautiful. The other necklace they show us is very fragile, and according to them made of heads of ants. We ask them what they want in exchange and they answer that they want the salt that we have brought from the highlands.

Young and fearless

I am happy to have made this trip. At that time my will was stronger than my fear. Looking back it was really a bold venture, especially thinking about all the diseases I could have caught. However, I only got a touch of amoeba dysentery which, during my recovery at one of the hospitals in the capital La Paz, gave me another adventure. Would I like to go back? Perhaps when my children are grown up and can take care of themselves. However, I wonder if the village is still there. The Esseja chief is most probably not alive twenty years on, and the girl who gave me the chicken, will she recognize me? Is the barge still in use and can it take me to the shore in the middle of the night? There are many questions, but I hope to have them answered one day.

Journeys can be made in time and space

My trip to the Amazon basin was a trip in space and about two years later, it is time for a journey into prehistory. This time it is Lars who introduces me to a meeting with the former Mesolithic inhabitants of Skateholm in southern Scania. I have just finished my studies in osteology, when I join the excavation of some of the burials of these hunter gatherers. It was really an instructive period and I am very grateful to Lars who gave me the opportunity to practise excavation of human remains, since I had decided to become an anthropologist. It didn't take long before Lars tested my knowledge. When a skeleton was excavated he asked me to sex and age estimate the individual.

I know that Lars is interested in travelling and has visited many places. However, I don't know if he has been in the Amazon basin but if not, I could recommend it.

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JOHN COLES

On the absence of presence

THIS PAPER IS offered to Lars Larsson in recognition of his great contribution in site exploration and presentation to audiences both academic and public. The intention here is to comment on the seemingly simple, yet often complex, effects that a Presence, an audience, may have on sites of significant heritage importance, while an Absence of interested parties may be beneficial and yet carry its own problems of supervision and neglect.

My own views have become more focussed from recent travels in Canada, Japan and central Europe, and I see the contrasting attitudes and responses from a base of years of involvement with heritage matters in western Europe. There are many facets to the problems of conservation and promotion of significant sites, but I concentrate here on one aspect only, that of the Presence or the Absence of an audience, the public as well as the archaeologists, on sites that pose special problems of popularity, of fragility and of access.

In many countries of the northern world we see examples of damage done to crucially important sites and landscapes. Sites over-explored, over-restored, over-promoted, remain as examples of past failures or bad decisions. The ancient settlement of the Glastonbury Lake Village, and that of Biskupin too, held much unique evidence by virtue of good preservative conditions, yet most of each site was excavated at the same or barely-improved standard, leaving little for modern archaeological work to be applied. The rock carvings of a site such as Aspeberget in Sweden have been known for over 150 years and the several attempts to provide protection from atmospheric conditions and the public, and the archaeologists, have had variable results as the visitor today can well see. We cannot, of course, do better than our own techniques allow, and our criticisms of the past should be tempered by the possibilities, of rewards and laments, of the future. In the fields of preservation and presentation we may feel critical of past efforts, yet we have our own over-stressed sites and landscapes where protection has failed to match attraction.

In many countries, public funds have been offered, with good intentions, for the restoration and presentation of "heritage" monuments to the public at large, and the effects have sometimes been difficult to justify. Hadrian's Wall in northern England, Stonehenge in the south, the Järrestad rock carvings in Sweden, the Carnac stone alignments in Brittany, Yoshinogari in Japan and other well-known sites all suffer, to varying degrees, from the impact of over-popularity, in part due to our own advertising campaigns.

In the course of recent work for a number of authorities in North America, in west and central Europe, and in Japan, I have had the opportunity to visit sites that are under the pressures of development, of heritage promotion, of public involvement, and have discussed with colleagues some of the decisions that have had to be made, not all of them entirely satisfactory. In this paper I will mention only two major and well-known sites where the public pressures are great, and two others where the archaeological content benefits from lack of such pressures: two sites with abundant Presence, and two with a good deal of Absence.

Biskupin, Poland

This is probably the most-widely known and respected prehistoric site in central Europe. The fortified settlement of the first millennium BC had over 100 wooden houses, wooden roadways and enclosing rampart, and literally tonnes of organic and inorganic materials preserved by a measure of waterlogging. The site was extensively excavated between 1934 and 1974, and over 75 % of the area of settlement was exposed, much of the structural remains removed, and the site subject to variable drying conditions thereafter (Jaskanis 1991; Piotrowski 1995). In recent years, efforts have been made to maintain some suitable preservative measures, including damming the surrounding lake waters. Replica buildings and walkways have been created (Figure 1). As a national monument, and actively-promoted site, visitor numbers have reached a quarter of a million in the recent past. Some measure of control is exercised by walkways and signposts, but some areas are heavily trodden and the contextual landscape is more and more difficult to project.

There can be no doubt that far too much of the site was excavated in the first flush of enthusiasm, and modern analytical approaches are now restricted to small-scale operations, and the vast bulk of the site lies disturbed and dismantled, explored long ago, and not now in good condition. The current staff at Biskupin have done exceptional work in efforts to preserve what is left of the site, and to attract and educate the public. Only targeted work can now be deemed appropriate and worthwhile (*e.g.* Wazny 1994).

In the early days of recognition, the entire operation at

Biskupin was funded by national agencies. Now however the responsibility falls more upon local and regional sources, and the site can only survive by its own active promotion. An annual Festival attracts many thousands and encourages a national recognition of the site's importance, and reconstructions and demonstrations provide good educational opportunities. So an Absence of Presence today would spell the decline of the site both in its maintenance and its future scientific examinations.

Yoshinogari, Saga Prefecture, Japan

One of the largest settlements of the Yayoi Period in Japan (300 BC–AD 300), the village was surrounded by a double moat with strong watch towers set inside. Adjacent to the settlement was a huge burial mound with a richly-furnished burial and an extensive cemetery of over 200 burials, many in large pot-shaped coffins (Sako 1991; Hudson and Barnes 1991). The entire site, discovered and explored in 1986–88, before planned industrial development, was declared to be of national importance and the development was halted. Major parts of the complex were re-buried, and the burial mound material is displayed in a pavilion set upon the mound base. An exhibition hall sets out the history of the site with artefacts, models and videos. Guidebooks are designed at different levels for visitors – a monograph, a 36-page booklet, 4-page guide, and an English-language guide.

The extended National Designation area is about 40 hectares, and some of the structures detected during excavation have been replicated on site, so the hundreds of thousands of visitors per year (Sawamura 2004) can see houses, gates, ramparts and towers (Figure 2). Funding for the entire complex, its preservation, excavation and presentation, was shared between the national and regional authorities.

Access to the area is loosely but effectively controlled, with walkways and few fences, so the atmosphere of the site is maintained. The survival of the unexcavated portion of the complex is not likely to be improved by the pressure of visitors, but it is noticeable that cleanliness of the whole site is scrupulously maintained. So here the Presence is quite tightly controlled, and damage through erosion and deliberate vandalism is reduced, and the general respect with which the heritage is held in Japan must aid in the overall

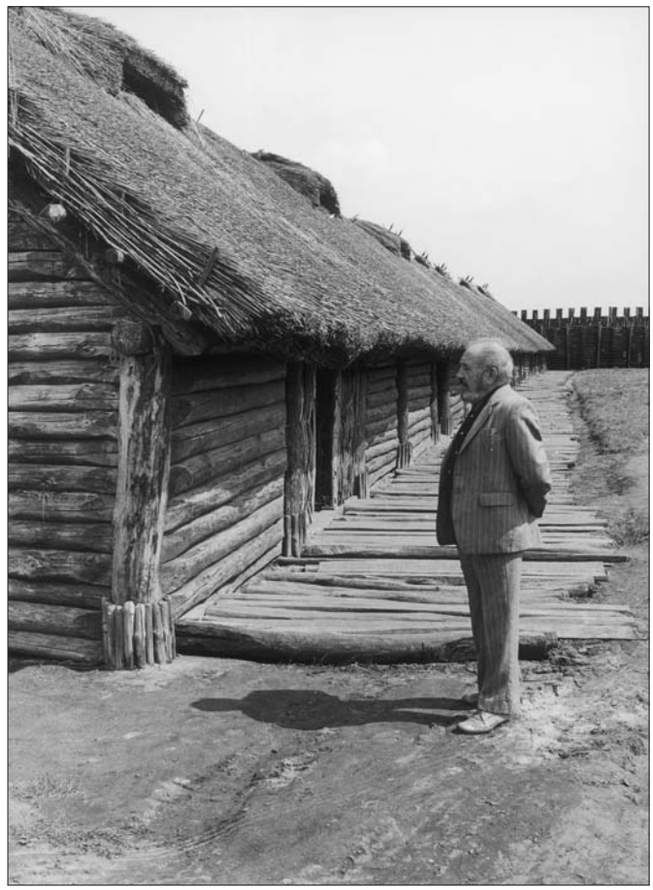

FIGURE 1. The discoverer of the Biskupin fortress, Dr Walenty Szwajcer, beside one of the rows of houses and walkway replicated on the site. Photo: Andrzey Ring, Warszawa.

FIGURE 2. The Yoshinogari hillfort, Fukuoka, Japan, extensively excavated, surfaces reconstituted, with some replicas built for public demonstration. Photo: John Coles 1994.

security, preservation and enjoyment of the site. The regional museum at Fukuoka receives about 300,000 visitors per year and has a magnificent education department for children which is reflected in the behaviour of visitors at Yoshinogari.

Frobisher Bay, Nunavut, Canada

The bay, on the SE of Baffin Island, leads in to the principal town of Iqaluit, the capital of Nunavut. Nunavut occupies about 1/5 of Canada's landmass. It has a population of 27,000 and few roads of any length. The climate is Arctic and this has several implications for archaeology and the heritage. Very few archaeological excavations have been carried out in the immediate area around the Bay (Collins 1950). There are very few visitors to the region, and climatic conditions allow exceptional survival. What might be expected can be glimpsed in recent descriptions of society and economy in the general region (*e.g.* Brody 1987).

A small island in Frobisher Bay holds the traces of ancient settlement in undisturbed condition. Stone, bone and ivory survive uneroded on open sites and it is a revelation to see edges of material still sharp and unworn. House-settings consisting of stone blocks, bone and ivory supports for skin coverings remain inviolate (Figure 3), as if awaiting the return of the seasonal hunters with their sheltering skins of seal, walrus and caribou. Their landing places along the rocky shore show little sign of human alteration, and their industrial places where butchery and other preparations were carried out remain as scatters of debris around the central blocks. Burial cairns rest undisturbed, with clothed contents occa-

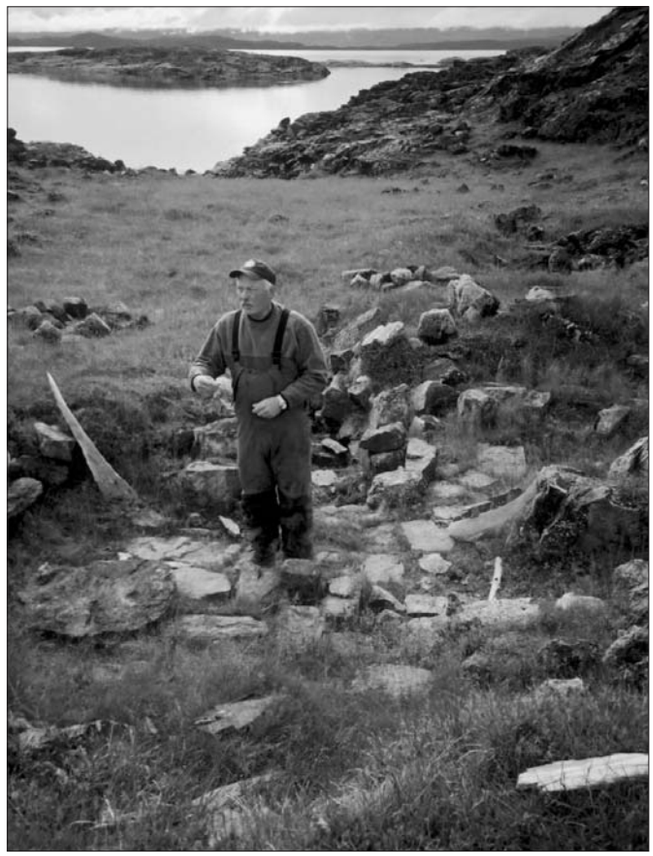

FIGURE 3. Frobisher Bay, Nunavut, Canada. A seasonal encampment, unexcavated, with structural and economic remains in undisturbed condition, no pathways to the site, no notice boards, no trampling of surfaces, but wide open to ill-informed curiosity. Photo: John Coles 2001.

FIGURE 4. St. Victor, Saskatchewan, Canada. The sandstone plateau overlooking a narrow ravine and wide flatland. The exposed surface has about 800 images carved into the soft sandstone. Photo: John Coles 2005.

sionally visible through the loose stone packing. Narrow stone cists once roofed with swan wings were fox traps, and other ingenious settings had trap-falls and other mechanisms.

All of these remains and their immediate landscape context survive seemingly untouched. No pressure by visitors, souvenir-hunters or archaeologists seems to have disturbed the sites and adjacent areas. Access by boat is restricted, seasonal visit opportunities are climatic controlled, and a few informed heritage managers seem to bear the responsibilities of education and control with enthusiasm and determination. An Absence of Presence here demonstrates its virtues, but any alteration in climatic conditions (already underway in the region), or in amendment of economic practices, or enhanced tourism, may well create difficulties for the survival of such pristine sites (Czonka 2000). The agencies concerned with heritage matters will have to make provision for the onset of substantial change.

St. Victor, Saskatchewan, Canada

The wide expanse of the Northern Plains in mid-western Canada and America is sometimes truncated in spectacular fashion by narrow valleys, some dry and of glacial origin, and some occupied and eroded by streams and rivers today. Geologically, the plains are complex with thin layers of sedimentary deposits sometimes resting upon less stable materials. At St. Victor in southern Saskatchewan a thin and soft sandstone plateau has been truncated abruptly (Figure 4) and, below the edge, a narrow ravine is littered with fallen blocks and eroding lower sands and gravels (Figure 5).

In the early 20th century, bison bones were found below the cliff, and a late 19th century record notes that native people had used this place as a bison jump, the animals driven in a herd over the cliff edge to be either corralled or slaughtered below. Among the Plains Indians the variety of bison/buffalo jump sites was extensive (Verbicky-Todd 1984). In the vicinity of St. Victor are other bison jump sites such as Wanuskewin and Opimihaw, dated 1,500 and 2,300 years ago, respectively; the several sites at Wanuskewin are in no way as steep as the St. Victor fall but may have served to corral as much as disable the animals.

On the flat surface of the St. Victor sandstone plateau (Figure 4), near the present-day edges, are several hundreds of rock carvings including many bison hoofprints as well as human and bear footprints (Figure 6). The carvings are believed to date within the period AD 500–1700 (Keyser and Klassen 2001; Lowie 1982) and to belong to the Assiniboine tribal group, although direct attribution is unclear. The carvings were "discovered" by European-derived settlers in 1870, re-discovered in 1955 and recorded in 1970–81 (Jones and Jones 1982). The St. Victor site is now protected by legal and physical means (see below) but it is clear that parts of the carved surfaces have fallen down the slope. During my visits to the area, information was obtained from local people that from 1960 onwards, the place was often used for private and public gatherings, when climbing and jumping were practised and rockfalls occurred. The carvings on the soft rock have been partly eroded by human traffic, and in 2000 a formidable fence was erected which attempts to exclude all visitors from the surfaces (Figure 7).

FIGURE 5. St. Victor, Canada. View from below the plateau, with fallen blocks and the base of the bison jump. Protective fence in foreground. Photo: John Coles 2006.

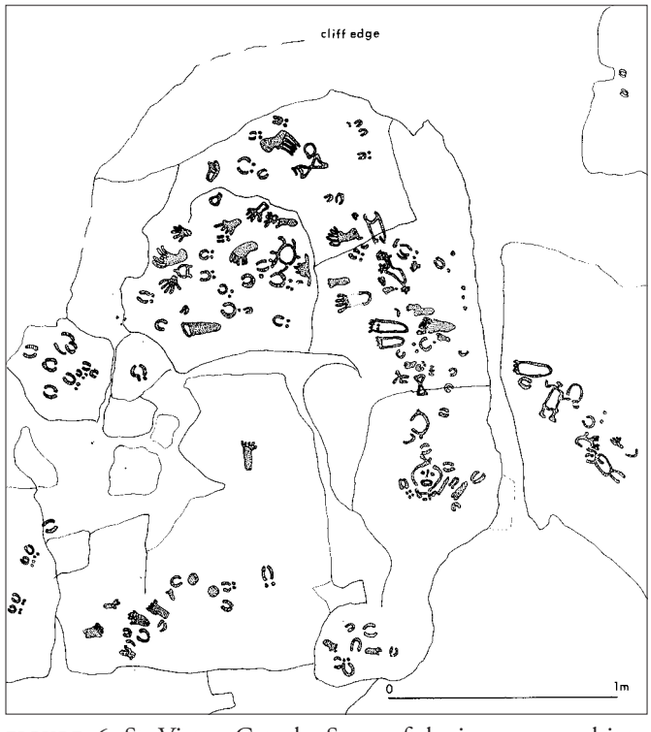

FIGURE 6. St. Victor, Canada. Some of the images carved into the sandstone surface near the edge of the plateau, with bison hoofprints, bear and human footprints, human face and other symbols. Plan based on St. Victor Provincial Park guide leaflet and site visit 2005.

As the images lie upon a horizontal rock surface, and are 3 metres or so beyond the fence, they can barely be seen by visitors. Several blocks of replica carvings have been placed at the entrance to the St. Victor Provincial Park enclosure so that the images can be seen, felt, photographed or

FIGURE 7. St. Victor, Canada. The sandstone plateau with carvings protected from human traffic by a fence set about 3 metres upslope of the exposed surface. Photo: John Coles 2006.

rubbed. A part of the entire site is replicated in the Provincial Museum in Regina. Nonetheless, it is the landscape context that is crucial to an appreciation of the site and its images, and the current presentation is spectacular (Figure 4), yet the imagery itself is more or less invisible for much of the daylight when visitors arrive. Natural erosion of the sandstone is occurring and the rock is subject to extremes of cold, water, hailstones and sun during the year. The site certainly has an Absence of Presence, and without the severely restricting fence to protect the surfaces, much of the imagery would be worn down, if not vandalised or indeed physically removed, as has happened elsewhere in the Plains Indian region. The St. Victor site thus presents a true dilemma for those who aim to protect the heritage, to explore its history and to educate the public. Sites such as these are unlikely to survive without severe and distorting practices, and on balance the current position seems the best that can be devised.

As an aside, the site and its problems might be compared with the rock carvings at Frännarp in Skåne, a site that Lars Larsson knows well. Here the images are deeper, the rock harder, but the practice of painting the carvings to help the visitor observe cannot have done much to aid preservation of carved edges, nor to ensure the quality of the soils at base of site, nor to persuade the public that the images are fragile.

Comment

These four sites – Biskupin, Yoshinogari, Frobisher Bay and St. Victor – represent but a fraction of those where public appreciation has been acknowledged, and in part addressed. Absence and Presence are important factors in any consideration of the heritage, and those charged with protection and presentation often have a difficult task in balancing the needs of access and education on the one hand, and exploration and information on the other. Sometimes it will be mere location within the countryside, and access and economic or political promotion, that forces decisions one way or another, as the setting and problems of both Biskupin and Yoshinogari attest. In other cases, isolation through climate or distance will aid survival yet can hinder explanation, but in such cases the potential for future revelations remains intact. Such sites as those in Frobisher Bay and at St. Victor surely demand special care in their identification, promotion and protection. The Absence of Presence is a concept that may well come into greater prominence in the next decades if archaeologists and heritage managers hope to preserve sites of importance for future decisions and, where possible, to present sites for education and respect.

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IN THE PRESENT

LENNART CARLIE

Skateholm – catalyst for an academic journey

AS STUDENTS OF archaeology, most of us have probably some dream or image of where our studies will lead. Yet this vision is not totally clear at the start; there is ample opportunity for the people around you to influence your final choice. So it is likely that one is directed, slowly but surely, towards a goal that is not yet firmly rooted in one's own consciousness. Looking back, I can remember my own early image of archaeology as a form of advanced treasure hunting, with beautiful or unique finds playing a prominent role, but also the systematization of the collected finds according to set templates. When I was offered the opportunity, just after graduation, to spend a few summer months assisting in the excavation of the Mesolithic cemeteries at Skateholm, it was therefore like a gift from above.

During the four years that the excavations lasted, we were seven students of archaeology taking our first faltering steps in the various disciplines of field archaeology. Some of us took part in only one or two digging seasons, while others had the chance to participate in more. I believe that we all acquired an unforgettable memory of the varied graves buried in the sand of southern Scania, and of the rich finds waiting in the thick occupation layers of the settlement site (Larsson 1988a:9ff).

Since the theme of this volume is travel, Skateholm can be compared to a "departure station". This was where we started our academic journey, the result of which is that five of us, to date, have completed our doctoral dissertations and we are all still active in archaeology. And it seems that no terminal station is in sight yet. The fact that archaeology still seems exciting and interesting is in all probability because of all the challenges we face, as a great deal of the actual fieldwork can be compared to a huge experiment.

The excavations at Skateholm took place at a time when field archaeology was undergoing major changes. From having had to rely exclusively on the brute force of the human body, when the majority of the topsoil had to be stripped with shovels, machines had now been enlisted to save time and labour. Places like Fosie served as a model in Sweden, even though the working conditions might not have been ideal for the archaeologists who had to work there with enormous bulldozers right beside them (Björhem and Säfvestad 1993:1ff). But these big machines had not previously been used to any great extent to expose graves. For the second digging season, an excavator was hired, and the overall result showed that the method worked well even when tackling such sensitive remains as inhumation graves. After a few hours of careful earthmoving, the topsoil was stripped from an area large enough for a season's excavating. A couple more days of digging by hand and the majority of the graves were delineated as dark stains against the otherwise light-coloured sand.

FIGURE 1. Lars discusses the placing of the buried individuals with Ewa Ryberg and Ulla-Karin Larsson. Photo: L. Carlie.

But there was a catch; it was discovered that several graves, above all at Skateholm 2, displayed a filling that was hard to distinguish from the surrounding sand. Through contacts with Leif Bjelm at the Department of Technical Geology, Lund University, the first attempts were made to use georadar to detect these graves (Bjelm and Larsson 1984:39ff).

FIGURE 2. Taking photographs required a good sense of balance and the assistance of a couple of people. Photo: L. Carlie.

What the eye could not discern, the radar images showed in all their clarity, and on more than one occasion the archaeological investigation had to be done more by feel than by sight. In other words, it was not possible to see the edges of the pits; they were only noticeable because they differed slightly in consistency from the surrounding surface.

Unlike many contemporary excavations of graves, we chose not to use the method of gradually digging down to the bottom of the grave following a horizontal plane. Instead we used a method that aimed to preserve the edges of the pit intact in order to give the opportunity to study any differences in the construction of the graves. For us archaeologists it was no great problem when the deceased had been placed in shallow pits, but at Skateholm there were also individuals who had been placed far below the surface. In some cases it could be as much as a metre, and it took great patience, spending several days on scaffolding, lying on our stomachs (Figure 1). But we archaeologists were not alone in being forced to work in this position; the osteologists Ove and Evy Persson and Leif Jonsson had to adopt the same posture when performing their first analyses in the field. Since the bones were often rather fragile, there was a risk that several important measurements could be ruined since the large bones from the extremities were particularly at risk of being broken, making it impossible to estimate the height of the deceased. After the last excavation season it was concluded that Lars Larsson's choice of method had been correct, since a large number of the collected skeletons were so brittle that it would have been virtually impossible to undertake any measurements afterwards.

Unlike today's field archaeology, when huts, running water and electricity are taken for granted, conditions were rather different at the start of the 1980s. The budget did not permit any extravagance, but assiduous marketing or persuasion produced two sponsors who made site huts and large tents available to us. Under the cover of the tents, the excavating archaeologists could calmly work their way down to even more skeletons, despite pouring rain. Perhaps the most problematic, but also the most challenging feature of the excavations was the lack of modern aids, which could have made the work easier. Instead it was left pretty much to each individual to improvise an appropriate solution. One of these was connected with the final documentation of the skeletons. Since we followed the edges of the pits downwards, there was rarely any chance to brush the bones clear of sand, which constantly fell back when we tried to gather it. The solution was a little petrol-driven generator, which made it possible to take an old vacuum cleaner out into the field as a good way to tidy up the graves. The photographic documentation of individual graves was also a demanding task. The idea of a skylift would have been unthinkable; instead several different alternatives were improvised to replace the expensive options. Everything from wheelbarrows and sifting frames to household stepladders (Figure 2) were enlisted, and there are books and articles showing what good results could be achieved by such simple means.

The people on the dig were very well looked after. As an archaeologist one was given great individual freedom to solve problems connected to particular graves, how to expose and document the skeleton. As regards the safety of the work environment, there were rules that are still conspicuous by their absence at many of today's excavations. The simple expedient of wearing a safety mask when preparing skeletons with Zaponlack, so that they would not fall apart, saved some of us from having to go around with a constant splitting headache. Perhaps most important of all, we did not incur injury for life.

For archaeology as a whole, Lars Larsson's great achievement has been his ability to convey information to the general public. On the local level, anyone interested in archaeology was able to read the results of each excavation season in various periodicals. But it is one thing to read about our new knowledge and a different matter to experience it on site. Having open days for the public gave thousands of people the opportunity to see a real skeleton close-up and gain some idea of the various methods of archaeology (Figure 3). The dialogue with the visitors could last several hours, and the feedback was often rewarding. For instance, a doctor was able to solve one of our more serious problems during a digging season when

FIGURE 3. The public demonstrations attracted a lot of visitors. Interested members of the general public came in a never-ending flow. Photo: L. Carlie.

he explained why we could not figure out the placing of a body. The solution was very simple. The deceased had been placed on his stomach in the grave, which explained why the legs were extended in a way that looked so unusual.

In the same period the first initiatives were also taken to create the prehistoric village at Skånes Djurpark, where the Mesolithic hut from Skateholm was one of the features (Larsson 1988b:83ff). Both for the general public and also for the archaeologists involved, the reconstruction was an aha-experience; the cosy interior of the hut showed that Mesolithic people had lived comfortably, at least during the summer months. The Swedish television company also took an interest in the results of the reconstructed prehistoric village and the Skateholm excavations, producing a number of programmes reflecting prehistoric development from a Scanian perspective. But despite the reconstructions and fascinating finds, it was the skeletons that attracted the greatest interest. During the final excavation season one of the greatest challenges was to lift entire graves intact. The recipients were the Museum of National Antiquities, the Historical Museum in Lund, Ystad Museum, and Trelleborg Museum. This too was a new phenomenon, and the work can be compared to week-long improvisations, where the greatest problem was to prevent the specimens from cracking. After much toil and trouble, the specimens were sent to their various destinations and are still there for the public to see. The largest venture was mounted by the museum in Trelleborg, where the results of the excavation were given a section of their own. With great imagination, a prehistoric microcosm was created, where scenes of life and death more than 7,000 years ago have fascinated a steady flow of visitors from far and near.

It is even more obvious that the fascination is infectious when one considers everything that we have published over the years, and also the tasks that are dear to our hearts. There are countless articles and books aimed at the general public, conveying the exciting things that people have experienced over thousands of years. Several of these works have been intended to increase awareness of the many dimensions of the cultural landscape and its value for our mental health, not least for recreation.

As a final comment, it is perhaps best to add that, even without Lars Larsson's influences I myself, and probably also my colleagues, would have gone on to pursue a career in archaeology, but I believe that the experience we gained from the excavations at Skateholm had a significant impact on our final choice of the archaeological disciplines.

English revised by Alan Crozier

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JOHAN CALLMER

Prometheus or Sisyphus?

Some reflections on possibilities and impossibilities in archaeology in the form of a cognitive odyssey in a Scanian region

Introductory lament

THE CATASTROPHIC DEVELOPMENT of decreasing funds for research in the humanities in many European countries and the steeply rising costs of excavations have driven many archaeologists on the research side of our discipline to frustration and possibly sometimes to acute desperation. An alternative could be to change sides and join the state or municipal archaeological service or a private excavation firm. Then you could excavate exclusively, but rarely anything that has fired your intellect. In most countries this is no real alternative since the allowance for research there is nil or close to nil. Only in a few countries and for short periods have conditions in the archaeological service been better than that. Unfortunately, the long-time prospects for this quantitatively totally dominant branch of archaeology are, in my opinion, not very inspiring. One can in fact argue that independent research involving excavation on a scale above the little peephole in the ground is seldom possible. Archaeology as a research discipline has not been successful in formulating what is a *sine qua non* with respect to new excavations to keep the discipline living and developing (in many traditional fields of archaeology our actual standard of knowledge is no better than fifty years ago, and so many new fields have been opened up!). In postmodernist archaeology, out of the necessity to keep digging on a low level or to completely renounce it, a virtue has often been formulated. A third possibility is of course to start research work in the Third World, where costs of living and labour are low and where excavation permits are easily obtained. For various reasons this post-colonialism colonialist archaeology may not be very attractive and you may easily be involved in dubious and embarrassing argumentation where archaeology in fact has nothing to say. Lars Larsson has always opposed these forces and tendencies in contemporary archaeology, and I respect him very much for this.

Between the single monument and the standard distribution map

These alarming developments have, however, led to some constructive thinking about alternatives to regular excavations of large and complex archaeological objects. Of course it was well known long ago that a lot could be achieved without large-scale excavation. This is the often very relevant level below the standard distribution maps. In a primitive way it was what many of the earliest practitioners of our discipline did. They went collecting under more or less organized conditions. Sometimes they noted the find spots systematically and produced detailed maps. In fortunate circumstances this could come close to landscape archaeology. Local scholars like Tor Helliesen at Stavanger and Theodor Petersen at Trondheim, as well as centrally placed ones like Sophus Müller in Copenhagen (just to mention some early North-European examples), recognized the importance of studies of the archaeological remains in their setting and their mutual interrelationships in space. Of course, the influence of human geography on archaeology soon became strong and has remained so. This dependence on human geography rose to a crescendo of transfers of geographical thinking in the 1970s. A multitude of studies were devoted to this topic. Today looking at these efforts in the rear-view mirror, we must admit that there was mostly a very wide gap between the theories advanced and the material basis discussed. Reading through those works now, one certainly understands the fascination raised by the fine theory but one is instantly struck with vertigo when glancing through the pages describing the database. We admit that there were qualitative differences, but the verdict holds true for the vast majority of cases. This is not to say that the situation is much different today, although the favoured theoretical paradigm has changed a little.

Behind the looking glass

As a bridge back to some nice recollections of lively discussions of landscape archaeology with Lars around 1970 on the road or on the leeward side of various excavated sand mounds in the coastal region of Western Scania – in those days our earliest interests were centred on the Stone Age from the Mesolithic to the Late Neolithic – I will here discuss some aspects of a long-term project with a different chronological framework but with some guiding ideas of those early days in the career still playing an important role. Many of the problems raised back in the 1970s were not solved at all and for many reasons they still deserve to be solved. I will proceed in an unorthodox way and try to come close to the real process of research. As a research report it may be a disaster, but this is how it was. The road is more a mental one than a real one.

I invested more than a decade of my scholarly life in the

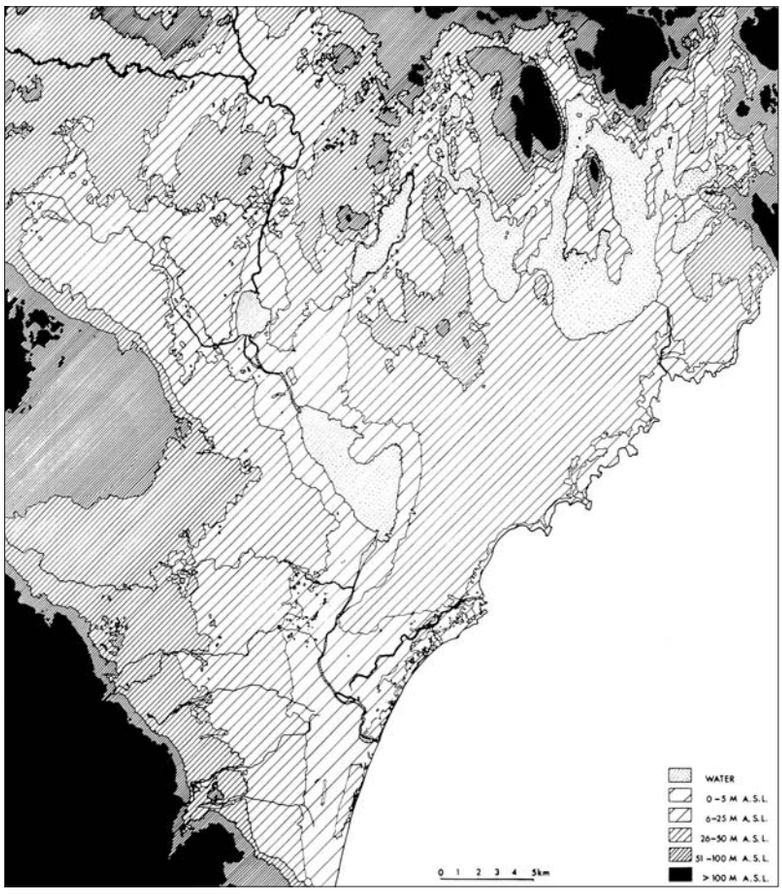

FIGURE 1. The plain of Kristianstad has unusually clear-cut natural boundaries.

study of a highly interesting complex of trading sites at Åhus (NE Scania) encompassing the late prehistoric period from *c.* AD 700 to the end of the Middle Ages (Callmer 2006). The problems of localities with this very special social and economic profile are twofold. On the one hand it is necessary to discuss these sites as nodal points in networks extending along the coasts of Northern Europe, promoting trade and exchange over very considerable distances. Although little cherished today, this aspect must be considered essential. On the other hand these sites always relate to a well-defined region (in a few cases probably more than one) or a hinterland. There are of course two reasons for this. First, the products and commodities exchanged or traded were to some extent produced in the region. Second, the population at the trading site, not only for economic reasons but for social reasons as well, were more or less forced to communicate with the population of the region. Strategies to promote our understanding of these sites must follow both these lines.

Some initial ideas on how to tackle the problem of the region

My interesting results at the trading sites did not correspond to a high level of knowledge of the contemporary settlement of the region. The only positive thing about the region was in fact that, although it was quite extensive, it had distinct natural boundaries (relief, soil quality and historical woodlands) (Figure 1). The equivalent in human geography is the plain of Kristianstad (Callmer 1994). There had only been a single research excavation in the region, although at the very significant potential political centre of Vä. In addition there had been a Sahara dig typical of those days where the miserable remains of a few sunken-featured buildings had been documented (the chronology was vague).

In the beginning, *i.e.* in the early 1980s, I first cherished the idea of tandem excavation of a rural site in the neighbourhood of the trading sites and later an ambitious direct continuation of the research programme with rural sites of different kinds (centre, village, single farm). As already remarked, finance for a research excavation of that type could not be found, and there is little hope that this situation will change markedly. Not a single large-scale research excavation of this type has been carried out since then in the Swedish part of Southern Scandinavia. Here we cannot help coming back to our initial lament. Can our discipline really content itself with a standard of knowledge of the basic living milieu of the Iron Age and the Early Middle Ages without even one example of a total excavation? The fragments provided by rescue archaeology often raise more questions than answers. Is the constant reference to a small number of Danish sites excavated in extenso (mostly in Jutland) tenable from a scholarly point of view? After all there should be a research programme with the aim of securing a relevant basis for research on the social milieu of the Iron Age and medieval population (grave material relevant for the question will hardly pop up).

Creative although wishful thinking versus cold reality

In the early 1990s having finished the investigations of the trading sites and moving on along the inevitable career path, which many qualified academics cannot avoid, I found in the first place that time for real research, at least where I was working, became increasingly scarce. I also gradually faced the cold reality that I would not be able to raise the research money for what was essentially only the logical consequence of earlier research results.

It was necessary to proceed along other paths. In fact, my interest in other and cheaper methods had developed much earlier. Already as a young undergraduate I had come across Olof Arrhenius' magnificent phosphate map of Scania (1934) (Figure 2) and had started carefully mapping find spots of the Migration Period and later periods on it. The coincidence was striking and the patterned structure of the

phosphate-rich islands extending like an archipelago over the plains of southernmost Sweden was realized early on. I thought it was time for an initiative in spatial studies in western Scania. First I showed my results to my professor, who proved vaguely sceptical. Another attempt was made to interest the director, at that time, of the Kulturen museum, who was actively seeking to come to terms with the problem of the urban origins of Lund. I pointed to the biggest phosphate island of all on the map at Uppåkra immediately to the south of Lund and declared: here lies an urban centre. He laughed and did not believe me at all. The time was not ripe for a project of this type in western Scania.

FIGURE 2. A section from Arrhenius' bewitching phosphate map.

Going spatial: the phosphate method

In the region of my excavations of trading sites the situation was different. It was very quiet on the antiquarian front. This also meant, however, that there was room for initiatives. I came into contact with the local bureau of employment initiatives. The bureau had a small reserve of locals for many of whom regular employment had become remote and unreal. Some of them hated this while others liked the short spells of time clearing railway lines or cutting old trees in parks and avenues, with plenty of time in between to go cod fishing to fill the freezer for a few months. One thing they had in common was that they liked outdoor work. For short periods they could be made available for research, although any mention of research was strictly forbidden in the bureaucratic documentation surrounding these activities. We started with phosphate samples. The data of Arrhenius were after all crude and simplified for the purpose of locating settlements. It was a synthesis of much more detailed cartographic material, today possibly lost (I have spent days looking in vain for this material in an old barn at Kagghamra, the estate of the late Dr Arrhenius). Work started in the neighbourhood of the trading sites but could be gradually extended to encompass a very considerable part of the plain (Figure 3). The basis of this endeavour was the body of phosphate-rich surfaces mapped by Arrhenius. Often only fragments of phosphate islands appeared on the map, if the neighbouring farm did not take part in the contract cultivation of sugar beets in those days. Topography (slight elevations in the relief) and field walking (pottery finds) often helped to set up tentative limits for the collection of samples. However, we also embarked on complete *terra incognita*, which had not been noted earlier.

For practical reasons, however, woodland had to be excluded. Systematic collection of samples there was not impossible but was beyond what could be expected of our workforce. Densely built areas such as residential neighbourhoods and urban enclaves were dropped completely.

We were able to benefit from a generous and friendly attitude from the farmers in the area. Hundreds of owners and tenants were involved. Only in a handful of cases did my request for permission to collect samples strike on rocks harder than stone. Either there were multiple owners who would not agree on anything between themselves or the owner had previous negative experience of antiquarian authorities. At least in one case a farmer of modest means had had to pay for some unnecessary excavations of hearths in a sand pit. I deeply regretted that rejection because the man owned another very interesting piece of land.

In those days it was possible to have the samples processed and measured for a rather reasonable price. The National Heritage Board (RAÄ) even opened a laboratory for a few years at Borgholm. It is sad that this lab, which of course had no chances on the free market, was soon closed down.

There were phosphate islands of different size and content. Indeed systematic studies (already started on the western plain) made it possible to group them into three rather distinct size groups (1: 1–3 ha; 2: 4–9 ha; 3: >10 ha). There were also various degrees of density of the phosphate content of the islands. Some were very compact and others were clearly multifocal. These observations were of course complemented by various degrees of intensity: how high was the content of phosphates? Two or three smaller islands often

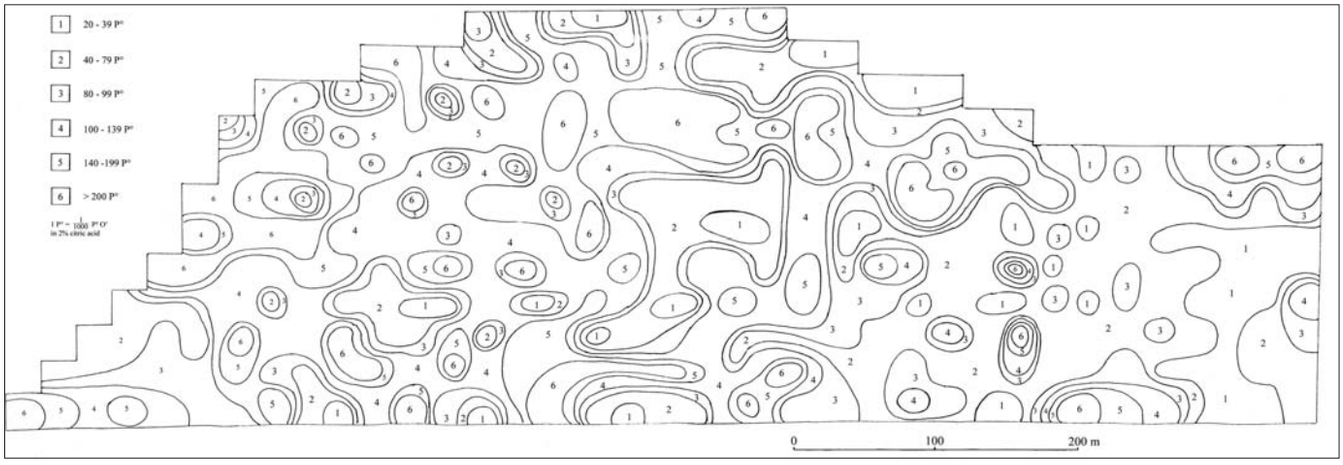

FIGURE 3. A phosphate surface on the Plain of Kristianstad. The multifocal structure of the phosphates indicates an agglomerated settlement of more than half a dozen units (farms).

surrounded the large phosphate islands like skerries on a nautical chart. Frequently, but by no means always, the large islands could be linked to deserted historical village sites. With the application of model thinking and a general, orthodox evolutionist approach to development from small and simple to big and complex (shared by so many happy geographers and archaeologists of those days), a generalized scenario could be constructed. Settlement in the late Roman Period (3rd–4th centuries AD) was often based on small units of one or only a couple of households. The size of many sites grew during the Migration Period (5th–6th centuries AD) and especially in the Vendel and Viking Periods (7th–11th centuries). Very characteristic was the obvious merging of smaller units to form larger ones. Middle-sized and large phosphate areas generally represent agglomerated, village-like settlements. The reasons for this development were sought in the development of agriculture and in socio-political conditions. As we can see, this explanatory construct was very crude and had little or nothing to say about variation. The standard knowledge of where people actually lived from the Migration Period onward had been raised very significantly. We also could show the total number of sites over large tracts of land (potential studies of settlements in relation to each other!). Last but not least, there was the evolutionist model of settlement development (as well an economic and socio-political model) (Callmer 1978, 1979, 1986).

Temporary retreat to excavation

There was no question that the phosphate islands were not relevant to central questions concerning Late Iron Age and medieval society and its dynamics. The cold reality was, however, that this interesting and rich material brought together was a palimpsest. Like the texts on medieval parchments, the phosphate imprint in the soil formed (totally or partly) superimposed layers. Comparative studies focussing on *de facto* finds and phosphate surfaces had improved our understanding, but when it came to a concrete landscape the problems were immense. Almost instinctively I tried to turn back to excavation. Would it nevertheless be possible to organize some sort of test excavations with the workmen of the bureau for employment initiatives?

The ambitions had to be low and the technique simple. An experienced archaeologist had to be present all the time. With these principles a digging programme was launched involving some volunteers from the bureau. Thin and uncomplicated layers (single context) were excavated with trenches of 3 x 3 m. at a standard distance of 10–20 m. from each other along lines through the phosphate islands. This method was applied to three very extensive settlements situated in a row along the bank of the major river in the region. The excavations, which included sieving, were a success (Figure 4). In a single campaign of about two months the three excavations could be concluded. A rich corpus of finds became available and it was spatially structured. Hearths, pits, sunken-featured buildings and wells were visible as coloured stains against the light brown and yellow of the sandy ground and were accordingly documented. An extension of the excavation programme was planned but the rules for the activities of the bureau were suddenly changed dramatically and a swift end to this interesting cooperation was inevitable. An application for research funds for the continuation of the programme failed notwithstanding the fine results.

Before the 18th century nobody saw the land from above

The month of June in the year these three excavations were undertaken was unusually dry. Especially on one of the sites we could see very distinct cropmarks. We climbed unto the roof of the car and had an impressive view. Aerial photography in Sweden at that time met little interest among archaeologists, whether antiquarians or research people. Esse Ericsson, an enthusiast, was turned down and Gad Rausing, who had made some fine observations, had other things

to do. By pure chance I have a good friend with a pilot's licence. For four years, with the support of the Hasselblad Foundation, we spent many summer evenings swirling in the late afternoon light above the old settlements. The conditions were very different in those years. Only one year was perfect with respect to the weather and then the crops had to be the right ones (bad luck when there were potatoes!). It was soon realized that only a long-term programme (best is the annual overflight) could bring the expected results. The most significant observations were those of sunken-featured buildings of some depth and wells (Figure 5). Post-built houses were more elusive. The utility of the method for locating settlement and catching some elementary structures was obvious, and the sunken-featured buildings gave a general date *c.* 600–1000 AD (much less numerous in the Roman and Migration Periods and in the Early Middle Ages). The ease with which one covers large areas is delusive (since it must be combined with other methods) and one easily forgets that nobody saw the earth like this before Montgolfier. There is the risk (even more than with maps) that you forget the reality of the ancients.

"da klinger i muld"

Back in the early 1970s Lars and I tried to buy a metal detector. We wanted to launch a project on the treasure finds of the Iron Age in Scania. For some reason the French firm that offered the detector for sale never delivered it. Later we found no time to promote the project any further. We have however now both come back to this technique with similar objectives: as an interesting method to date settlements and to get a relative measure of the economic and social (as well as political) success of the population of diverse settlements. Many colleagues have ridiculed the method as treasure hunting. It may be that some fascinating finds turn up but the real question is whether archaeological research can afford to throw this source material away (it is rapidly destroyed by chemical substances in the modern plough soil). For me it was a logical consequence of the ambition to widen the pallet of survey methods and especially to combine different methods. During the last four years systematic detector surveys have been carried out on almost all the localities covered by the phosphate programme and on numerous other sites. The most important contribution is of course the dating. Ornamental metalwork and coins provide *terminus post quem* datings, mostly within a third of a century. That is generally much better than ^{14}C datings. Interesting observations have also been made of ornamental metalwork and coins in relationship to other settlement data. The dominant households, for example, seem to be located on the front side of the settlements along the riverbank mentioned above. The number of dominant households in the agglomerated settlements seems to be very small. Perhaps only a single household kept this position. The efficiency of detector survey cannot be questioned,

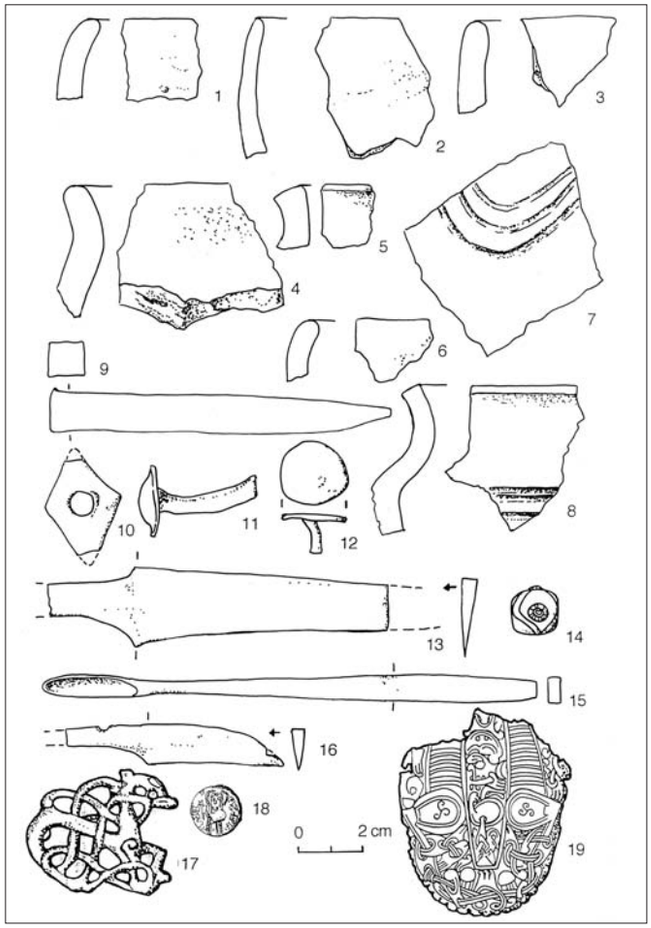

FIGURE 4. From the rich find material from the survey excavation of a phosphate surface.

although full success can only be reached when many survey methods are combined.

The detector data, however, also have their shortcomings. A site yielding rich and interesting material during the survey excavation campaign proved very poor when the detector was brought into action. In this case it is difficult to see the reason for the fallout. In another case we have reason to suspect plundering.

Who is your idol? Sisyphus or Prometheus?

In this short paper I have sketched some personal experiences of trying to piece together a lost cultural landscape with its settlements and inhabitants in our dear, unrivalled province of Scania. With relatively cheap methods it has been possible to raise knowledge to an astonishing level. The important thing to me has been to combine as many relevant aspects as possible (not all are treated here, such as geology, hydrography and palaeobotany) in a restricted spatial frame big enough to present a meaningful slice of the past. The more or less forced necessity to avoid the extremely high costs of large-scale excavation has been a guiding principle. In several respects I think the research strategy

FIGURE 5. A settlement from the air. Sunken-featured buildings account for the distinct cropmarks here.

described here has generated much more knowledge than one or two large-scale excavations. I am convinced, however, that many colleagues look on this body of data as inferior to "real" excavation. To a certain degree I agree or, rather, we need both types of data, and something should be done to change this uneasy situation.

As an archaeologist you cannot avoid Sisyphus. Whether you like it or not, the incompleteness of data is fundamental for archaeology as well as the necessity to narrow the gap between the actual body of evidence and the reality of the past (in which some of us believe). You will never reach this goal, but that is perhaps not the most important thing. You may still come a long way in this Sisyphean quest. Sometimes the results slide back downhill but not to the degree some prophets of archaeological theory maintain.

The road is perhaps as important as the distant goal. The investigations and the strategies you develop, as well as the dreams and ideas that generate it, are of equal value to the established facts. Here we end up with Prometheus, who will never tire of inspiring us and stimulating us. The structure of archaeological work behind the looking glass is rarely as beautifully laid out as publications make us believe. I have tried to show how special situations and unexpected coincidences in the end are as important as the theoretical blueprint. The road is twisted and the road map incoherent. But that, after all, is the manner of the titans.

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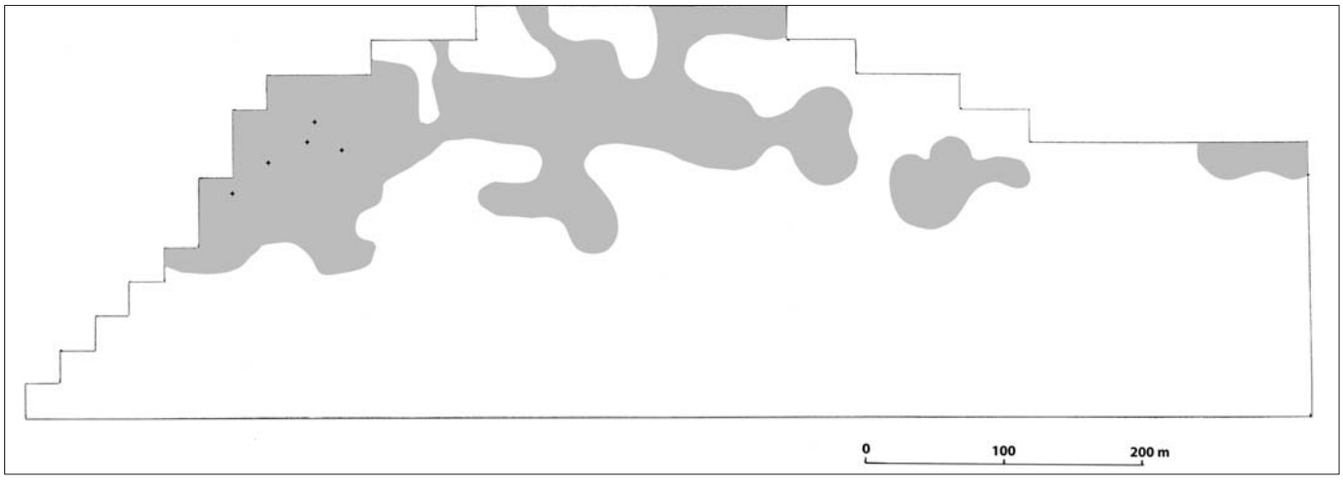

FIGURE 6. The distribution of detector finds on one of the many investigated sites.

BODIL PETERSSON & JES WIENBERG

Time travelling

Between research and presentation at Hjerl Hede

Introduction

THE PAST IS reconstructed and re-enacted to an increasing extent. Everything from Stone Age settlements to industries of the 20th century is recreated. Thus it is possible to travel back in time to almost any period or phenomena (Petersson 2003; Horsler 2003). Most places with reconstructions and re-enactment have come into being since the 1980s, however there are predecessors, which we tend to forget.

The open-air-museums were among the first to reconstruct early settlements and life. At the same time as threatened buildings and settings from the countryside and the towns were rescued by being moved to the open-air-museums, the museums also experimented with reconstruction and re-enactment of the Middle Ages and the Prehistory.

Thus the Hjerl Hede Open Air Museum at the Hjerl Moor in Jutland, Denmark, since the 1930s has reconstructed buildings from the Stone Age, the Bronze Age, the Iron Age, and the Middle Ages (www.hjerlhede.dk). The reconstructions have been carried out in co-operation with leading scholars of their age, such as Gudmund Hatt, P. V. Glob, Poul Nørlund, Axel Steensberg, Hans-Ole Hansen and Ulla Haastrup. The reconstructions reflected the actual research frontier of the age. Still there is a tendency to overlook Hjerl Hede both in the present debate and in the history of the reconstructions of the past. Hjerl Hede has ended in the shadow of The Lejre Experimental Centre on Zealand and many other centres.

The aim is here, partly to present the Hjerl Hede Open Air Museum and its reconstructions, and partly to try to understand why the reconstructions of the museum unjustly have ended in the shadow.

Hjerl Hede Open Air Museum

The Hjerl Hede Open Air Museum, formerly "The Old Village", is constructed around a village from the 18–19th centuries with farms, water- and windmill, school and parsonage conveyed there. Here are also a dairy, different handicrafts, a steam sawmill, peat production, a living Stone Age settlement, and a reconstructed medieval church.

The museum was founded by the director Hans-Peter Hjerl Hansen in 1930. The beginning was the moving to Hjerl Hede of the oldest preserved village farm of Denmark, the Vinkel Farm, from the 16th century. In 1932 for the first time in Denmark a museum made alive early country culture and handicraft. The museum followed this course more regularly from 1955. The museum was approved by the state in 1979–81 as a special museum and was then transferred from the Hjerl Foundation to a status as a self-governing institution (Hjerl-Hansen 1950; Mygind 2005).

Stone Age

An interest in Stone Age life is mirrored in an early attempt at reconstructing Stone Age life performed in 1919 in Sweden. This attempt was made by the journalist Ernst Klein at the manor of Rockelstad in Sörmland. Klein wrote a series of newspaper articles later collected in a small book called "Stone Age Life" (Swedish: *Stenåldersliv*; Klein 1920). This reconstructed life of the Stone Age was primarily performed as a basis for a series of entertaining articles in the newspaper *Aftontidningen*. But at the same time this attempt shows a genuinely felt interest in the past, probably due to the fact that Klein was deeply interested in ancient times and later became the first museum teacher at the Open Air museum of Skansen in Stockholm.

In Denmark the reconstruction of Stone Age life begins with Hjerl Hede in 1955 some 36 years after the Swedish experiment. Soon after, a person also involved in the reconstructions at Hjerl Hede, Hans-Ole Hansen, applied the idea of re-creating Stone Age houses in another part of Denmark, in Allerslev on Zealand. He involved some of his friends to build a Stone Age house in 1956. Probably this house was inspired by the attempts at Hjerl Hede, but in Hansen's reconstructions in Lejre the prototypes were taken from Denmark (Hansen 1959).

At the very beginning of Stone Age life and buildings in Hjerl Hede two Stone Age huts were erected. These activities were performed with support from the National Museum in Copenhagen. The house models were taken from entirely different geographic parts of the world. One of the huts had a Greek round hut as its model, and the other one was made after a finding from a Stone Age hut from Langeland in Denmark.

The second phase of Stone Age life at Hjerl Hede started when the two huts were replaced in 1967. Now the reconstructions were erected with the Barkær findings as a model. The archaeologist P. V. Glob was responsible for the work. Expansions and further buildings were made during the years to come.

FIGURE 1. The Stone Age settlement and its visitors at Hjerl Hede Open Air Museum. Photo: Jes Wienberg, July 1998.

The third phase of Stone Age life at Hjerl Hede started in 1986–87 when one of the Barkær houses was pulled down and replaced by a reconstruction of a house from Limensgård on Bornholm. This work was led by the archaeologist Poul Otto Nielsen. One of the reasons why they chose to replace the Barkær houses was that Glob in 1975 had changed his mind about the Barkær houses. He now believed that they were houses of death and ritual instead of houses for the living. A second house from Limensgård was built in 1993–95 (Mygind 2005:117f).

The explicit aim of the Stone Age houses at Hjerl Hede was to use them in the performance act of living past (Buskov 1980). Ambitions of the research was probably applied during the erection of the houses, but after that the houses became an integrated part of the presentation at the Hjerl Hede Open Air Museum (Figure 1). The Stone Age reconstruction of Hjerl Hede is the earliest Danish example of recreated Stone Age. It is even so early that the models are partly from outside Denmark. After this the models for reconstructed houses are mostly from the area of Denmark or Scandinavia.

Bronze Age

The interest in reconstructing houses from the Bronze Age is relatively late in comparison with the attempts of recreating houses from the Stone Age and the Iron Age. Hjerl Hede is also here the earliest example in Scandinavia as it starts already in the year 1974. In Sweden the earliest example is at Vitlycke in Bohuslän, western Sweden, starting in 1986. In the years 1997–2001 the Bronze Age house Bovigården in Boarp, Scania, was erected. In southern Norway there is "Bronseplassen", started in 1993. In Denmark after Hjerl Hede there is a Bronze Age house erected at Hollufgård on Funen in 1983 and another house from the period is erected near Borum Eshøj in Jutland in 1993.

The Bronze Age house of Hjerl Hede was built in 1974 with the findings from Egehøj, Djursland in Jutland, as a model. The work was led by the archaeologist Niels Axel Boas. The erection of the house was a part of the presentation activities at the museum, and the building was performed with the tools of the Bronze Age (Boas 1980; Mygind 2005:116ff). The Bronze Age house never had the same content as the Stone Age houses. The house was an attempt of the museum to give a "full" sequence of houses from prehistory. But both the first and the second house from the Iron Age had long ago been pulled down, so it was never a full and contemporary representation of prehistoric buildings at Hjerl Hede.

Iron Age

On Gotland in Sweden Gerda Boëthius and John Nihlén 1930 built an Iron Age house on top of a "Giant's grave", on a ground of stone where there had been a house (Boëthius and Nihlén 1932). The house was called "The Lojsta Hall". The building is not in an open-air museum. Boëthius and Nihlén, architect and archaeologist respectively, had an interest in Scandinavian early building tradition.

In Denmark it was at Hjerl Hede that the first building

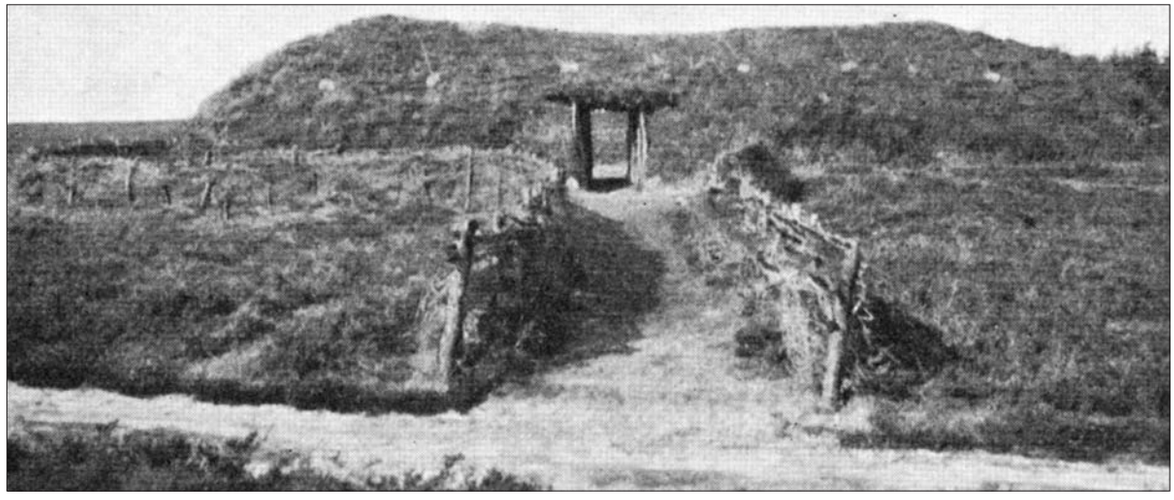

FIGURE 2. The first Iron Age house. Photo from Hatt 1950:59.

from the Iron Age was erected. After this house was built in 1938, there has been built a lot of Iron Age long houses, especially after the establishment in 1964 of the Lejre Experimental Centre as part of an educational ambition in Denmark.

The culture geographer and archaeologist Gudmund Hatt was responsible for the erection of the first Iron Age house (Figure 2) at Hjerl Hede Open Air Museum in 1938, only eight years after the opening of the museum. This first Iron Age house was built after a model of a find from Malle Moor in Jutland (Hatt 1950; Mygind 2005:82f.). In the year 1952 a new Iron Age house was erected, this time from another model, but still from the vicinity, a locality called Gørding Hede, also in Jutland. At this time the archaeologist P. V. Glob was responsible together with Mogens Wittusen (Glob 1980).

The purpose of the first Iron Age house at Hjerl Hede was to elucidate a local building tradition in a long time perspective. The aim was to represent an early phase of regional architecture in Jutland and it was in close connection with the idea of showing the history of the region. It may be possible to conclude that in 1938, as well as in the year of the building of the Lojsta Hall around 1930, it was a primary aim to present national building traditions and greatness in connection with national historical traditions. The primary aim was anyway not to show a way of presentation and living history as we see today in the Stone Age reconstructions.

Middle Ages

Many Norwegian and Swedish churches have been removed into parks or the new established open air museums during the 19th century until the beginning of the 20th century to be saved from destruction, when the parish needed a new and larger church. The churches removed, were wooden churches, either stave churches or timber churches. A single medieval stone church however has been removed. The ruins of St Mary Minor in Lund were re-erected at the Cultural Museum in 1914.

In Denmark, which was and is totally dominated by stone churches, fewer churches were renewed and none were moved into a museum. The churches of Rubjerg and Lyngby in Jutland were rebuilt further inland in respectively 1904 and 1913–14, when they were threatened by the sea. For the same reason it has been considered, but rejected, to move the nearby church of Mårup either to the Open Air Museum at Copenhagen or further from the sea.

Since the 1990s several stave churches have been reconstructed in Scandinavia: Fantoft at Bergen 1992–97 after a fire, Jørundgard Medieval Centre in Oppland 1994, Gol Medieval Park in Hallingdal 1994, Moesgård Museum in Jutland 1995–97, Mannaminne Open Air Museum in Västernorrland 2000, Heiamøy in the Vestmanna Isles at Iceland 2000 and Brattahlid in Greenland 2000. Reconstructions of wooden churches have also been planned at the Viking Village "Viking Ages" in Scania and at Södra Råda in Värmland (after a fire).

Many wooden churches have been reconstructed, but only a few stone churches. At the Open Air Museum Murberget in Härnösand in Västernorrland a North-Swedish late medieval church was erected 1925–30 after the model of the churches in Hackås and Ramsele. The church of Murberget has wall paintings and furniture from different models of northern Sweden. The purpose at Murberget was threefold: To create a symbol for the new open air museum of Northern Sweden; to build a functioning church; and finally to have a museum for church art (Bäckström 1994; 2002). A Romanesque stone church (Figure 3) was reconstructed at Hjerl Hede Open Air Museum in 1950. Early Christian monastery churches have been reconstructed in Ferrycarrig and Gortin in Ireland in the 1980s and a Merovingian church in Herrsching at Ammersee in Bavaria, Germany, in the 1990s.

The idea of a reconstruction of a medieval stone church in Denmark at a museum came from the leader of Hjerl Hede Open Air Museum, Hans Peter Hjerl Hansen. The church was however built after the death of Hjerl Hansen.

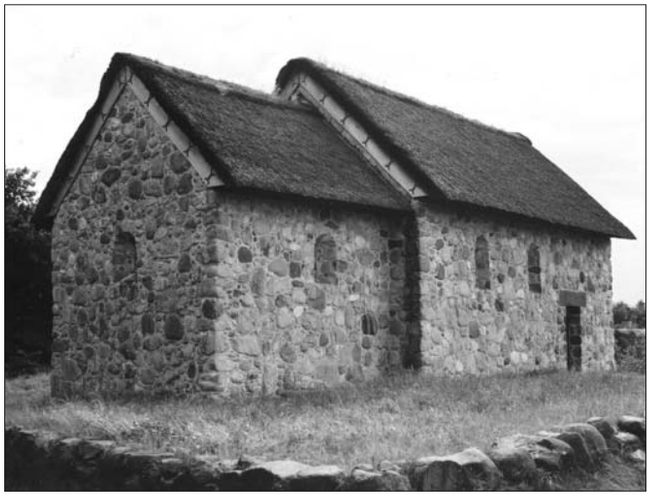

FIGURE 3. The reconstructed Romanesque stone church at Hjerl Hede Open Air Museum. Photo: Jes Wienberg, July 2005.

The reconstruction was managed in close corporation with the National Museum in Copenhagen with its director Poul Nørlund and the architects and curators C. G. Schultz and Aage Roussell. The church was drawn by the architect Leopold Teschl.

The building of the medieval church started in 1949 and the church was opened at the jubilee celebration in 1950. King Frederik 9 and Queen Ingrid participated at the celebration, and a speech was given by Nørlund.

The first intention was to copy an existing Jutlandic medieval church, which then should be filled with collected furniture. This idea were soon dropped, as Jutland already is dotted with preserved medieval churches, and furthermore it became apparent that it was difficult to acquire furniture. Instead the intention turned into building an ideal type, which could represent the first Romanesque stone churches from the period *c.* 1100–50. Thus the church of Hjerl Hede became simple with a chancel and nave without additions, with a pavement, wall benches, timber ceiling and a thatched roof.

The chancel and nave of the church at Hjerl Hede was erected using as a model the church of Tjørring at Herning, but without its later additions such as its western tower and porch. The idea to the model came from the leader of Herning Museum, H. P. Hansen. The baptismal font at Hjerl Hede is a genuine medieval font found in a garden at Hørning. The model of the altar table was taken from Tømmerby, the candlesticks from Visby, the crucifix from Åby, the doors from Stadil and the bell from Smollerup. Thus the architecture and the furniture of the church all have its models in Jutland (Nørlund 1950; Mygind 2005:85ff).

In 1985–86 the church was used in an experiment. The art historian Ulla Haastrup at the restoration School at the Danish Academy of Fine Arts, in co-operation with the National Museum had painted wall paintings in fresco- and secco-technique in the chancel, in the triumphal arch and on the triumphal wall using the preserved Romanesque wall paintings of the church of Råsted, Jutland, as a model. In 1992 also the font was painted (Haastrup 1986; 1993). And finally in 1994 coloured glass was put into the windows.

The medieval church is used for service in the season and used as a background in a historical movie. On the other hand the church at Hjerl Hede has not, as is nowadays the case with other reconstructed churches, been used at baptisms or weddings, as it is not consecrated.

The reconstructed church at Hjerl Hede is built with assistance of the most competent experts of its period using the actual knowledge of the time of its origin. From the letters in the archive of the museum it appears clear that the persons involved carefully considered the elaboration of the church and did their best to reach the highest possible authenticity. Thus Teschl made an investigation of the masonry at the church of Tjørring before the construction work at Hjerl Hede.

Today the church might be conceived as a little too "primitive" with its coarse walls, ceiling, and thatched roof. However the wall paintings and the painting of the font in bright colours have taken the interior of the church up to the present research front. Basically the Romanesque church fits badly with the core of the open air museum in the 18th and 19th centuries. It ought to have been a Jutlandic church as they looked like in those centuries, *e.g.* a Romanesque church, where a porch and a tower were added, possibly vaulting and partly new windows. Or the other way around, the Romanesque church needs the context of a medieval village.

There is no medieval village but it should be mentioned that the museum made medieval ploughing experiments with a wheel plough in 1956. The experiments were made in co-operation with the ethnologist Axel Steensberg from the National Museum (Mygind 2005:94).

Research and presentation

The reconstructions and the experiments at Hjerl Hede Open Air Museum are all conducted consistently with the actual knowledge by leading scholars of its time. Thus research and presentation have been closely connected. When nevertheless Hjerl Hede has landed in the shade of the Lejre Experimental Centre and other centres, it might be for several reasons. Here follows an attempt to present six concurrent causes, which have to do with a mixture of conscious choices and coincidences, geography and resources of money and staff:

1) Priorities

Reconstructions of settlements from the Prehistory and Middle Ages have been subordinate to the main focus of Hjerl Hede on the transferred buildings of the 18–19th centuries. The reconstructions have been of secondary importance, opposite to the case in Lejre and in other places, where settlement from prehistory and the Middle Ages has been the primary aim (in Lejre the 19th century is subordi-

nate!). The transition to become a state approved museum might have reinforced a tendency towards priority of preservation, not reconstruction.

2) Continuity

The reconstructions and experiments have been marked by a loss of continuity. There have been many excellent contributions more or less regularly since 1938, but no continuously activity such as annual experiments as in Lejre. The Iron Age and Bronze Age houses were allowed to decay without being replaced.

3) Publication

The reconstructions have attracted many visitors, not least the Stone Age settlement, but apart from a few brief and popular articles in Danish (cf. Hatt 1950; Nørlund 1950; Boas 1980; Buskov 1980; Glob 1980; Haastrup 1986; 1993) publications, that might have contributed to a national and international interest, are absent. A reason might be the absence of scientific staff responsible of research before 1986.

4) Private museum

Hjerl Hede Open Air Museum functioned as a private museum for a long period. It should not be a problem, but it is a fact that many scholars have been sceptic to initiatives from non-professionals. They believe that professionals and tax financing as a principle are better than amateurs and private donations. In that Hjerl Hede has had less prestige than Lejre Experimental Centre.

5) Remote reconstructions

The museum of Hjerl Hede is geographically and mentally far away from the universities and centre of population at Århus and Copenhagen. Archaeology in Copenhagen (and Lund in Sweden) focused on the nearby Lejre from 1964, while archaeology in Århus focused on its own reconstructions and experiments along the "Path of Antiquity" at Moesgård Museum since 1968.

6) Presentation

Hjerl Hede Open Air Museum was early in its performance act of making alive the past, but has (just as the Old Town in Århus) insisted on a form of presentation, where often the visitor from outside observes a staff re-enacting the past behind fences or bars. Most other centres now invite the public to participate in the past life, for instance by letting families live in the houses during their vacation or try old handicrafts within the area of the open air museum.

There are, however, some changes to recommend which are more or less realistic: 1) Increased focus on prehistory and the Middle Ages by supplementing with houses from the Bronze Age, the Iron Age and the Middle Ages. 2) Annual experiments in the high season. 3) Both popular and scientific publication of the reconstructions and the experiments in Danish and foreign languages. 4–5) Invitation of professionals to conferences concerning both the history and the future of the reconstructions and re-enactment at Hjerl Hede. 6) Public access to the re-enactment of the past and for instance opening up the church for baptisms and weddings. The visit at Hjerl Hede Open Air Museum might then not only become a travel to the past, but a travel also in the past.

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RAIMOND THÖRN

Travelling and networking in Europe in the 19th century

WHEN WE MEET other human beings we give and take in the specific social contexts that are created. When we walk away, we are not the same persons who entered the meeting. If the other is seen as interesting and sympathetic, we look forward to the next meeting. A friendship is established and so the process of creating a network goes on.

The archaeologist Nils Gustaf Bruzelius (1826–95) travelled during the years 1858–59 in Denmark, Germany, Austria, Switzerland and France. In trying to understand the networking process I shall look upon the background, the means, and the goals of Bruzelius. The picture obtained will be placed in its historical frame. The purpose is to try to achieve more clarity about the driving forces and possibilities amongst antiquarians in the 19th century. The tools used are Pierre Bourdieu's *capital, field* and *strategy* (Broady 1998).

The background

Nils Gustaf Bruzelius was born on 28 April 1826 in Västra Tommarp parish in south-western Scania, where his father Johannes Bruzelius (1793–1860) was a vicar. Johannes was the son of the vicar Nils Bruzelius (1742–1823). Since Nils Gustaf Bruzelius' great-grandfather and great-great-grandfather were also men of the church, one might think that he was bound to be a clergyman. With the answers at hand it seems that Bruzelius must have been more interested in archaeological artefacts than in religion. Grandfather Nils started a family collection and father Johannes had increased it in such an extent that in 1858 it contained about 2,000 items, which that year were transferred to The National Historical Museum (Engström 1926; Rydbeck 1926; Werin 1926).

In 1839 the 13-year-old Bruzelius became a pupil at the Cathedral School in Lund, where his best subjects were history, geography and natural history (Engström 1826). Three years later he became a student at the University of Lund, where in 1847 he took his Bachelor of Science in botany and natural history (Engström 1926:10). The same year he received his doctor's degree with the thesis "The theories about the human races: A historical and philosophical reflection" (Engström 1926:11; Rydbeck 1926). In 1849 Bruzelius started to work with the artefacts at the Historical Museum of the University of Lund. In 1850 Bruzelius finished the work "Description of artefacts found in Scania, together with initial remarks about Swedish antiquities in general". This was the first modern archaeological thesis to be defended at the University of Lund, in spite of the fact that archaeological education did not start until the late 1800s and the first chair in archaeology was inaugurated in 1914 in Uppsala, to be followed by Lund in 1919 (Högskoleverket 2003:21). On 10 March 1855 Bruzelius was appointed as director of the Historical Museum of Lund University and on 18 May he was appointed as a Reader in Nordic Archaeology at the University of Lund (Engström 1926:16ff; Rydbeck 1926). In 1856 he took part in a conference in Christiania (Oslo) and he talked about the Lackalänga finds, a rich boat grave from the late Iron Age, which was to be published by him in 1858 (Bruzelius 1856, 1858; Engström 1926:35f). During about six months in 1857 Bruzelius lived in Copenhagen where he studied (Rydbeck 1926). In 1858 he received a larger travel grant from the University of Lund.

Some social connections in Sweden and Denmark

When thinking about the social environment in which Bruzelius was educated, it should not be unimportant that the natural scientist and the archaeologist Sven Nilsson (1787–1883) was counted as a friend of the Bruzelius family. This can be seen in a correspondence from 17 March 1860 in which Nilsson writes that Bruzelius and his father are his friends. The importance of having influential friends can be illustrated with Nilsson's words from the same letter where he criticizes a thesis of Bruzelius. This is the same thesis that Nilsson had officially judged in a "mild and friendly" way.

Also, it is not without interest that his uncle, Magnus Bruzelius (1786–1855), during the years 1816–23 had published some important archaeological works (Gräslund 1987:31). Magnus, influenced by the professor of history in Lund, N. H. Sjöborg (1767–1838), had a collection of about 300–400 artefacts. His copper objects were described in a piece in the journal *Iduna* and the items made of stone were described in a thesis (Bruzelius 1816, 1816–18). Magnus had contacts with Danish scholars, one of whom was the archaeologist, numismatist and museum director Christian Jürgensen Thomsen (1788–1865). It is thought that Magnus's thesis influenced Thomsen (Carlgren 1926; Gräslund 1987).

The fact that also Bruzelius had contacts with Danish colleagues can be exemplified with a letter to Thomsen dated 21 November 1849. In this letter he sends his greetings to his friends, Strunk, Worsaae, Herbst and Steinhauer, who all worked for Thomsen. Christian Adolph Frederik Strunk (1816–88) was an archaeologist and a museum employee (Wiell 1999a:387). The archaeologist Jens Jacob Asmussen Worsaae (1821–85) was in 1849 an inspector of the national heritage and he was to become a professor, reader, museum director and secretary of culture (Kjær 1905). The archaeologist, numismatist and museum employee Christian Frederik Herbst (1818–1911) was to become a museum director (Gräslund 1987:49ff, 118). Carl Ludvig Steinhauer (1816–97) was a typographer and a museum employee (Jensen 1992:205).

A scientific journey from the summer of 1858 until the end of May 1859

I shall now present some highlights from the journey of Bruzelius, which is documented both in a formal report and in a personal diary. According to his diary he started his journey from Lund on 7 August 1858.

His first stop was in Copenhagen where he only stayed a couple of days, because he had lived in the city for about half a year in 1857 (Rydbeck 1926). During that previous stay he had studied the museum collections thoroughly and he had socialized with the museum employees. In his report to the University of Lund he gives a lot of credit to the Three-Age System of Thomsen, which had regulated the classification and chronological arrangement of artefacts since about 1832 (Jensen 1988:14).

In Flensburg, in 1858 still a Danish town, Bruzelius visited the museum in which the collections were arranged by the archaeologist and teacher Conrad Engelhardt (1825–81; Gräslund 1987:118). He also visited the excavation conducted by Engelhardt at the bog of Thorsbjerg, where weapons and other equipment had been found. The Iron Age remains were then seen as secular deposits, but were later to be interpreted as votive deposits (Ilkjær and Lønstrup 1982).

In Schwerin Bruzelius was guided through the museum by the museum employee Miss Amalie Buchheim (1819–1902; Bezold 1902), who was described by him as "knowledgeable and decent". In an antiquarian respect he considered Schwerin as "the Copenhagen of Germany". That was because the prehistorian and historian Friedrich Lisch (1801–83) used the Three-Age System when he arranged the archaeological collections.

The use of the Three-Age System was however not fully accepted amongst antiquarians in Germany, as Bruzelius witnessed at a meeting with German historians and archaeologists in Berlin on 15–18 September 1858. In his report he writes "Lisch was harassed in a less suitable way by antiquarians from Berlin". In his diary he writes that "Herr Fre. v. Ledebur said that people in Mark-Brandenburg cannot accept the three usual periods of culture. One could see very clearly that the Berliners wanted to catch Lisch, who is unnatural and a bit of a foolish person." Leopold Karl Wilhelm August Freiherr von Ledebur (1799–1877) was the museum director of the Royal Museum at the castle of Monbijou in Berlin. Freiherr von Ledebur had already criticized Lisch in 1836 for his classification of graves (Fischer 2003:77). The correspondence between von Ledebur and Lisch in early 1837 shows that the former instructed the latter about the importance of knowing the contexts of the artefacts (Fischer 2003:77f). Freiherr von Ledebur also wanted Lisch to use the same arrangement of the artefacts in "der Großherzoglichen Sammlung" in Schwerin as he had used in Berlin, but Lisch did not follow the example of von Ledebur. It is assumed that the controversy between Lisch and von Ledebur got worse after 1846, because in that year Worsaae published a book in which he wrote that some of the German museums, von Ledebur's Monbijou included, were like "rooms with rubbish" (Worsaae 1846:12ff; Fischer 2003:79). The tension between German and Danish archaeologists got worse after the war between the countries in 1864. In that year von Ledebur attacked Danish archaeologists (Fischer 2003:83). In 1869 "The Congress of Anthropology and Archaeology" was held in Copenhagen. The official language of the congress was French and it was not a coincidence (Wiell 1999b:141). Lisch also had an academic fight with Ludwig Giesebrecht (1792–1873) during the years 1838–48 about the Three-Age System (Mangelsdorf 2003). It can also be said that the museum director in Mainz, Ludwig Lindenschmit (1809–93), as late as the 1880s did not accept the idea of a separate Bronze and Iron Age (Gräslund 1987:16).

Bruzelius was very happy to attend the meeting in Berlin and I think that Lisch had informed him about the conference when they had met in Schwerin about three weeks before. It was also Lisch who, as president of the prehistoric part of the conference, invited Bruzelius to speak about the bog of Thorsbjerg on 18 September just before lunchtime (*Correspondenz-Blatt* 1858:21). In Berlin Bruzelius met a lot of prominent personalities such as: Lindenschmit from Mainz, whom he visited on 16 May 1859; Professor Jakob Heinrich von Hefner-Alteneck (1811–1903) from Munich, whom he visited several times in November; museum director Ignaz von Olfers (1793–1872) from Berlin; the Egyptologist professor Karl Richard Lepsius (1810–84) from Berlin and the jurist and philology professor Theodor Mommsen (1817–1903). The biographer Bengt Engström writes that Bruzelius also had the honour of meeting Alexander von Humboldt (1769–1859), but I am very sceptical about whether such a meeting ever took place (Engström 1926:23). If so, I think that Bruzelius would have mentioned it in his report and/or in his diary. Engström could have added an invented meeting to the biography to please the publisher, Bruzelius's son Nils Ivar Bruzelius.

In Vienna, on Wednesday 20 October 1858, Bruzelius

received a letter from the geologist Professor Karl Adolf von Morlot (1820–67), who invited him to Switzerland. On 8 December Bruzelius travelled by boat from Germany to Switzerland, where he stayed for about three months. Professor von Morlot had earlier been on a scientific journey to Denmark (Gerber). His friend the archaeologist and museum director in Lausanne, Frédéric-Louis Troyon (1815–66), had been on a scientific tour to the Nordic countries and to England. Partly because of the knowledge then gained, he could date graves from a grave field at Bel-Air, near Lausanne, to the period 450–800 AD (Troyon 1841; Kaenel). One acquaintance of von Morlot and Troyon was the founder of limnology, Professor François-Alphonse Forel (1841–1912). These three gentlemen visited by Bruzelius were all interested in the lake-dwellings of western Switzerland and they had especially searched for artefacts in Lake Geneva. On 24 August 1854 they used a primitive form of diving equipment when searching for artefacts and it can therefore be said that marine archaeology was born (Speck 1981:105, 130). Research on the lake-dwellings of Switzerland was very topical in 1858, when Bruzelius arrived in this country. This is because it was only a few years since *Zürcher Freitagszeitung* had printed information on 17 March 1854 from the archaeologist Dr.h.c. Ferdinand Keller (1800–81) about the sensational lake-dwellings of western Switzerland. The article in the newspaper, and a book published the same year by Keller, started a "lake-dwelling fever" in Switzerland (Keller 1854; Speck 1981:104f). This large interest in lake-dwellings resulted in the discovery of lake-settlements all over the Alps within a few years. This resulted in Keller publishing more reports on the issue in question, which made him the authority in lake-dwelling research (Menotti 2001:320). One of the results of Keller's research was that the Three-Age System also was relevant when analysing the lake-dwellings (Speck 1981:106).

Bruzelius saw several artefacts in both public museums and private collections. A very large number of these objects had been found at lake-dwellings. In Biel Bruzelius visited the collector Colonel Friedrich Schwab (1803–69). He owned the largest collection with over 1,000 objects of bronze, found in Bieler See (Kanton Bern). In 1865 Schwab donated his collection to the city of Biel and the artefacts can now be seen in the Museum Schwab, which was inaugurated in 1873. The importance of this collection can be illustrated with the fact that some of these objects were shown at the Paris World's Fair in 1867 (Fliedl). Colonel Schwab showed Bruzelius the lake-dwelling of Nidau-Steinberg in Bieler See on 18 December, when they also retrieved some ceramics from the lake. A marine archaeological examination during 1998–99 showed that some wooden posts still could be seen. A dendrochronological dating gave the result 961–850 BC (Kanton Bern). Bruzelius also saw a lake-dwelling in Lake Geneva on 7 January in company with Forel and Morlot.

On 8 January the president of the "Antiquarische Gesellschaft in Zürich", Ferdinand Keller, nominated Bruzelius as a member of the society founded by Keller in 1832. Bruzelius published an article about Late Iron Age artefacts from the Scanian village of Önsvala in the journal of the society in 1859. In 1982 Professor Lars Larsson published an article about a cemetery and a settlement in Önsvala from the Late Iron Age (Larsson 1982).

Analysing Nils Gustaf Bruzelius

Bourdieu's term "capital" is equal to symbolical and material resources. Different types of "capital" are in action in the life of human beings. Relatives and friends are important in the social life and these relationships are to be seen as *a social capital* (Broady 1998:13). Nils Gustaf Bruzelius was born with a social capital of great value, because his father was from a family of clergymen and a friend of Sven Nilsson and his uncle Magnus had published some important archaeological works. At the University of Lund he was appointed as director of the Historical Museum and as Reader in Nordic Archaeology. These academic achievements are to be seen as *a symbolic capital*, *i.e.* merits acknowledged in *the field* of archaeology (Broady 1998:14ff).

It is a fact that Nils Gustaf Bruzelius had gained both social and symbolic capital of great value. But it was not enough to be satisfied with the positions gained. *The strategy* must be to increase the value of the capital (Broady 1998:13). In this respect I think that it was very important that Bruzelius applied for the large travel grant from the University of Lund. It is apparent that Bruzelius increased his social network during his scientific journey. In doing so he also enlarged his social capital. In Berlin he spoke about the bog of Thorsbjerg, which was mentioned in the report from the conference. In Zurich Bruzelius became a member of the "Antiquarische Gesellschaft in Zürich" and he published an article about Late Iron Age artefacts from the Scanian village of Önsvala in the journal of the society in 1859. These actions in Berlin and Zurich can be seen as additions to the symbolic capital of Bruzelius.

It can be said that the social and symbolic capital of Bruzelius were in good condition when he arrived in Scania in the spring of 1859 after his scientific journey. But *the economic capital* was perhaps in not such good order, because already in 1857 he had complained about the salary. The earnings could perhaps be enough for one person to cope with the expenses. But if Bruzelius wanted a wife and children, it is possible that this was very difficult. The result of his brooding was that he became an assistant master at the grammar school in Malmö on 12 December 1860. Three years later he married Ida Charlotta Dyberg (1840–1864), the daughter of the merchant Olof Dyberg in Malmö, but the wife died after nine months. In 1865 he became headmaster at the lower secondary school in Ystad. In 1867 Bruzelius married Karolina Gabriella Alexandra Hallbeck (born 1844), the daughter of warrant officer class 1 and the well-to-do Karl Alexander

Hallbeck (Rydbeck 1926). Two years later their son Nils Ivar was born and after another two years a daughter was born (Letters from Nils Gustaf Bruzelius to Martin Weibull of 18 October 1869 and 31 March 1871).

In 1875 Professor Sven Nilsson writes in a letter to Bruzelius: "It was an irreplaceable loss when you left the university" (Engström 1926:29). I would say that perhaps the loss was greater for the university than for Bruzelius. The realities of life forced him to find his income at other levels in the educational system, but he never stopped being an archaeologist. This is very clear from a look at the bibliography of Nils Gustaf Bruzelius, which shows that several important works were printed after he left Lund.

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DAVID LOEFFLER

Scientific creativity – scientific conformity

An archaeological example and its consequences

Behold the turtle, who makes progress only when it sticks its neck out.
Anonymous

HOW TO PROMOTE creativity is an issue of current concern for Sweden's universities, politicians, research councils and institutions. Individualism, diversity, collaboration, freedom, tolerance and originality are the cherished bywords. Yet all recognise that science does not take place in a social vacuum and that our ideals are confronted by herd-instincts, compliance, hierarchies, coercion, intolerance and dogmatism. Advocates for a top-down approach suggest that concentrating scarce resources on a few strong research environments will result in good science. Others are sceptical (Larsson 2001; Fröberg 2003; Bennich-Björkman 2004; Hasselberg 2004; Holmberg 2004; Lövtrup 2004; Rothstein 2005).

One of the strongest archaeological research environments of the last century was the Central Board of National Antiquities and the State Historical Museum (RAÄ/SHM). Within the walls of this national institution there flourished (utilising Ludwik Fleck's terminology) a robust thought-collective characterised by its own distinctive thought-style, one which successfully monopolised how Norrland's prehistory was interpreted and presented for well over 70 years (Fleck 1981; Loeffler 2005a).

The context of institutionalised convictions

This normative thought-style interpreted the Norrlandian past in accordance with its own internal logic; (1) that Norrland had been inhabited late, *c.* 2500 bc, by a people coming from the south, (2) that population density had been low, their lifestyle nomadic and thus settlements sparse and temporary, (3) that development in the North was retarded, as displayed by the manufacture of archaic tool types long after they had become redundant elsewhere, (4) that when changes did occur or progress was made, it was initiated from the south, and (5) that Norrland had functioned as a source of raw materials, procured for and by the more advanced cultures from without (Loeffler 2005a).

The persuasive constitution of this thought-style reflects, and seemingly gains support from, southern Sweden's present geo-political predominance. The origin of that development dates back to the 13th century, when the South's emerging elite, secular as well as profane and in fierce competition with those in Denmark and Novgorod, realised the economic importance of the North. The lucrative revenues derived from northern fish, furs and skins were advanced through military expeditions, the establishment of churches and fortified outposts and through judicial control over trading privileges. The creation of an independent kingdom of Sweden in 1523, and its subsequent acquisition of a European empire during the following century, left it surrounded by adversaries. These circumstances served to enhanced economic interest in the North, prompting the central authorities to consolidate political and economic monopoly over the region by actively founding farming communities, iron mills, marketplaces, towns and ports in order to ensure that the wealth inherent in its fish, meat, skins, furs, iron, charcoal and wood tar reached the coffers of the Royal Kingdom. The demise of the Swedish Empire in 1718, the annexation of Finland by Russia in 1809 and the loss of Norway in 1905 repeatedly re-directed the economic hopes of the emerging Nation-State northwards. What had been lost elsewhere must be replaced in the North. Portrayed as Sweden's "Amerika", the central government supported the establishment of farms, saw and pulp mills, iron foundries, the opening of iron and mineral mines, the building of roads, railways, floatways, dams, power plants and transmission lines, so that the outpouring of wood tar, timber, wood pulp, gold, iron and hydroelectric power would all flow, with increasing profit, unencumbered southwards (Loeffler 2005a).

Mono economies (the exploitation of a few natural resources) are precarious, rendering the affected region dependent on and subordinate to outside powers. This relationship, as it exists between northern and southern Sweden, has long since come to be considered, if not natural, then at least inevitable. This conviction also left an indelible impression on the minds of archaeologists, with the result that Norrland's prehistoric past was unreflectively portrayed as a simple extension of its historic present. Once codified, the five postulates of this thought-style were successfully upheld and defended until the mid 1970s despite clear empirical evidence to the contrary (Loeffler 2005a).

The maverick

Office clerk and business man, Knut Tinnberg was 50 years old when he discovered his true passion in life (Figure 1). His archaeological skills were initially sharpened through his

participation in surveys and excavations of Mesolithic sites along the Swedish West Coast under the supervision of Nils Niklasson, Harald Thomasson and Johan Alin, each a foremost expert within their respective fields of archaeology, zoology and geology.

Mesolithic studies throughout Scandinavia were constantly revealing the presence of ever older artefacts, sites and cultures. The Ertebølle culture was first recognised in Denmark during the 1890s. Less than a decade later the Maglemose culture was discovered. The existence of Norway's Nøstvet culture was established in 1905. On the Swedish side of the border this culture and its characteristic axe, named after the Lihult site, was documented in 1906. The first traces of the Fosna culture were discovered by Nummedal in 1909. To this he added the Komsa culture in 1925. In 1909 the first Mesolithic site belonging to the Finnish Suomusjärvi culture was investigated. Sweden's first Ertebølle sites, in Skåne and Bohuslän, were excavated in 1901 and 1905 respectively. Sites belonging to the even older Sandarna culture would not be fully accepted as such until the excavation of its type-site in 1930. The characteristic techno-complex of the Hensbacka culture was recognised by the 1920s, although another 30 years would pass before full acceptance was conferred. Mesolithic sites elsewhere in southern Sweden remained conspicuously lacking. Nevertheless, by *c.* 1920 it was generally accepted that these areas had clearly been occupied during an early stage of the Mesolithic as indicated by the presence of Limhamn axes, Nøstvet-Lihult axes, round-butted axes, slotted bone points fitted with microblades, harpoons, flake axes, core axes, point-butted axes, keeled scrapers and/or handle cores (Figure 2). The presence of similar artefacts in Norrland were nevertheless explained away, thus preserving the edifice of the normative thought-style which held that the north was first settled at the beginning of the Neolithic. However, in light of advances elsewhere, Tinnberg thought otherwise. In the summer of 1930, and at his own expense, he set out to discover Norrland's Mesolithic inhabitants (Affidavit D.nr. 3262/33; Loeffler 2005a:148ff; 2005b).

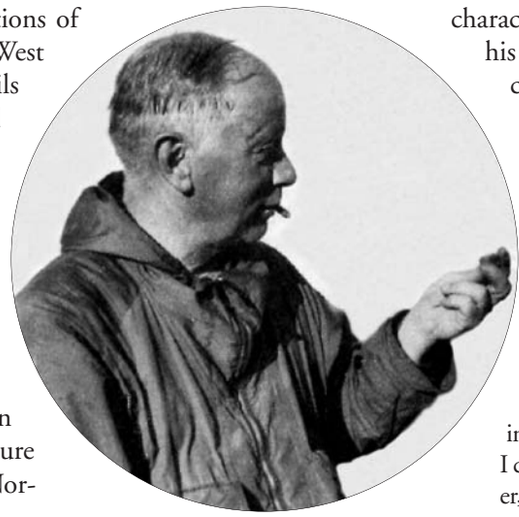

FIGURE 1. Knut Tinnberg (1878–1948) inspecting an artefact of some kind. The photograph appears to have been taken on one of his many excursions into the mountain areas of Norrland where he hoped to find traces of Norrland's earliest inhabitants (source Janson 1949, here modified).

Tinnberg's uncanny ability in finding Stone Age sites and artefacts was soon recognised by contemporaries and attracted both academic and official patronage, hesitantly bestowed upon him by the RAÄ/SHM as represented by Axel Bagge (1894–1953). Available correspondence on file from the 1930s clearly reveals a growing sense of respect and friendship between the two, yet it is also obvious that Bagge found Tinnberg taxing, even difficult, due in part to his character, his lack of scholarly learning and his unorthodox opinions on archaeological matters. Tinnberg does seem exceptionally obstinate, which he himself confessed:

> Above all others, I am well aware of my burning interest as concerns these investigations … and if I am now abandoned by the high and mighty, then you should not be surprised if I become angry. One could say that I am a lunatic, residing up here in this wilderness, exposing myself to so much wear and tear, to which I contribute all the money I can gather together, but the fact of the matter is thus, this is my private madness and I *will* see it completed, with or without help. This is a resolution that only ill health or an untimely accident can impede (Letter 28-4-1935, emphasis in the original).

His annual and often arduous investigations throughout the North during the 1930s were constantly plagued by financial difficulties (Letters 17-5-1935; 22-11-1935; 2-4-1940; 25-9-1940);

> Looking back on my adventures in Norrland, not counting the laborious toil I have expended without so much as one penny in compensation, I see that it has cost me a large sum of money. Two years in Härjedalen and one year in Lappland and Jämtland, all paid for out of my own pocket … (Letter 28-4-1935).

To Tinnberg's mind, this unrelenting situation seemed to warrant abrupt measures despite earlier agreements (Protocols 13-11-1933; 15-11-1933). In reference to those artefacts discovered during his field season of 1936 he writes:

> … under present conditions as they exist between myself and the State Historical Museum, I do not consider myself obligated to hand over these artefacts voluntarily and free of charge. I will therefore keep them until further notice … however … if I were to receive a solid promise from the National Antiquarian that he will support my future application for funding from the Humanities Research Council with a written affidavit … then I pledge that I will surrender the artefacts found this year and those collected next year … (Letter 4-7-1936).

It is reasonable to assume that Tinnberg's seemingly unorthodox manners did not endear him in the eyes of the powers that be. The RAÄ/SHM deemed it prudent that he collaborate with Erik Granlund, one of Sweden's leading geologists. This arrangement floundered, as noted by Bagge in a letter to Tinnberg:

FIGURE 2. Mesolithic research in Scandinavia *c.* 1930. Solid lines demarcate Mesolithic cultures as revealed by sites and stray finds. Dotted lines delimit areas where stray finds dating to the Mesolithic were known and accepted as such. Map depicts coastline today and during the Ancylus-Litorina transition *c.* 5,000 BC.

> … he [Granlund] is displeased about your wilful behaviour, your reluctance to submit to the knowledge of experts and your deficiencies in geology and related sciences in general. (If only once during the course of your chequered life you had worked as a teacher, for example, at some college – sigh) … because as you know – it is easier for a camel to pass through the eye of a needle than for an amateur to pass over the magic boundaries that surround the shaman's and medicine man's sacred sanctum (Letter 8-5-1935).

Tinnberg also ran afoul of O. B. Santesson (1874–1950) and Gustaf Hallström (1880–1962), two leading experts on Norrlandian archaeology, the result of disagreements concerning the nature of the Stone Age material from Norrland and how it should be interpreted (Hallström 1937:220; Letters 17-10-1933; 19-4-1934; 13-12-1935; Loeffler 2005a; 2005b). Tinnberg became increasingly outspoken in his views about the Norrlandian past, which he repeatedly advanced by penning articles for local newspapers. These views were not appreciated by the scholarly community, as exemplified by Bagge's letter to Maj Gullbring at the museum in Umeå concerning some Stone Age finds made by Tinnberg in the county of Västerbotten:

> I will however provide you personally with an explicit explanation, based on my extraordinary and intimate knowledge acquired over many years concerning friend Tinnberg's qualities, it is not to be recommend that you allow him the liberty of publishing the Stone Age materials. He is in possession of a rather animated yet professionally undisciplined fantasy that (newspapers articles excluded) precludes this scholarly endeavour. His great strength consists of his energetic, resolute and successful exertions in the field and his subsequent discovery of new sites. In this capacity he has so far rendered great service to prehistoric research … (Letter 13-11-1941).

This is how Tinnberg is remembered today (Janson 1960; Sundlin 1990), although with the benefit of hindsight one realises that this undisciplined thinker was decades ahead of his contemporaries.

The heresies

Tinnberg considered stray finds to be indicative of yet undiscovered sites, while realising that the presence of fire-cracked stones probability signified the existence of a prehistoric feature and/or site of some kind. He knew that the so-called "ocular method" of surveying was totally insufficient in itself and that test-pitting was essential. He also recognised that surveyed areas must be revisited, that once is never, ever enough. He pioneered the use of phosphate and osteological analysis in the North, as well as being one of the first to utilise aerial photography and the occurrence of crop-marks to discover hitherto unknown features. It is probable that he was the first to perceive that those pit-features found in the geological phenomenon known as "cobblestone fields" were made by humans and might be prehistoric. He was one of the first to express the view that those Norrlandian features known as "embankments of fire-cracked stones", regarded as rubbish heaps by everyone else, were the remains of semi-subterranean houses. He clearly understood that sites of Stone Age character are not always located on the very shoreline of present-day lakes and waterways, making a search behind the shore a necessity. He also thought that flakes should be collected and analysed, studies he felt would yield knowledge of the techniques employed by Stone Age people. These insights, today considered self-evident by many, were long ignored or denied by archaeologists of his and later generations (Loeffler 2005a:186, 2005b; Löthman 1986; Tinnberg 1937a, 1937b, 1940a, 1940b).

But Tinnberg's most audacious assumption was that Norrland could have been inhabited by humans coming from both south and north "following on the heels of the retreating ice" between *c.* 7,500 and 6,000 BC (Tinnberg 1934, 1935). It seemed ludicrous to think that Norrland had remained empty for thousands of years after deglaciation, and yet this is exactly what the dominant thought-style seriously professed. By asserting the contrary, Tinnberg was committing archaeological heresy. Vital to any understanding of the

Mesolithic was the speed and duration of the latest deglaciation and the ensuing shoreline displacement (Figure 3). These climatological and geological processes were reasonably well understood by the 1930s (Loeffler 2005:178). Based on this evidence, Tinnberg thought it likely that early settlements would be found in the coastal areas along ancient beach terraces created by shoreline displacement. He also expected to find traces of Norrland's earliest inhabitants, the equivalent of Norway's Komsa culture, Mesolithic or even Palaeolithic in age, situated in the foothills and mountain areas of the interior. These sites, he reasoned, would be found along ancient beach escarpments created by the now vanished glacial ice-lakes or on beaches left high and dry above existing lakes through tilting caused by the uneven isostatic uplift of the earth's crust. It was towards these latter two areas that he directed his main efforts.

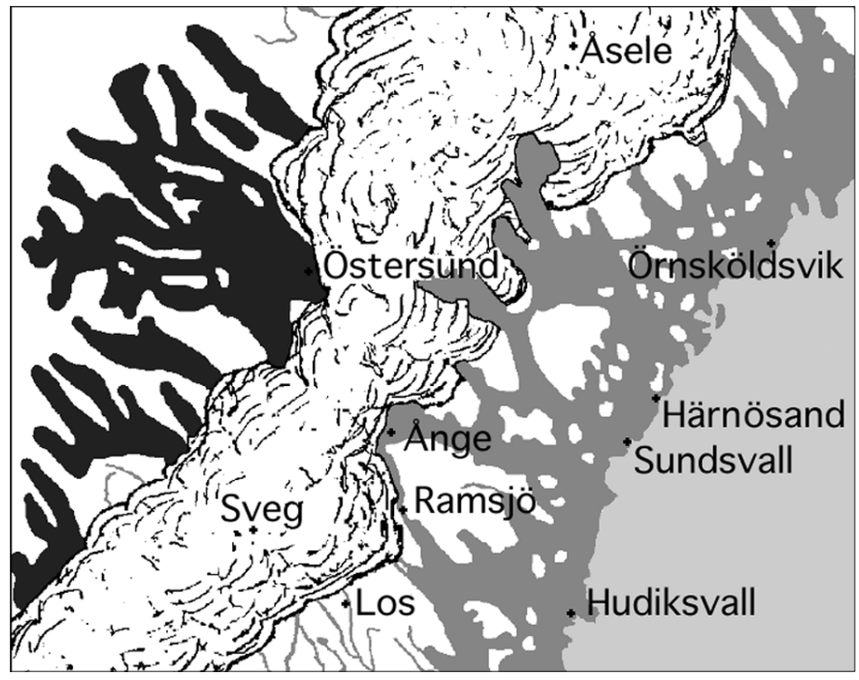

FIGURE 3. Central Norrland *c.* 7,000 BC. Black: ice-dammed lakes. Dark grey: highest maritime sea level. Light grey: present-day sea level. White: dry land (source Högbom 1934, here redrawn and modified).

Contemporaries were either sceptical, supportive or hesitant (Affidavit D.nr. 4658 1/2/34; D.nr. 465811/2/34;P.M. D.nr. 4658 1/2/34 Letters 13-10-1933; 17-10-1933; 8-5-1935; 20-11-1935). Bagge, although always sympathetic, belonged to the latter. He did however publish the results from Tinnberg's investigations at Lake Torneträsk in northernmost Norrland, where artefacts and sites had been found that supported Tinnberg's audacious claims (Bagge 1937). On closer examination, about a third of the artefacts Tinnberg had collected from these and similar sites were judged to be eoliths while the remainder were considered to be either Neolithic or of indeterminable age. Some of the sites described as being located on old beach escarpments, and thus ancient indeed, proved otherwise (Letters 23-9-1938; 18-2-1939; 12-12-1939; 27-9-1940). Tinnberg was thus found guilty of over-interpreting the data. Whether he erred on the side of caution (collecting too much rather than too little) or whether it was a result of over-zealous enthusiasm is a moot question. What is interesting is that the ensuing debate degenerated into questions concerning the authenticity of *this* artefact or *that* site, and by extension fostered doubts concerning his credibility. In doing so the prevalent thought-collective neatly sidestepped the main issue raised by Tinnberg: *the where and when of Norrland's earliest inhabitants*.

His ideas now safely discredited, Tinnberg's talents were readily directed elsewhere. From 1942 until his death Tinnberg was seasonally employed by the RAÄ/SHM were he did sterling work surveying Norrland's many waterways before they were exploited for their hydroelectric power. However, he did not gave up his quest, although he never again attracted the attention of academia, which up until the 1970s would summarily reject all evidence that suggested settlement in the North before the Neolithic (Janson 1949, 1960, 1962a, Janson 1962b; Loeffler 2005a).

Recycling the present

Some of the oldest sites in Norrland have since been found in those areas predicted by Tinnberg. And while he never discovered any Palaeolithic settlements, he did find 15 different sites that yielded handle cores, conical microblade cores and/or microblades, artefacts typical of the Mesolithic and thus traces of the region's earliest inhabitants (Loeffler 2005a:162).

> Microblades and microblade cores have earlier been found on a number of sites in … southern Norrland's inland. One can debate whether or not they should be classified as belonging to the Older Stone Age, as they are in southern Scandinavia, or if their presence here signals some sort of retarded development. [They] … are, without hesitation, Mesolithic in form. If they had been made of flint and had been found on a site situated along the West Coast or in Skåne, then there would have been no hesitation as to their dating to the Older Stone Age (Gräslund 1970:144f).

Gräslund's astute observation encapsulates the internal logic of that dominant thought-style which successfully recycled the present via the Norrlandian past by explaining away mounting evidence to the contrary.

Tinnberg's influence on latter-day generations is non-existent while his innovative insights remain unrecognised. His

fate illustrates well the cohesive forces of conformity and our difficulty in recognising creativity even when it stares us in the face. If history teaches anything, it is that we are notoriously bad at predicting the future. Our only recourse might be to take our cue from the turtle. This includes taking risks when it comes to funding, realising that decades might pass before today's investment yields fruit.

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Letter 27-9-1940 from Bagge to Tinnberg.
Letter 13-11-1941 from Bagge to Gullbring.
P.M. D.nr. 4658/1/2/34 by Bagge.
Protocol dated 13-11-1933.
Protocol dated 15-11-1933.

SHINAKO KANDA HEATHMAN

My tale about the far field

TEN YEARS AGO I joined an excavation in northern Japan as one of the supervisors of the undergraduates. The location was Tanohata Village, Iwate Prefecture, nearly 500 km. north of Tokyo. Since I had always excavated in or around the Tokyo area, it was my first time to go out to such a remote place.

It was a hot and humid summer. Because the project for the season had already started, a colleague and I went there together. We first took the bullet train for 2 hours and 45 minutes from Tokyo to Morioka, the capital and the biggest city of Iwate. The name Iwate means "the palm on the rock" and comes from the following story. There are three big rocks in Morioka, which were worshipped as a god called "Lord Three-Rock" by the local people. Once upon a time, there was a troll who bothered the local inhabitants and travellers. They asked Lord Three-Rock to punish him, and the god did this by tying the troll to the three rocks. The troll was greatly surprised and begged the god for mercy. The god agreed on one condition: "If you show me proof that you will not bother people again." The troll stamped his palm on the three rocks as proof and ran away over the mountains. Even today you can see the troll's palm imprint on the rocks.

Iwate is a curious place. One of the most famous poets in Japan, Basho Matsuo (1644–1694) wrote many poems about this area in his book *Oku no Hosomichi* ("A Path in Oku").[1] Kunio Yanagida (1875–1962), by far the most famous folklorist in Japan, edited numerous folktales told by Kizen Sasaki about this area and published a book *Tales about Tohno (the Far Field)*. Furthermore, one of Japan's most popular novelists and poets, Kenji Miyazawa (1896–1933), came from Iwate. These works give us a general impression that Iwate is a deep forested and "uncivilized" area.

Indeed, this place was quite different from the areas that show up on the central stage of Japanese history. It was a land for the Ainu, a minority in Japan, until the time that the Japanese or "Wa" led by Hirafu Abe, defeated the Ainu or "Ezo" in 658. It was not until 801 that the Wa finally conquered this area. At that time, the famous Wa leader, Tamuramaro Sakanoue, made good friends with the Ainu leader, Aterui, while he was held prisoner. However, Aterui had to kill himself to save the lives of the rest of the Ainu. One of the history comics I read when I was a child described this sequence as follows. Tamuramaro arranged the last party for Aterui, and at that time Aterui laughed loudly and said, "If I could save all the Ainu just by killing myself, it would be so easy to do it". Tamuramaro was crying all the time while Aterui was laughing. Anyway the Wa built several forts to defend against the Ainu rebels around this area, and one of them called Shiwa Fort was the beginning of Morioka City. Morioka means "a mounded hill". Through history this area often had famous chieftains such as the Abe and Ohshu-Fujiwara families. A warlord in the 16th century, Nobunao Nambu, built Morioka Castle in 1597, the foundations of which are still intact today.

At Morioka we changed trains and went to Miyako. Morioka Basin is surrounded by mountains, plateaus and forests, while Miyako faces the Pacific Ocean. This area called Sanriku Beach is the longest rias coast in Japan, famous for its scenery. Also, since the cold tide coming from Kamchatka and the warm tide coming from the Philippine Sea meet here, the marine life is very rich. The view of the rias coast, or the "ocean alps" was wonderful. Norwegian fjords are sharper and higher, but this rias coast was much more "colourful" – deep green, the ocean and sky blue, sunshine yellow and clouds white. It was unbelievable that such an open view was waiting for us after going over the plateau from Morioka, which was surrounded by the mountains.

At Miyako we again changed trains and headed for Tanohata. It is about 50 minutes, if you are lucky to catch one of the few trains. When we got off the train at Tanohata, I thought it was somewhat dark. No wonder, because the sun was hidden by the sharp rias cliff at the back of the station. The front was the coast and several small fishing markets and houses were between the station and the coast. These buildings probably obtain sunshine only a few hours a day, but this may not be so unusual here. Also, since no more than 16 % of the village land is flat, you can only live either at the top of the hill or at the bottom by the beach. The population was only 4,806 or 1,389 households as of 1995, and it has become even less according to the latest statistics in 2005. Twenty-eight percent of the households earn their living from fishing or agriculture, which in Japan sounds pretty high. The inhabitants mostly live either from breeding cattle up on the plateau or by cultivating tangles and "wakame"[2] and catching salmon, abalone and sea urchin. Although Iwate is prominent for rice, this village has only 0.4 % land use for rice fields.

Although I was born and grew up in a fishing town near Tokyo, in Tanohata I did not feel "the sea", namely the

humid salt water smell, as I always do when I go to my hometown. Perhaps it was because the water is colder. Instead, I smelt the trees and leaves so strongly. One of our colleagues, who had been there for a couple days, picked us up with a small truck at the station. Right after the truck started, I found out why I smelt trees so much. The sharp cliff began right at the back of the station, and even on the way to the top was already a total forest. The paved road we took was the main road and the only road of the village, which goes to the top of the plateau from the coastal area.

Then the truck suddenly stopped and the driver said, "Look, a serow". An animal that looked kind of like a huge reindeer was sitting in the middle of the road. It was a serow,[3] which we believed that we could only see in the zoo. It is one of the endangered animals designated by the Japanese government. We could not move the truck closer, because we did not want to hurt either the animal or the truck. It was so big and did not get scared by truck lights, engine noise, and human beings at all, and thus it took us about 20 minutes to wait for the serow to move on.

When we got to the top of the hill and drove a bit, the deep forest suddenly ended and wild grassland opened in our sight. There were numerous rocks standing, looking down at the Pacific Ocean from the top corner of the cliff. They reminded me of Ales Stenar. The silhouettes of the rocks in the twilight were peculiar. They were just like standing silent men. The scene gave me an idea that this place may have been used for some kind of cult, for instance, of the sun, the sea, the stars, or "the other side". This was Site Tateishino I, our destination.

Site Tateishino I contains first of all three stone rows. Stone Row I is more than 80 m. long, Stone Row II is about 20 m., and Stone Row III has not yet been well excavated. Stone Row I goes along the same elevation. According to a local archaeologist, since the structure of one of the rock complexes (12B18) which is a part of Stone Row II is similar to that of the grave of Site Yubunezawa II, the stone row in Tateishino I has a high possibility of containing a burial facility. Pottery, such as pitchers, legs of pottery dolls, stone knives, stone plates, stone axes and other items have been found from this site. They are dated to the later part of the Early Jomon, as well as the later part of the Middle through the middle part of the Late Jomon Periods. The relationship between these three rows is still unexplained. There is a house pit between Stone Rows II and III, another house pit under Stone Row II, and several pits next to them. The houses are dated to the beginning through the early Late Jomon Period, while the dates of the pits vary.[4]

There are many sites around this place. Two kilometres to the southwest are Site Hamaiwazumi I and II; the former is a village site from the later part of the Middle Jomon, and the latter uncovered the perfectly preserved figure of a pottery doll with "sunglasses". Site Kitte I, 1.5 km. to the southeast, is a village site from the early part of the Late Jomon, almost the same time as Tateishino I.

When we got there only small parts of Stone Rows I and II had been excavated, though we could see that the rows extended further. The ground covering the stones was so bumpy in a stone row shape. It is surely exciting to examine this type of site, but at the same time it is rather boring, for we will probably have to write that "this site could have been used for some kind of cult, or for a burial of a special person, but a further examination is required for a better assumption". My colleague said, "Soon you'll be able to tell that this is a difficult place – it's so hot out now, just recording a number of rocks is amazingly boring and it takes forever. Plus don't forget that you'll be working with thirty inexperienced kids."

The project was supposed to be taken over by the project team at the institution for a bit longer after the summer, and then by the local authority. Thus, the most important point for us was "not to ruin the site and the project by this fieldwork lesson". Of course the students were all interested in archaeology. However, most of them grew up in big cities and were not used to running around in nature. They were good at swimming in a pool or playing baseball, but they did not know which weeds would give them a rash or how to avoid sunstroke. If anything serious happened, the project would have to be cancelled immediately.

After a while, my colleague with one more graduate student left the site in order to buy some food for dinner. They had to go to a supermarket in the neighbouring town before it closed. Then we finished the excavation for the day and went to the house where we were supposed to stay. Since there was no accommodation in the village, we had asked the village office beforehand if there was any place to stay, and then the office introduced us to a huge farm house which could take care of us during the lesson. We had to prepare meals by ourselves, and thus we were waiting for those who went shopping to come back.

However, they did not come back. At that time mobile phones did not reach that area. We had to do something by ourselves, as everybody was starting to get really hungry. "There is a small shop next to the gasoline station", someone said. "According to the shop's and the station's name, it seems that one and the same family owns both. Though the shop is probably already closed, since the house was at the back of the station, they may be able to open the shop for us if we go there and ask them!" We went to the shopkeeper's house and explained that we needed some food and thus wanted them to open the shop for a bit. A woman of around 65 came up and answered, "?????." "Excuse me?" "?????."

This was a great shock for us. We could not understand even a single word! Imagine you live in a small island, and you know that every inhabitant speaks Japanese. Although you may know that some dialects are notoriously strong – except for the different languages such as Ainu – you could never imagine that you would not be able to understand even a single word, or that the person would not talk any

standard Japanese at all. "Uh–, vegetables, meat, or … uh …" We started to behave as if we were talking to a foreigner in a foreign country. Then a little girl of around 4 or 5 came up at the back of the woman. We asked the girl, "Could you please explain to us what she is saying?" but she kept looking at us. The girl was not old enough to go to an elementary school, where she would learn standard Japanese! Most likely they understood what we said, but we could not make any communication. We had to come back to the house without purchasing any food. We were so shocked and tired. "What was that language? Was that really Japanese?" We even could not tell if the lady was talking Japanese, but just believed that she was. Anyway, after a couple of hours the colleagues who went to the town finally came back. They said they had got lost on the way because it was totally dark and there was no sign on the road. We were so happy that we could finally get something to eat!

After that day, our excavation was fairly peaceful. Our host family members could manage standard Japanese, though we often had a hard time understanding them. The house was so huge and old that it was rather scary to walk around at night, but it made us excited to feel as if we were in a haunted mansion. At the site several cars and small trucks went by every day, and most of them stopped and asked us, "??????" One day an archaeologist at the local authority visited the site and he gave us a word list, which helped us a lot. It contained the sentences such as "What are you doing?" "What did you find there?" "Where are you from?" When a truck driver asked me, "What did you find there? Any treasures?" how happy I was to understand him! It reminded me of my first days in Sweden. Of course we answered to him, "No treasure, just rocks".

A wonderful mysterious world can be found everywhere. Tanohata was a really scenic natural site full of green and blue colours, serows and the incomprehensive language, and probably has it been so for 10,000 years. My memories of the stay and the excavation in the village are pretty vague, but I clearly remember the colour, the smell and the cultural shock I experienced with the dialect. Since the site has been arranged as an archaeological park, I would like to go back there some time and see how the park looks. But whether anybody visits there or not, the stones must be standing silent, just as they have done.

Notes

1 This area used to be called Oku or Mutsu, which means "far deep".
2 *Undaria pinnatifida*, the most popular seaweed in Japan.
3 Japanese serow, *Capricornis crispus*.
4 The Jomon Period can roughly divided as follows: ~7290 BC Beginning, ~5160 BC Early, ~2780 BC Early–Middle, ~2115 BC Middle, ~1125 BC Late, and ~31 BC End. However, this division is always disputable and changeable, although not drastically.

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Time travel: a new perspective on the distant past

THIS PAPER DISCUSSES three ways in which the distant past matters to the present. Two perspectives are well known, but the third is emerging only now, in our age. I am referring to an evolutionary perspective, a political perspective and a time travel perspective. Any archaeologist or historian can count herself lucky to live in a time when the distant past gains new significance. This paper is a first attempt at describing my observations about the distant past in the present. For the purposes of this essay, I define "the distant past" as the past before the time that can be remembered by a living individual, *i.e.* earlier than approximately 80 years ago. Mostly, however, I will be focussing on prehistory. Geographically my argument is valid only for the post-industrial "Western" world in which certain cultural and economic conditions favour the three perspectives discussed over others.

Although these three perspectives are not mutually exclusive, I will be emphasising aspects in which they markedly differ. These can be subsumed under the following parameters:

BEGINNING: Each perspective presupposes a particular point in time which it takes as the starting point of the distant past. (This is not to be confused with the time in which each perspective first emerged.)

FOCUS: Certain key notions and concepts describe the specific focus of each of the three perspectives and their respective approaches to the past.

DEMANDS: Each perspective demands certain attitudes, skills or pre-understandings from both archaeologists and their audiences (*e.g.* students, readers, visitors …).

DYNAMIC: All perspectives contain a particular kind of dynamic supplying one or more "driving" ideas that are central to it.

KNOWLEDGE: Finally, each perspective presupposes a particular importance of (academic) knowledge about the past.

FIGURE 1. Long-term human evolution according to the archaeological journal *Skalk*. Drawing by Jørgen Kraglund. Reproduced by permission of *Skalk* (copyright).

The first perspective: Evolution

The evolutionary perspective on the past creates a long-term historical perspective that ultimately ranges from the beginning of the universe to the present day. As far as archaeologists are concerned, the periods studied stretch from the oldest human ancestors, living several million years ago, until the 20th century (and an archaeology of the 21st century is already emerging as well!). Ninety-nine per cent or more of the entire human past falls within the archaeol-

FIGURE 2. "Die Ötzis kommen! Höhlenmenschen wie Du und ich", seen in a supermarket in Tübingen, Germany. Who is controlling representations of the past? Who is selling what to whom? Photo: Cornelius Holtorf 2004.

ogists' remit, whereas historians and many other disciplines deal only with a very tiny proportion of human biological and cultural evolution at the very end of it. According to this perspective, the past matters to the present because it explains its origins, where we all come from, and how the present, in the long term, came to be the way it is. This is the traditional approach taught in schools and used by most academic textbooks: a developmental story of human history, chronologically organised and ultimately leading to our own time (Figure 1).

As already indicated, specific human evolution begins at the point where it separates from general primate evolution. The search for the "missing link", *i.e.* the common ancestor of humans and apes, is one of the classic themes of human evolutionary research. Although it has become doubtful whether there was indeed any common ancestor of that kind, palaeoanthropologists have traced distant human ancestors many million years before the present.

The special focus of this approach is on chronology and historical context. Without reliable dates for archaeological finds and sites it is impossible to contextualise them at the right point in the process of human evolution. Once fixed in time and space, archaeological evidence gains meaning and significance from putting it into a specific historical context that emerges from all the relevant, available information already known. Accordingly, undatable and contextless finds are ultimately historically meaningless. The ubiquity of this perspective has led to an obsession in archaeology with dating. In some cases a project is taken to be complete as soon as satisfactory dates for all its finds have been established so that they can be put into a satisfying chronological sequence.

This approach demands of both archaeologists and their audiences sometimes considerable pre-existing knowledge on the course of human history, deriving from the accumulated insights of past research. Without a rough idea of the overall sequence of cultural evolution it is impossible to appreciate the specific contribution a specific find has made to scholarship. That is the reason why archaeological education often aims at conveying so much factual knowledge about past periods. In addition, a sound methodological expertise is required in order to be able to sort good scholarship which produces valid insights from bad scholarship which does not. Very few non-archaeologists have this kind of knowledge and expertise.

The evolutionary dynamic is one of historical causes and effects. Why did things happen in the way they did? Studying questions about causal links in history have always been important in archaeology, especially with the advent of "processual" archaeology in the 1960s. Why do humans walk upright? What made the Neanderthals extinct? Why did people become farmers? How did the Indo-European languages spread over much of Europe? What lay behind the "urban revolution" and the beginnings of "civilisation"? What caused the collapse of the Roman Empire?

Although not everything in the human past may be knowable, anything knowable is in principle relevant to this approach. Indeed, the more we know about the human past, the better we are likely to understand any specific historical context and thus human evolution as a whole.

The second perspective: Politics

The second perspective focuses on the politics of the past, investigating representations and remains of the past as phenomena of different presents. Traces of the past can be interpreted in many different ways. Every account of the past mirrors existing norms and expectations of the present in which it was constructed. A political perspective scrutinises first and foremost the specific circumstances in which a certain view of the past gains currency in a particular present-day context. Whose interests are served if the past is remembered in this way rather than another? Who controls the representations of the past? Who is allowed and indeed expected to interpret past remains on everybody's behalf? In recent decades, this approach has become very popular among academics as part of a growing interest in critical theory, but also as a consequence of an increasing interest in the history of research. Historical studies have been demonstrating to what extent changing perceptions of the past and its remains reflected the changing circumstances of those interpreting. By the same token, critical studies of the norms and rules that govern contemporary archaeological practice have led to insights about the politics of archaeology today (Figure 2).

If the past is defined and constructed differently in each present, the obvious starting point of this perspective is the first such context. In the case of prehistory, for example, that

FIGURE 3. A special Viking Age moment of our time, observed at Foteviken Viking Reserve. Photo: Cornelius Holtorf 2005.

was in the 1830s when Paul Tournal first used the term *préhistorique* in describing the finds he had made in the caves of southern France. Another early context was around the year 1851 when the Canadian scholar Daniel Wilson introduced the term *prehistoric* into English. It is pointless to ask about the meaning of prehistory or prehistoric finds for time periods before the 1830s when that concept did not in fact exist.

As no past can be independent of the present in which it is constructed, there is a special focus here on contemporary contexts. In order to improve our understanding of the past, it is mandatory to study the specific present from which it emerges. A key notion is critique. We need to ask why there was a need or desire to introduce the concept of prehistory in the mid 19th century and which functions it has been serving ever since then. Moreover, how we today understand the meaning of prehistory in the 19th century will not be the same as how it was understood twenty years ago or how it will be understood in twenty years from now.

What this approach demands of both archaeologists and their audiences is the ability to think critically and not take anything as self-evident. In other words, more important than knowledge is a specific attitude and a way of questioning knowledge. Through critical analysis it is possible to see through the way the past is constructed in each present and understand the underlying constraints and interests of the various stake-holders. This kind of critical assessment demands a high degree of intellectual rigour from audiences which cannot be taken for granted.

The dynamic underlying this approach is one of political means and purposes. The way people construct the past is the result of particular strategies adapted in the present. Pasts are promoted or adapted because they serve certain ends in the present. Nationalistic politicians aim to support their cause by choosing chauvinistic pasts. Visitors to amusement parks seek to maximise their enjoyment by preferring rides and attractions linked to historic themes that are easy to recognise, simple to grasp, and fun to experience.

According to this perspective, in theory anything that once happened in the past might be relevant to a given present. In practice however only certain aspects of the past are chosen as relevant at any given time. The question is thus not how much can be known about the past but what has been or is known about the past in which context, and why. There is a politics of knowledge.

The third perspective: Time travel

The third way in which the past gains meaning in the present has emerged only recently. Although people have long been imagining what life was like in different ages, in recent years an entire industry has developed around the notion of travelling to other places in time. Today, a growing number of people dream of alternative realities. They seek to realise such dreams by travelling to exciting holiday destinations linked with past worlds, by assuming alternative identities in life role play or in computer games, or by enjoy-

	EVOLUTION	POLITICS	TIME TRAVEL
BEGINNING	First humans	The distant past's earliest construction	Now!
FOCUS	Chronology Historical context	Contemporary context Critique	Experience Credibility
DEMANDS	Knowledge about human history	Critical thinking	Embodied engagement
DYNAMIC	Historical causes and effects	Political means and purposes	Imagining life now and then
KNOWLEDGE	Anything is relevant	Questioning what is known and why	Importance of what cannot be known

TABLE 1. Three perspectives on the distant past. A schematic overview.

ing the realities constructed in popular historical novels or TV docu-soaps such as the Swedish series *Riket* (Figure 3).

The experience of time travel is linked to our own lives and may begin on the first day of our holidays or at 8 p.m. on a particular television channel. We all live in the present but we are free to enter the past at any time! This perspective is neither about knowledge of human evolution nor about a critical analysis of our own age but about our imagination and embodied experience.

Key notions for the way in which the past becomes meaningful through time travel include credibility and experience. In this perspective, the past does not have to be genuine in the sense that it once "really" happened, but it needs to be credible as an authentic experience about a past that *might* have happened. For example, Jan Guillou's bestselling novels about the adventures of *Arn* in the late 11th century AD are obviously to a large extent fictitious yet his readers are so impressed by their seeming historicity that they travel in large numbers to the Swedish sites where significant (fictitious) scenes in the novel are set. Credible pasts are largely reliant on trust. We trust pasts either when they correspond closely to the past we already know, *i.e.* our expectations, or when they are vetted by experts whom we trust (which is one reason why historical movies and documentaries tend to have scientific advisors).

Time travel does not demand a particular intellectual attitude towards either past or present but instead a readiness for an embodied engagement with different realities, involving both body and soul. Time travel is about imagining other worlds from the perspective of somebody actually living in that world, involving all the senses.

The dynamic of time travel lies in a constant oscillation between imagining life now and then. On the one hand, the time traveller never leaves the present and remains the person she is, with all the associated baggage in the form of world views, preconceptions, and personal life histories. On the other hand, the time traveller is leaving that present and enters another reality governed by different norms and open to all sorts of fantasies and behaviours that she may not be associated with in the present. Ironically, many time travellers ultimately seek to find themselves in the past.

Some of the most significant aspects of time travel are based on knowledge that is next to impossible ever to be (re-)gained in a scientific way. Sensual perceptions, bodily experiences, habitual behaviour, emotions, dreams and not knowing what historically "came next" have been crucial to life in any period but archaeologists and others cannot easily reconstruct these dimensions from the evidence available today. It is hard to avoid imposing our own responses to these issues on other periods and thus constructing the past as an extension of the present. But arguably an extension of the present is precisely what many desire.

The three perspectives in competition

Each of the three ways in which the distant past matters to the present can claim for itself to be the most important perspective, subsuming the other two (Table 1).

EVOLUTION puts all parts of our present into a long-term historical perspective. Even POLITICS and TIME TRAVEL are ultimately the outcome of a long evolutionary trajectory. All perspectives towards the distant past must be understood within the respective historical and cultural contexts in which they first emerged and later continued to flourish. The politics of the past cannot be appreciated fully without knowledge about critical theory's development in the 20th century and in particular its relation to fascist and nationalistic ideologies in Germany and elsewhere. Contemporary time travel is arguably a phenomenon arising from a widespread fascination with heritage typical for postmodernity. The associated heritage industry is undoubtedly linked to the post-industrial society, first arising during the final quarter of the 20th century and still developing today. By the same token, the evolutionary perspective itself can be contextualised. It emerged in its earliest forms during the 17th and 18th centuries within the intellectual frameworks of the Enlightenment, Romanticism and the beginnings of modern scientific thinking. Since the 19th century this perspective has remained fundamentally unchanged.

POLITICS applies as much to EVOLUTION and TIME TRAVEL as it does to any other way in which the past is given meaning today. Academic uses of the past are to be scrutinised in the same way as their purely commercial, ideological and other counterparts. In each case, it is imperative to ask about the political agendas and interests behind particular phenomena. The most important question always has to be: who benefits? Time travel can be seen in the context of the heritage industry and often has strong commercial overtones (it *sells*). Simultaneously, time travel allows

people to escape the present for a while, thus compensating for its deficiencies and, as a result, contributing to maintaining the political status quo rather than working towards change. Similarly, the evolutionary perspective has always been a strong pillar in the secular and scientific worldview of the modern world, at all times to a larger or lesser extent competing with religious worldviews. The political dimension of evolution recently came to the fore when a strong creationist lobby in America had some success in changing school curricula. Behind the debate on these changes lie fundamental political and ideological divisions in society. Finally, even the political perspective itself is political. It is no coincidence that many of its proponents are associated with the political Left. They are seeking to change not only our understanding of archaeology and other academic disciplines but ultimately even society as a whole.

TIME TRAVEL is even at the heart of EVOLUTION and POLITICS. Arguably the past cannot be understood in any way if it was not for some kind of possibility to imagine what life was like in another age. The evolutionary perspective is based on the understanding that scientific knowledge about past realities can be gained – however limited and incomplete it might be. However much scientists may emphasise the role of irrefutable facts and objective knowledge, they are at the same time likely to agree on the central role of the imagination in all sciences, including archaeology. Similarly, understandings of the past are politically and socially meaningless today if they do not invite and indeed provoke people to imagine what life was like then. The politics of the past is directly dependent on the power of reconstructions of the past to engage and move people. It is precisely the suggested feeling that "these people were like we are today" or that "we are not like those people at all" that makes the past so powerful in society.

In sum, all three perspectives are able to give meaning and significance to the distant past in the present. Each can explain the other two. They can be combined with each other. The choice is ours, but choose we must.

An emerging field of research

Since both the evolutionary and the political perspective are well established in archaeology I have decided not to make references to the abundant literature available. However, time travel is a relatively new subject and I will therefore give a short overview of some of the literature in this field, with a particular emphasis on texts in Swedish.

Time travel is sometimes discussed under the labels of "resurrectionism" and "living history" and has as such been acknowledged in the literature of various disciplines for some time. Good starting points for the existing academic appreciation of the phenomenon of living the past in the present are Jay Anderson's early presentation of *Time Machines: The World of Living History* from 1984, the classic account of *The Past is a Foreign Country* by David Lowenthal (1985), the first volume of Raphael Samuel's account of present *Theatres of Memory* (1994) and an article by Mike Crang on the Magic Kingdom (1996).

Recently, some contemporary trends relating to the evidently existing fascination of experiencing the past have also been reviewed by archaeologists. Kristian Kristiansen (2001) argued that the future of presenting archaeological heritage does not lie in museums but in recreated historical realities and visitor centres at particularly significant sites in the landscape where visitors can experience past realities directly "where it happened". Bodil Petersson's study *Föreställningar om det förflutna* (2003) critically reviewed archaeological reconstructions and their attempt to recreate past realities. One long chapter is dedicated specifically to time travel. Petersson argues that in the Stone Age, travellers find harmony with nature, simple technology and social equality, whereas the Bronze Age holds social hierarchies, (fertility) rituals and some ecological thinking, the Iron Age appeals with home-made food, clothes and small-scale village life, the Viking Age offers seafaring, long-distance trade, and warfare but even world peace, and the Medieval period finally presents the visitor with markets and cultural festivals, clear social roles and knight tournaments.

The historian and journalist Åsa Linderborg (2005) discussed the existing fascination of contemporary people with the Middle Ages. She pointed out that more "Medieval" tournaments have taken place during the 1990s than during the entire Middle Ages. Her analysis of phenomena like *Riket*, Guillou's *Arn* novels, and the annual *Medeltidsveckan* in Visby leads her to conclude that historical role play is popular because it gives people the chance to play being somebody else, sometimes inverting existing social hierarchies, although in reality they will only ever find their own present selves in the past. Linderborg refers to a particularly interesting study, by Lotten Gustafsson (2002). Gustafsson studied *Medeltidsveckan* with a particular interest in how the Medieval past, Medieval Visby and Medieval identities are constructed in the present. In conclusion, she argued that grand narratives about the Middle Ages are today being replaced by playful re-creations that are commercial but also firmly grounded in individual experiences and the deeply felt collective identities of the participants.

Erika Sandström (2005) also looked at the phenomenon of time travel in the present, focussing, in addition to *Medeltidsveckan*, on *Jamtli Historieland* in Östersund. Intriguingly, she found that visitors to both places revel in a happy, adventurous and romantic version of the Middle Ages, even though they know at the same time that the past reality was not like this at all but actually very tough and often unpleasant. People can thus choose to ignore their knowledge when they consume the past. They enjoy the experience of travelling, with others, into a past that they know never existed. In a critical analysis of history in contemporary TV the art historian Max Liljefors (2005) argued that the popularity of subjective experiences of the past can

be emphasised so much that effectively one's own "I" becomes the meaning of history.

Many of these and other issues have also been taken up in the anthology *Konsten att lära och viljan att uppleva* (Aronsson and Larsson 2002). Several contributions, by Erika Larsson (now Sandström), Peter Aronsson, Bodil Petersson, Per-Ola Jacobson and others, discuss various important aspects of the trend towards experiencing the past sensually and its relations to traditional history and the formation of historical consciousness. Larsson, for example, argues that there are three periods in particular to which people like to time-travel: the Stone Age, the Middle Ages, and the turn of the 20th century. However, she realises at the same time that today the past is less about what really happened at a given time and more about our own associations with particular periods. As several other authors discuss, this has profound consequences for the way history is to be taught in schools and museums. The past increasingly appears interesting to the extent that it is associated with exciting stories. Didactic forms must therefore be used in which histories can be told in imaginative and dramatic fashions that involve the audience in ways previously not known. Today the past needs to be experienced with all the senses if it is to be relevant to the present (see also Holtorf and Petersson 2006).

Conclusion

Some of us may have travelled to all the continents for conferences or research projects. But have we travelled into the past often enough? In the light of the contemporary phenomenon of time travel into the past, I am arguing that as archaeologists we need to continue studying this new way of appreciating the distant past in the present.

The distant past has perhaps never been more loved in any present than in ours. What is more, perhaps never have more people lived in the past than today. What could possibly please an archaeologist more than that? It is like a very special birthday present. Many happy returns, Lars!

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LIV NILSSON STUTZ

"… I will feel lost, unhappy and at home"

Travel and deep analogy as archaeological tools

Some day I will go to Aarhus
To see his peat-brown head,
The mild pods of his eyelids,
His pointed skin cap.

The Tollund Man, Seamus Heaney.[1]

Some day I will go to Aarhus

THE OPENING LINES of Seamus Heaney's poem *The Tollund Man* capture the dream of a future journey. A dream to stand one day face to face with a man from the past, and through this encounter, made possible by travel in the spatial dimensions, also experience a movement through time, into the deep past, where this man was killed and left in the bog. The encounter with his naked body and the material remains – the cap, noose and girdle – bring to the fore a story of a life long gone. And as this story emerges and begins to fill with imagination, it reveals the fate of a man given as bridegroom to a goddess. And in company with others, he has travelled for miles into a foreign land. The themes of travel and of foreignness tie these men together into a sense of a shared humanity across time and space (Figure 1).

FIGURE 1. *"She tightened her torc on him and opened her fen, those dark juices working him to a saint's kept body"* (from *The Tollund Man*, by S. Heaney). The Tollund Man in the exhibit at Silkeborg Museum. With permission from the Silkeborg Museum.

Archaeology is also, in a sense, about travelling. In many ways the archaeologist, in his or her mind, just like Heaney, travels back in time. As we undertake this journey, we use different tools to bring life to the material remains and write their story – and write the people who handled them back into history. Time travel might be an all too familiar cliché when relating to inquiries into the past. However, we must not lose sight of the usefulness of such thoughts. The past can indeed be "a foreign country", as alluded to in the book title by David Lowenthal (1986). The images we create of the past can be seen as more or less objective statements of what happened in the past, as political comments or as templates for strategies for the future (van der Leeuw and Redman 2002). They can also be perceived as adventures on which to embark by non–archaeologists, as described by Bodil Petersson in her study of full-scale reconstructions of prehistoric environments (Petersson 2003), or indeed by the archaeologists themselves, as their work process, in and of itself, can be seen as an adventure. The sense of adventure and dream has always been present in our discipline. The past remains barred to us, and can only be reached through imaginative reconstruction (Lowenthal 1985:4), and maybe that is part of its appeal. The fact that few archaeologists were trained in the discipline before the twentieth century, but were drawn to it from other disciplines and professions (Trigger 1989:16), probably by the allure of adventure and fascination with the quest for the past, underlines the centrality of this theme in the roots of archaeology.

No matter what our objectives are, ultimately, we always think – and to a certain extent, travel – across chronological boundaries in order to make the stories tangible. The journey on which we embark may take many shapes. There is a scientific journey, through which we share our strategies and test our ideas, in order to communicate something more concrete than just our dreams. By developing and using different tools and strategies, we create a sort of map and a communal language to approach the past and describe our experience of it. Beyond the professional sharing and testing of ideas, this also involves a dimension of inward travel, not unlike that described by Heaney in his encounter with the Tollund Man. This inward journey consists of the intellectual and creative challenge to bring a sense of life and humanity to the past, beyond the bare facts. If our scientific tools are like maps, then this inward travel can be likened to the stories and memoirs written about a journey, stories that always harbour the presence of their author.

At a deeper level there is an even more important similarity between travelling and archaeology. In order to address this, we need to think about what travelling really is about. I argue that in order really to accomplish a journey, we have to be willing to get lost. We have to be willing to question not only our expectations and assumptions, but also ourselves. Only then do we really travel. Through travel we are

exposed not only to new landscapes and places, but also to different ways of life, different values, different logics and different rules. If we truly experience these differences, we will, in a sense, lose ourselves. In the meeting with the other we will relativize our own selves, our way of life, our values, our logics and our rules, and in the process we will ultimately find our way back, not lost forever, but enriched by a deeper understanding of what it means to be human. Archaeology is, ultimately, about the same thing. Through the meeting with the prehistoric other, we deconstruct and reconstruct our own understanding of the world in order to make sense of the past. How indeed could we approach the past, if not through a deep understanding of ourselves? And what would be the point of doing it, if we can't make it relevant in the present? As R. G. Collingwood noted in 1939, every archaeological problem "ultimately arises out of 'real' life … [W]e study history in order to see more clearly into the situation in which we are called upon to act" (Collingwood 1939:114, quoted in Trigger 1989:13). So, as we travel back in time, we always, no matter our theoretical agenda, find ourselves, and find out something about ourselves. But to make the journey interesting, we must also remember to allow what we see to have an impact on our perception, change our course and lead us forward toward new insights.

Maps and tools

Maps are not objective, but they are often very useful. The same thing can be said about archaeological theories. Archaeologists have over the years made use of many different tools, when trying to make their way toward an interpretation of the material remains of the past. As a social science, archaeology faces some significant challenges, since we cannot make observations directly in the present. Instead, we must rely on material remains: artefacts, human remains, remains of features, etc., and interpret them with the help of our understanding of both the material remains themselves, and of human behaviour. This is not a simple task, and Bruce Trigger's statement that "archaeology might have been invented specifically as a case study for the philosophy of science" (Trigger 2003:1) reveals the depth of the challenge.

Throughout the history of archaeology as a discipline, the ideologies and ideas underpinning interpretation might have changed, but disregarding this variation, all archaeological thought has been grounded in the idea of different forms of analogy. Observations in the present, and an understanding of the present, ranging from the scientific approaches to site formation processes (Schiffer 1976, 1978) and taphonomic and actualistic research (Gifford 1981; Gifford Gonzales 1989; Lyman 1994) to the use of ethnoarchaeology (Binford 1967, 1978; Yellen 1977) and ethnography (Hodder 1982), have all been used as different forms of analogies in the approach of the remains of the past. And while the use of analogies in archaeology has been criticized (Ucko 1969; *see also* Wylie 1985, 1989), they remain a crucial basis for our understanding. These analogies have been the basic tools for the understanding of the past, as the history of archaeological thought has unfolded through its different phases, each with its specific emphasis. Historically, American archaeology nurtured closer ties with social and cultural anthropology in the use of analogies than did European archaeology. The reason for this was probably the lack of direct historical connection between cultures studied and the archaeological record (Trigger 1989:288). In order to enrich its toolbox, European archaeology instead developed close ties with other social sciences during the 1980s and 1990s (Johnson 2006), and post-processualism widened the field of useful analogies into fields such as philosophy, psychology, social theory, performance theory, etc.

As archaeologists, we are aware of the fact that we use analogies, and most of the time we are also aware of the limitations they present. Still we use them to find our way into the past and make sense of it. They are our maps, and while we know that they are subjective and sometimes blunt tools, they assist us in different ways as we make our way back through time, and as they do they become incorporated into archaeological thought and integrated into the loose concept of archaeological theory.

To feel lost, unhappy and at home

When using analogies from cultural anthropology and to some extent social theory, the archaeologist is often struck by a fundamental challenge. Social and cultural anthropology is often grounded in the assumption that difference is the most important phenomenon to be observed. Archaeology, on the other hand, always has to assume there is a certain degree of similarity to be found in order for our analogies to be useful.

Let us return to Heaney and his imagined encounter with the Tollund Man. What is really the purpose of the journey to Aarhus? Beyond the initial adventure and fascination, the journey becomes something deeper. Heaney travels in space and in time and encounters a fate, a man from the past. But in a deeper sense he also encounters himself and something within himself to which he can relate in a new way. Something about the place, something about the encounter with the Tollund Man, not only spurs his imagination, but also strikes a chord of belonging, of relating. Across time and space, he feels a sense of being simultaneously lost and at home: "Out there, in the old man-killing parishes, I will feel lost, unhappy and at home." In the same sense, archaeology, beyond the adventure and thrill, potentially has a deeper purpose (Figure 2).

I am not sure all archaeologists would be interested in revealing their personal emotions in their interpretation of the material remains of the past, the way Heaney does in his poetry. I want to underline that it is by no means required or necessary. However, I want to argue that whether or not they do it in a conscious way, archaeologists always approach

FIGURE 2. *"His peat-brown head, the mild pods of his eyelids and his pointed skin cap"* (from *The Tollund Man*, by S. Heaney). The remarkable preservation of the Tollund Man's remains allows us to stand face to face with an individual from the past. With permission from the Silkeborg Museum.

some kind of personal connection to the people in the past who are their subjects of study. The process of relating does not necessarily happen on an emotional level, but might as well take the shape of a seemingly objective scientific or intellectual approach. The central point that I want to make here is that, no matter how the approach to the past is carried out, it always assumes a certain similarity with the present. As opposed to cultural anthropology, which is grounded in observing and explaining difference between cultural and social settings, archaeology is not simply based on, but actually dependent on similarity. If we did not, at a very fundamental level, assume that there is an undercurrent, a human condition, which we all share, across time and space, all our attempts to approach the past would be doomed. This understanding is what I call Deep Analogy.

Some might react strongly against the emphasis of similarity, since it initially can be mistaken for universalism. But unlike universalism, deep analogy does not naively underestimate the importance of variability in human cultures. Instead, it sees variability as a testimony to human creativity, precisely when it comes to dealing with the challenge of being human. All this variability, all this difference, springs from underlying similarity. This perspective erases the impassibility of temporal distance, and erases the boundaries between then and now, between them and us. Concepts such as the modern and pre-modern self, often taken for granted in contemporary social theory, are grounded in the assumption that there is some fundamental difference between contemporary people and people in the past. Deep analogy undermines such ideas of discontinuity. The discrete but fundamental assumption of similarity is intrinsic to archaeology as a discipline, and from a perspective of interdisciplinary complementarity, archaeology can contribute in a unique way to human sciences for the understanding of humanity.

Seamus Heaney's poetry continues to show us possible ways to erase the idea of difference, of distinction between the pre-modern and the modern self, between traditional and "Western" societies. It also points, in interesting ways, to similarities between the poetic and literary mind on the one hand, and archaeological thought, on the other. In the poem *Funeral Rites* Heaney moves us seamlessly from what appears to be personal memories of wax candles and dead bodies in a Catholic Irish funeral backward into a deep past, where the dead were buried under mounds and megaliths, finally arriving at a mythic exposé of an unavenged warrior. As the poem's narrative drifts back in time, it shatters the boundaries between then and now. Every instance, every aspect of the past, whether personal or mythical, is relevant and part of the understanding of death in this odd, long-term perspective. This structure of the poem reminds me of how we as archaeologists proceed scientifically, relating the present and the past into a coherent view of humanity. In *Punishment*, the deep analogy is pushed further as it reveals a primal human emotional register, where the author relates an emotion of both rejection and understanding of the tribal dynamics of punishment. Here, through the encounter with the remains of a female bog body, Heaney imagines her fate as being sealed through the punishment following adultery. The poem reveals a dark side of humanity, as the narrator describes how he would "connive in civilized outrage, yet understand the exact and tribal, intimate revenge". Through this shift back to the contemporary reaction to the imagined past, the connection between past and present allows us to relate to an emotion, and recognize the other in ourselves.

Deep Analogy does not necessarily mean acceptance, and it is not a ticket to hyperrelativism. Instead it means recognition and understanding of the dynamics involved in the human condition and in human societies and cultures. It also means that when we look for the similarity deep underneath the variability and difference – which remains critical to for us to consider, as well – we might be able to find a common language with which to engage in a dialogue. Maybe in this way, a perhaps naïve but appealing thought would be to give archaeology a critical role in contemporary society. Our unique perspective on humanity, that over the long term we see the underlying similarities through the differences, could provide an important basis for mutual understanding. Through time *and* across social and spatial distance we have more in common whatever the practical barriers between us.

The ability to feel lost and at home at the same time, this is dependent on the ability to see the familiar in the radically different. In order to reach that human core in others, we must be in touch with it within ourselves. This understanding of the other is rooted in an understanding of oneself. The focus and recognition of the local, the small scale, the traditional and the human in one's own past can thus be the key to an open mind. To be firmly grounded can be liberating. But ever so often, this understanding of oneself comes through the encounter with the other. And in this

way, travelling does not only become an analogy for the archaeological project in a theoretical sense, but also an effective tool, since it opens up our minds to deep analogy.

Epilogue: At home beyond the tribe

That Sunday morning we had travelled far.
We stood a long time out in Tollund Moss:
The low ground, the swart water, the thick grass
Hallucinatory and familiar.

Tollund, by Seamus Heaney

Seamus Heaney finally went to Aarhus. The experience is described in a poem entitled *Tollund*, dated to September 1994. The description of the encounter reveals a grasping for the familiar, first through analogies with literature: "It could have been a still out of Townland of Peace", and then to the more immediately concrete: "It could have been Mullhollandstown or Scribe." But through the search for analogies, it becomes clear that this is no longer the prehistoric place where the Tollund Man was sacrificed: "Things had moved on." Now it is "user-friendly outback" with tourist signs and light traffic sound. The Tollund Man himself is no longer part of the poem. It is the place itself, in all its layers of history, ascribed meanings and associations that reveals itself to Heaney. Tollund Moss is radically different from his expectations, but still, it is strangely familiar. Through the changes, he can still feel the connection as he stands "footloose, at home beyond the tribe".

As archaeologists we can relate to the feeling described by Heaney when we often visit what is, for us, a mythical site, only to find out that it is now the location of a parking lot, a housing development or a highway. This can sometimes strike us as disappointing. Yet, most importantly, the place is real. Things do move on, and they have to. As archaeologists we do not underestimate the importance of seeing the actual site, even if it is changed, because it still retains a reality, and we can weed our way back in time, through the layers of history to reach something in the past. The journey brings an insight, a new way to relate, to the place, the expectations and to oneself.

In archaeology you rarely find exactly what you are looking for, but as you experience the past through your expectations, you grow in knowledge from the friction produced when expectation meet the actual material circumstances. And as we grow, we can relate to the past and still retain our identity as contemporary researchers. We too, can feel at home, beyond the tribe.

Note

1 All the quotes from Seamus Heaney's poetry are from Heaney 1998.

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ELISABETH RUDEBECK

From tilling the soil to choosing a lifestyle

Changing definitions of the concept of culture as a reflection of cultural change

Introduction

WHAT IS CULTURE? Depending on whom you ask you will get a different answer. One possible answer is learned behaviour transmitted between generations, another is customs, values and traditions shared by a group of people, yet other answers may be systems of meaning or communication by way of symbolic codes. However, there are many more possible answers.

In their in-depth study of the concept of culture in the Western intellectual tradition, the American anthropologists Alfred Kroeber and Clyde Kluckhohn list 164 different definitions of culture (Kroeber and Kluckhohn 1952). Since the time of their investigation, the concept has gained even more connotations, not least because of large-scale political and cultural changes in the world. As noted by Kroeber and Kluckhohn, we must also be aware of the difference between how scholars and intellectuals define and use the concept and how it is used and conceived by people outside the academic world (Kroeber and Kluckhohn 1952:4).

I am not concerned here with the ancient concept of culture, *i.e.*, worship of the gods and fields and "care directed to the refinement of life" (Kroeber and Kluckhohn 1952:10), nor with archaeological or anthropological definitions of culture – a never-ending story within the social sciences (*e.g.* Kroeber and Kluckhohn 1952:3ff; Geertz 1973:3ff; Friedman 2000:67ff). Instead, I will study the changing meaning of the concept of culture in Swedish encyclopaedias from the late nineteenth century until today, particularly in relation to the concept of agriculture. The study is inspired by the investigation made by Kroeber and Kluckhohn and by the following quotation from Jonathan Friedman's book *Cultural Identity and Global Process* (2000:71): "the use of the concept of culture, in whatever form, has had a cyclical history that is not independent of the goings-on of the world at large".

It is to be expected that definitions in general encyclopaedias aiming at a wide audience have to balance professional considerations with sensitivities towards current *zeitgeists*, especially if the concept is value-laden and rich in associations. Encyclopaedic definitions may therefore be seen as compromises between scholarly perspectives and everyday usages, and as fairly good representations not only of explicit ideas but also of more implicit collective attitudes, *i.e.* mentalities (*Nationalencyklopedin* [*NE*], "mentalitetshistoria"). Hence, we may learn something about changing mentalities by comparing what culture meant a hundred years ago, fifty years ago and twenty years ago, to what it means today, but also by focussing on what it does *not* mean anymore.

Knowledge of the history of crucial concepts is relevant to studies in all fields of science. Without such knowledge there is an obvious risk of projecting contemporary notions onto the past, thus mediating simplified interpretations, lacking in historicity and complexity. If we fail to pay attention to the history of concepts we may give the illusion that views of the past during previous centuries were more similar to contemporary views than they actually were – and we may create a false sense of continuity. On the other hand, we may conceal the *longue durée* of various ideas and concepts, hence creating a false image of conceptual discontinuities.

Generally, when people speak of culture today, in both academic and everyday contexts, they use the word in its anthropological sense, *i.e.*, as synonymous with custom, and usually with an emphasis on systems of meaning (Friedman 2000:69). How does this relate to the traditional meaning of the concept in the Western intellectual tradition, *i.e.*, culture as cultivation, or nurture, of the individual and the soil (Kroeber and Kluckhohn 1952:35)? To the Swedish archaeologist and Chief Custodian of Antiquities, Hans Hildebrand (1842–1913), culture was work aiming at harvests, whether material, spiritual or intellectual:

> Culture is simply that condition in which the human being is not satisfied to let his nature remain as it originally is, but tries to cultivate that which is in his nature, as the cultivator cultivates the earth with the purpose of yielding harvests. Culture or cultivation is thus the property of everyone, a single human being or a people, who by their action intervene in their own development.[1]

Cultivation of the earth and of human nature are seen as fundamental for the creation of culture. Culture means intervening in something that is in a natural state. Hildebrand speaks about culture in reflexive terms; human beings are thus active and conscious subjects in its creation. People create culture with the purpose of improving. The metaphorical transmission of culture from soil to individual and society reveals a thinking in which all of these objects are seen as subsequently subject to the same process, that of cultivation, *i.e.*, a change from a natural, "raw", condition to a cultural, "artificial", condition.

As a contrast, according to UNESCO's Universal Declaration on Cultural Diversity (2001), the concept of culture includes almost every aspect of human social life, possibly with the *exception* of subsistence economy.

> *Reaffirming* that culture should be regarded as the set of distinctive spiritual, material, intellectual and emotional features of society or a social group, and that it encompasses, in addition to art and literature, lifestyles, ways of living together, value systems, traditions and beliefs …

Both quotations are normative to the extent that they declare not only what culture is, but also what it *ought* to be. In Hildebrand's statement this is implicit in the metaphorical language. The UNESCO statement reaffirms what is included in the concept, mainly as a preventive measure against culture clashes in the aftermath of September 11, 2001. This is clear from the introductory text in the declaration, stating that the 31st session of the UNESCO General Conference was:

> … an opportunity for States to reaffirm their conviction that intercultural dialogue is the best guarantee of peace and to reject outright the theory of the inevitable clash of cultures and civilizations. Such a wide-ranging instrument is a first for the international community. It raises cultural diversity to the level of "the common heritage of humanity", "as necessary for humankind as biodiversity is for nature" and makes its defence an ethical imperative indissociable from respect for the dignity of the individual.

This statement is easy to accept on a general level. However, the biological metaphor, although intended to serve the purpose of naturalizing cultural diversity in the benevolent aim of tolerance and respect, may bring about associations with ideas that run counter to the ones intended. Moreover, making culture "natural" does not help when it comes to profound conflicts between value systems that cannot be solved by reference to cultural diversity.

The concept of culture – a brief review

Before reviewing the various definitions of culture during the last 120 years, I will focus on a few points in the extensive study made by Kroeber and Kluckhohn. Although they do not discuss the concept of culture in relation to the concept of agriculture, they state that "the most generic sense of the word 'culture' – in Latin and in all the languages which have borrowed the Latin root – retains the primary notion of cultivation or becoming cultured" and also the notion of nurture (Kroeber and Kluckhohn 1952:35, 145). The word culture is derived from the Latin verb *colere*, meaning tending or cultivation, but also honouring or flattering, and the earliest dictionary definition, from 1420, is "husbandry, tilling" and "worship". In 1510 it is "training of the mind, faculties, manners" and in 1628 "training of the human body" (Kroeber and Kluckhohn 1952:33). During the seventeenth century, the French noun *culture* was used together with an object, *e.g.* culture of wheat or letters. In 1686, the German historian Samuel von Pufendorf, following Thomas Hobbes, contrasted a civilized state to a natural state and broadened the concept from the individual to the group (*NE* 1993, Vol. 11:511). After 1750, culture was more commonly used about human societies and human history, particularly in the German language (Kroeber and Kluckhohn 1952:145).

In 1805, dictionary definitions of culture include "refinement of the mind, tastes, and manners; the condition of being thus trained and refined; the intellectual side of civilization". From the late eighteenth century and all the way to the late nineteenth century, however, culture also signified "the growing of", *e.g.* silk, oyster, bee and bacterial cultures (Kroeber and Kluckhohn 1952:33).

During the nineteenth century, the French word *civilisation* was used in contexts where Germans would use the word *Kultur* (Kroeber and Kluckhohn 1952:12). Social philosophers in the tradition from Emmanuel Kant to Friedrich Hegel used the concept largely in its Enlightenment sense; *i.e.*, as denoting improvement, although they usually preferred the concept of spirit (Germ. *Geist*). The German word *Kultur* referred to "the distinctive 'higher' values or enlightenment of a society" and this meaning is evidenced also in the division between *Naturvölker* and *Kulturvölker* in the anthropological literature during the first decades of the twentieth century (Kroeber and Kluckhohn 1952:35). This division is largely equal to that between "primitive peoples" and "civilized peoples" in the English language.

Although already developed by several Enlightenment scholars (Rudebeck 2000:72ff), the idea of three stages of culture in the German ethnographer Gustav Friedrich Klemm's book *Allgemeine Kulturgeschichte der Menschheit* (1843–52) is often mentioned as decisive for the subsequent use of the concept of culture. Klemm's stages implied a ladder of successive improvements from savagery to domestication and, eventually, to freedom. Edward Burnett Tylor borrowed the German word *Kultur* and his famous book, *Primitive Culture*, first published in 1871, was decisive for the successive development of anthropological thought (Kroeber and Kluckhohn 1952:9f). With Tylor, culture received its modern meaning as "the complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society" (Tylor 1891:1).

Definitions of culture in Swedish Encyclopaedias between 1885 and 2005

In table I, I review definitions of culture in ten Swedish general encyclopaedias, published between 1885 and 2005. Space does not allow a detailed discussion of the definitions in all

TABLE 1. Definitions of the word culture in Swedish encyclopaedias from 1885 to 2005.

Encyclopaedia	Year	Initial definition of culture	Secondary definitions
Nordisk Familjebok[1]	1885 1911	(Lat. *cultúra*, from *cólere*, tend; cultivate), cultivation, working, tillage; the sum of the work intended to harvest cultivated plants … for the needs of humans and domesticated animals …	… dressing, tending …, breeding …; in general work on the development and refinement of an object that is inherently suitable for the purpose; the result of such an effort; education, cultivation, refinement, improvement, development of the human aptitudes; the advance of the entire human ity or a particular people from the low state of nature to civilization.
Allers illustrerade Konversationslexikon	1905	(Lat.), cultivation, tilling of the soil; the tending of plants …; the breeding of animals …	Development, refinement, education, civilization (as opposed to the state of nature or barbarism)
Nordisk Familjebok	1930	(Lat. *cultura*), cultivation, clearing of land; care for and education which is given by nature …	Manifestations of spiritual life, stage of spiritual of that or material development; original meaning as cultivation of the land
Svensk Uppslagsbok[2]	1933	(Lat. *cultúra*, cultivation, cf. cult), cultivation, clearing of land, cultivation in isolation (cf. *culture of bacteria*, *cultivated plant*) …	… spiritual cultivation, manifestation of spiritual life (cf. *civilized peoples* as opposed to *primitive peoples*); refinement, good manners, education. … In comparison to civilization, culture emphasizes the purely spiritual, civilization more the outer, material-technical development
Svensk Uppslagsbok	1955 1965	(Lat. c*ultúra*, cultivation, cf. Cult), cultivation or tilling of the land, clearing of land … the culture of organisms …	… Metaphorically c. signifies education, refinementof spiritual or bodily qualities or behaviours …; the stage of development of humanity, a people or a group; all manifestations of spiritual life and material skill; *kulturfolk* vs. *naturfolk*
Prismas Uppslagsbok[3]	1986	**1** spiritual or material cultivation, education …	**2** care for and education of spiritual or physical ability, **3** cultivation of the earth; the state of the cultivated earth, **4** the isolated cultivation of bacteria
Nationalencyklopedin	1993	**1** cultivation, education (followed by a short historical outline of the concept in a socio-philosophical perspective).	**2** cultivation of microorganisms and cells;
Bra Böckers Lexikon	1995	(Lat.), cultivation, originally of the soil …	in a broad sense all human activities and the spiritual and material results of these …; spiritual cultivation
Bra Böckers Lexikon	2000	(from Latin *cultus*: worship, cultivation, education), **1** cultivation, education …	**2** culture of bacteria etc; spiritual cultivation; also about all human activity; the aesthetic concept of culture dominates in the public debate; high culture vs. popular culture, c. is often only used about the former
aha – Modern kunskap för alla	2005	(<Lat. *cultura*: 'cultivation', 'working', 'education'). **1.** Cultivation, education. The concept has many definitions and may be used in a concrete as well as in an abstract sense. Within the social sciences c. may be interpreted as learned customs …	… can also mean traditions in a company or a community; used in an abstract sense as equal to spiritual cultivation; also: features typical of a group, which separate them from others; high culture vs. popular culture … **2** culture of bacteria …

1 *Nordisk Familjebok* 1885, Vol. IX, column 237. In Swedish: "(Lat. cultúra, af cólere, egna omvårdnad; odla), odling, bearbetning, uppbrukning; sammanfattningen af de arbeten, med hvilka åsyftas att afvinna jorden kulturväxter … för menniskans och husdjurens behof; ans, skötsel …, afvel …; i allmänhet arbete på utvecklingen och förädlandet af ett föremål som har inneboende anlag dertill; resultatet af ett sådant arbete; utbildning, bildning, förfining, förädling, utveckling af de menskliga anlagen; menskligheten eller ett enskildt folks fortskridande från det låga naturtillståndet till civilisation (…)."

2 *Svensk Uppslagsbok* 1933, Vol. 16, column 275. In Swedish: "**Kultúr** (lat. *cultúra*, odling, jfr Kult), odling, uppodling, renodling (jfr *bakteriekultur*, *kulturväxt*); andlig odling, yttringar av andligt liv (jfr *kulturfolk* motsatt *naturfolk*); förfining, hyfsning, bildning. Man skiljer ofta uttryckligen mellan materiell och andlig k. I jämförelse med civilisation (se d.o.) betonar k. mer det rent andliga, civilisation mer den yttre, materiellt-tekniska utvecklingen."

3 *Prismas Uppslagsbok* 1986:355. In Swedish: "**1** andlig el. materiell odling, bildning **2** vård och utbildning av själslig el. kroppslig förmåga **3** brukande av jorden; den brukade jordens skick **4** renodling av bakterier."

of them. Therefore, the discussion following below is limited to a few examples.

I have reviewed the encyclopaedias with special attention to the wording of the initial definition of culture, but paying attention also to the definitions following the initial definition of the word. I have also noticed whether there is any mention of culture as an analytical concept in the social and human sciences, and if the concept is reviewed in a historical perspective or in ideational terms. In addition, I note whether there are references to high culture and popular culture and connotations including lifestyle and similar concepts.

The selection of sources to study was not the result of a systematic inquiry, but relied instead on which encyclopaedias were available on the shelves of the reference library in Lund University Library at the time of investigation. Hence, the sources are few in relation to the purpose of my investigation. Another problem concerns the translations that I have had to make here. Apart from the risk of misinterpretation, there is the bias in my choice of terminology. I try to compensate for this by including some of the passages in the original language in the endnotes or in the notes to Table I.

First published in 1876–1894, *Nordisk Familjebok* was the first modern Swedish encyclopaedia (*NE*, "encyklopedi"). The definition of culture (Sw. *kultur*) in the first edition may be seen in Table I. The definition in the second edi-

tion (1904–1926) is almost identical (*Nordisk Familjebok* 1911, vol. 15, column 225). Hence, around 1900, culture meant caring for and transforming an object that is in a natural state. This object could be the soil, plants, animals, human nature or society. There is a strong connection between culture as subsistence by means of agriculture and culture as the refinement of social and intellectual properties in the individual and in society. The potential for refinement, and for agriculture, is there, waiting to be realized. Culture is gained by way of cultivation and it is both regarded as a state and a process. There is no sign of Tylor's definition of culture in the text.

The definition reveals the idea of a universal history in which Western civilization is the standard by which to measure all societies and there is no influence from cultural relativism, which emerged during the turn of the century and eventually became the common scholarly view. Being a reaction against social evolutionism, cultural relativism denies "the existence of any universal standard that could be used to compare the degree of development or worth of different cultures" (Trigger 1989:152). However, it also implied "the abstraction of culture from its demographic or at worst racial basis" (Friedman 2000:67).

In the first edition of *Svensk Uppslagsbok*, published between 1929 and 1937, the definition of culture begins with "cultivation, clearing of land, cultivation in isolation …" and continues with references to spiritual life (Table I). The main difference compared to the 1885 definition is that cultivation of the soil is less emphasized. Culture is positively valued and it is the metaphorical meaning of the concept, *i.e.* as spiritual cultivation, that dominates, while the material aspect is included in the concept of civilization. It is the degree to which a people dominate or use nature that decides how they should be defined. Hence, "civilized peoples [Sw. *kulturfolk*] are peoples who have reached a high level of independent spiritual and material culture and who have succeeded in appropriating nature for their own purposes to a higher degree than the lowlier peoples which we call primitive peoples [Sw. *naturfolk*] …, whose level, however, all peoples have passed through" (*Svensk Uppslagsbok* 1933: column 276, my translation).[2] There is no evidence of Tylor's definition in the text. The first time this is the case is in *Svensk Uppslagsbok* from 1965 (Volume 17, column 116), where it is mentioned in passing that culture is: "… all manifestations of spiritual and material skill …".

We now turn to *Prismas Uppslagsbok* from 1986, published about one hundred years after the first encyclopaedia in this analysis. As in 1885, 1911 and 1933, it is still care and education of abilities, whether material or spiritual, that constitutes the core of the concept. Cultivation of the earth is explicitly stated as one of the meanings, although not as the first definition. Tylor's definition of culture is absent – more than a hundred years after its introduction.

One of the more recent sources in this investigation is the Swedish National Encyclopaedia, *Nationalencyklopedin* (*NE*), the first edition of which was published between 1989 and 1996 (with a web version since 2000). Here, the Swedish word *kultur* is divided into two meanings, first "cultivation, education", and then "cultivation of microorganisms and cells". Under the first signification, the concept is described and given a short historical outline in a socio-philosophical perspective. Under the subtitle "cultural anthropological approach", recent changes in the apprehension of the concept are described:

> since the beginning of the 1990s, many anthropologists have returned to the wide definition of the late 19th century and define culture as everything that human beings have, do and think; *i.e.*, both material things, patterns of behaviour and mentality. In anthropological analysis the emphasis is still on its character as a system of meaning.[3]

Nowhere in this comprehensive review of the concept is there a reference to the cultivation of the soil, except for the translations of the Latin terms *cultúra* (working, cultivation, education) and *cólo* (to cultivate). The emphasis is, for the first time in any of the encyclopaedias studied here, on culture as an analytical concept within the social sciences.

From tilling the soil to choosing a lifestyle

One of the most radical transformations in the Western world during the last century and a half, and one which I believe that we – as archaeologists and human beings – are largely unable to comprehend the evolutionary, historical and mental significance of, concerns the economic revolution, leading to a radical drop in the amount of people engaged in agriculture. In 1850, agriculture engaged 50 % or more of the population in all European countries, except Great Britain (where it was less), and in the United States. The amount of people engaged in agriculture fell below 10 % in most European countries as recently as after the Second World War (Rudebeck 2000:5, with reference to Grigg 1992:24). Hence, an agricultural way of life was the normal way of life in the Western world until a couple of generations ago, and today more than half of the world's population are engaged in this subsistence. In some countries more than 80 % of the inhabitants support themselves by farming, in contrast to the United States and Great Britain, where it is less than 3 % (*EB*, "agricultural economics"). In Sweden, less than 2 % of the economically active population were engaged in farming in 2004 (*Jordbruksstatistisk årsbok* 2004).

The agricultural way of life is an important source of social, religious and existential metaphors in languages all over the world. It is reasonable to assume that radical changes in subsistence economy will affect such metaphors in various ways. However, deep-seated metaphors are less likely to change as to wording, but more likely as to meaning.

It is obvious from the encyclopaedic definitions studied here that the material connotation – cultivation of the soil – and therefore also the metaphorical aspect of the concept of culture as cultivation, has been largely lost during the course of the twentieth century. Today, culture is something that we ascribe to all human societies, irrespective of the type of subsistence. In addition, for more than 25 years now, animals are also considered to have culture (Bonner 1980). This reflects a profound change in Western thinking about the human being, agriculture and culture – and animals – during the last 120 years. This change may be summarized as below:

According to nineteenth century social evolutionism (1), agriculture was a natural step on the ladder of progress and the precondition for culture, in the sense of refinement. As a consequence, non-agricultural societies were seen as lacking culture (Sw. *naturfolk*). They were left behind on the evolutionary path, allegedly due to mental or environmental factors. To most scholars from the 1960s onwards (2), humanity is defined as culture, in the sense of the ability to transmit learned behaviour and to symbolize. From this time on, cultivation is no longer seen as a prerequisite of culture and, depending on which theoretical standpoint is preferred, the emergence of agriculture is interpreted either as an adaptation to environmental circumstances or as a historical event due to social competition. However, to the general public, culture has been connected to agriculture long after the breakthrough of cultural relativism and the scholarly re-evaluation of hunter-gatherers. Kroeber and Kluckhohn found that the modern anthropological definition of culture did not appear in any of the general British or American dictionaries studied by them until about 1930, *i.e.*, about sixty years after its introduction (Kroeber and Kluckhohn 1952:9, 33). Among the encyclopaedias studied here, it is not until 1993 in *Nationalencyklopedin* that this definition is clearly stated; *i.e.* more than 120 years after its introduction! One explanation for the time-lag may be that the acceptance of the anthropological definition of culture was slower in areas where the German socio-philosophical tradition had dominated discourses on culture, *e.g.* in Germany and Sweden.

It may be argued that changes in the apprehension of the concept of culture during the last century reflects a "deneolithization" of Western mentality, *i.e.* that cultivation of the soil has lost its significance as the essential metaphor for human life and society. Nowadays culture has two main connotations, one referring to cultivation, generally in the sense of education, and one referring to the culture of bacteria. The first connotation is often divided into sub-meanings, with one relating to usage in the social sciences and the other to usage in the public debate. According to Jonathan Friedman, the transition in the scholarly usage of the concept since Tylor's definition, "is broadly captured in the movement from culture as everything learned and produced to systems, codes and programs of meaning" (Friedman 2000:69). In the public debate, culture denotes virtually all human activities, with particular emphasis on aesthetics and symbolic expressions, and sometimes with references to the contrast between high culture and popular culture, and to highly contemporary usages as *e.g.* business culture (Sw. *företagskultur*).

Considering the economic and social development in the Western world during recent decades, it is clear that the essential metaphors for human life today should be related to communication, exchange and consumption. Hence, culture means communicating and exchanging things, services and ideas and choosing lifestyles by way of consumption. In general terms, the concept of culture has been transferred from production to consumption; from improvement by way of cultivation to improvement by way of enlarging the possibilities to choose values, products and lifestyles on a market, *i.e.* the main concerns of the middle classes in the Western world. A similar process is noticeable for agriculture. Due to global competition, agriculture in Sweden and other Western countries is rapidly losing its purpose as a producer of food and increasingly becoming a tending of relict landscapes. The agricultural landscape is transformed into a museum in which to consume and experience traditional lifestyles for ecological, aesthetical, heritage and identity purposes.

Conclusion

Although the sources were few and the discussion brief, I have tried to point out possible associations between the changing definitions of the concept of culture during the last 120 years and changes in economy and mentality in the Western world during the same time. The perspective is limited in its scope, and it is clear that there are many and complex processes involved when concepts are re-defined and meanings change in hardly perceptible ways.

The different understandings of concepts within and outside of the academies needs to be underlined, considering the tendency among scholars to use terms which have very specific professional meanings also when communicating with a wider audience. Therefore, there is also an ethical side to consider here. Without proper knowledge of the history of essential concepts, we may increase the communication gap between scholars and the general public. Concepts are part of the preconceived assumptions of academic subjects and their history should to be communicated with the same attention to accuracy as the subject matter of the disciplines.

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Notes

1 Hildebrand 1880:16, my translation. In Swedish: "[Med kultur] betecknas helt enkelt det tillstånd, i hvilket man icke nöjer sig med att låta sin menskliga natur vara sådan som hon ursprungligen är, utan söker att bearbeta det man i henne har, liksom odlaren bearbetar jorden för att ur henne hemta skördar. Kultur eller odling har således envar, en enskild eller ett folk, som med egen verksamhet griper in i sin utveckling."

2 *Svensk Uppslagsbok* 1933, vol. 16, column 276, my translation. In Swedish: "**Kulturfolk**, sådana folk, som nått ett högt stadium av självständig andlig och materiell kultur och vilka förstått att taga naturen i sin tjänst i högre grad än de lägre folk, vi kalla naturfolk […], vilkas stadium dock alla folk genomgått."

3 *Nationalencyklopedin* 1993, vol. 11:511, my translation. In Swedish: "Därför har många antropologer sedan 1990-talets början återgått till det senare 1800-talets vida definition av och definierar kultur som allt det som människan har, gör och tänker, dvs. både materiella ting, beteendemönster och tänkande. I den antropologiska analysen ligger tonvikten dock fortfarande på dess karaktär av meningssystem."

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THE MESOLITHIC PAST

MAGNUS ANDERSSON & CECILIA CRONBERG

Moving north

The first travellers to south Scandinavia

ABOUT 15,000 YEARS ago the deglaciation began on the north European continent. South Scandinavia, which had been covered by the ice of the Weichsel glaciation on and off for almost 100,000 years, gradually became ice-free and once again available for human colonization. The Late Glacial phase is described as a time of extreme environmental instability. Shifts in climate and sea levels during this period must have had a great effect on the composition of the vegetation and fauna and consequently on the living conditions for the first pioneer inhabitants of Scandinavia (Björck 1996; Andersson and Knarrström 1999; Eriksen and Bratlund 2002; Knarrström 2004).

Why did humans initially occupy unfamiliar land masses about which nothing was known? It is a frustrating question for there are no easy analogies. We have no cases of ethnographically known hunter-gatherers moving into unknown landscape.

This article discusses the process of human colonization of new and unknown landscape during the Late Glacial phase. From this land the accumulated wisdom of grandparents and great-grandparents was silent and nothing could have been encoded into oral history or folklore.

Pioneers and colonizers

The first pioneers travelling to South Scandinavia more than 12,000 years ago belonged to the Hamburg culture (Larsson 1996). The humans of the Hamburg culture populated arctic steppe tundra with elements of birch and willow during the Bølling chronozone. Settlements characterized by classical Hamburgian shouldered points are known from many parts of north-western Europe (Burdukiewicz 1986). In Denmark some settlements from this period has been excavated (Holm and Rieck 1992; Holm 1993; Vang Petersen and Johansen 1993; Degn Johansson 2000; Eriksen 2002). The existence of Hamburg culture in Scania is still uncertain. A couple of finds around Lake Finjasjön and at Glumslöv indicate that groups of people could have crossed the strait in small boats, or walked over the ice during the wintertime, and during a short period populated even the south of Sweden (Larsson 1996; Andersson and Knarrström 1999).

The Bromme culture is dated to the subsequent Allerød period and probably even to the earliest phase of the Younger Dryas. The warmer Allerød chronozone enabled the spread of a birch forest with elements of new species such as aspen, rowan and pine. The Bromme culture is known from several settlements in Denmark and Schleswig-Holstein (Johansen 1997, 2000; Eriksen 2002). Mainly owing to Lars Larsson's contributions, the last twenty years have seen a major growth in research into the Late Palaeolithic in Scania in southern Sweden. New finds have contributed to a major extension of the distribution of assemblages of artefacts that are connected to the period in question. The Bromme culture, which was previously known only from the Segebro settlement in south-west Scania (Salomonsson 1962), is known today from several sites all over Scania. The settlements are located at lakes and watercourses or high up in the terrain. This is probably in fact the first colonizing phase, when the population settled down for a longer period. The Federmesser culture is regarded to be contemporary with Bromme culture, but no distinct elements of this culture are known with certainty in Scania (Larsson 1991, 1994, 1996; Andersson and Knarrström 1999).

Material that can be linked to the Ahrensburg culture has been found from today's western Russia to the east, to England in the west, and from central Germany in the south all the way up to the North Sea coast of Norway (Larsson 1996; Andersson and Knarrström 1999; Knarrström 2004; Terberger and Eriksen 2004). The culture is dated to the Younger Dryas, a period characterized by a steep fall in temperature. The colder climate turned the open woodland once again into a grass and shrub tundra (Björck 1996; Andersson and Knarrström 1999; Knarrström 2004). During recent years a couple of settlements from the Ahrensburg culture have been excavated in northern Scania (Figure 1; Knarrström in press; Karsten and Nilsson 2006).

The concept of the landscape

Despite the relative wealth of details concerning the climatic fluctuations at the end of the last Ice Age, little attention has been focused on human reactions to these dramatic environmental changes.

In academic writings, the landscape concept has been explored in both natural-science and social-science traditions, and this has given rise to a variety of meanings for the term. We can separate three basic types of landscape information (after Rockman 2003:4): First, *the physical landscape*, which concerns locations and physical characteristics

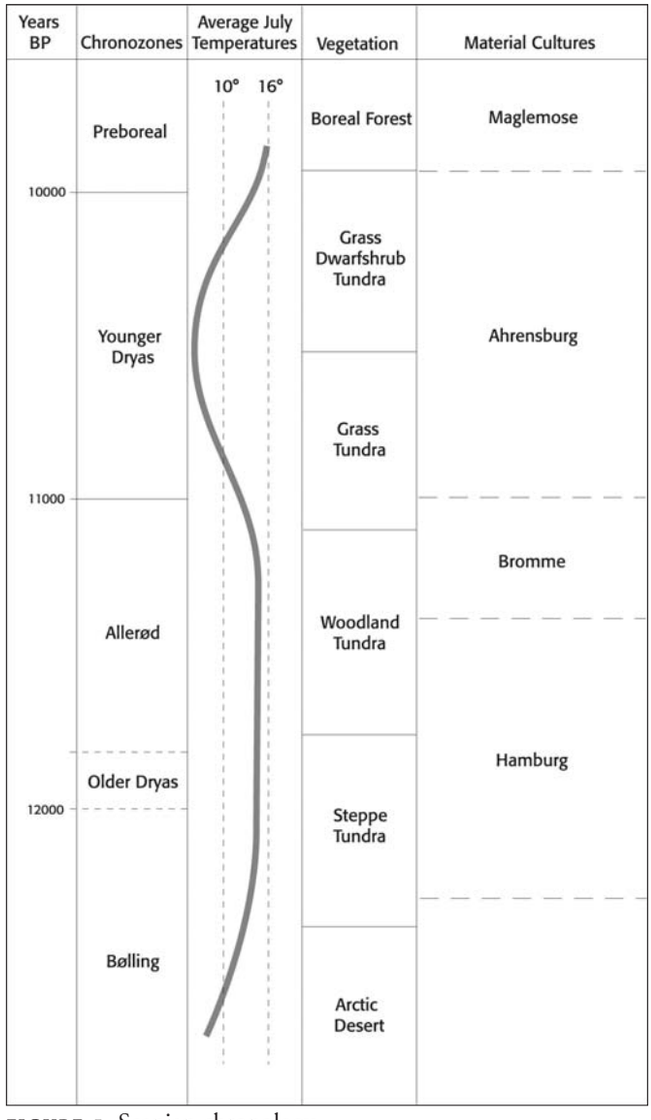

FIGURE 1. Scanian chronology.

of necessary resources, *e.g.* vegetation, fauna and lithic sources. The second information is about *the boundaries of the landscape*, which refers to familiarity with the usefulness and reliability of various resources, *e.g.* seasonal variations in biotic resources, how workable the lithic materials are. The third concept treats *the social landscape*. Rather than being a background to human activity, the landscape has a special meaning in every specific culture-historical context and hence also a dynamic, meaning-bearing role in interaction with the people who live in it. Alongside – and as part of – the ecological conditions, the landscape is filled with social memories and meanings created by the actions of former generations.

These three types of knowledge are not mutually exclusive. They may function as a feedback loop, each serving to reinforce the others (Rockman 2003:7). It is therefore important to consider all three types of landscape information in a study concerning the first pioneers in South Scandinavia. Ethnographic studies also clearly show that hunter-gatherers make no distinction between an ecological and a social/ideological landscape. How people reacted to environmental circumstances and the form in which they chose to arrange their lives in accordance with these depended on more or less conscious social and cultural choices. The landscape should not be viewed as an object; it is a living process in that places, regions, and identities are products of people operating within a network of power relations and exchange of knowledge, which in turn are historically constituted. In small-scale societies, geographical knowledge is based on the accumulated observations of generations. They constitute norms which guide people in the annual use of all the parts of the landscape. It is in fact also necessary to understand the inner dynamics of a society. (Ingold 1993; Bradley 2000; Kelly 2003).

Behavioural categories and territorial thinking

The Late Glacial pioneers came from a familiar landscape and a well-known way of life on the North European continent. Why then did groups of people leave familiar land and move into the unknown? With few exceptions previous research concerning the Late Palaeolithic pioneer settlements is about survival. The process of colonizing has been interpreted in terms of economy, resources and ecological adaptation. There is nothing, however, to suggest that the supply of resources on which people lived was not large enough to provide the relatively sparsely populated North European continent. Migrations of hunting game northwards were obviously an economic prerequisite for the human colonization but hardly the main reason. The question is, however, why did people migrate?

We know that hunter-gatherers temporarily or permanent leave the home district on different occasions. Zedeno and Stoffle (2003:65) classified four broad behavioural categories:

1 *Journeys*. This is the most complex of all categories. The reasons for journeys can vary, and they may be undertaken by individuals, age-specific groups, specialists etc. Journeys can last from a few weeks to years and may take people a great distance from their homelands. A journey can give valuable information about new landscape, for identifying potential future exploitation or colonization, and for expanding social networks.
2 *Regular movements*. This refers to short-term activities such as fetching water or gathering vegetables. Regular movements could also be seasonal and for longer distances in connection with hunting and fishing expeditions or with social meetings.
3 *Pilgrimages*. In contrast to journeys, pilgrimages target a single destination, usually a holy place, in connection with a fixed moment.
4 *Migrations*. This is a unidirectional journey that results in

permanent relocation. Migrants often tend to follow pathways previously scouted by individuals or task groups.

These categories are not mutually exclusive; on the contrary, they may be combined sequentially, spatially, or functionally according to the specific strategies for exploring and colonization used by a given group.

If we want to apply these behavioural categories to the Late Palaeolithic population, we have to understand their regional and local settlement pattern, and in this manner understand the reasons for moving into unfamiliar landscape. One way is to study territorial thinking and group ideology among Arctic Eskimos and relate it to their territorial behaviour. In historic times it is probably these hunter-gatherers societies that live in a landscape closest to the situation during the Late Glacial period (Riches 1982).

Among several Eskimo societies there are few rules concerning territorial behaviour or the group organization. Insofar as there exist any rules they rather concern what is appropriate than constituting social laws. This applies both to the leadership and to the territory. No clear directive keeps the population within a particular area. Even if the group maintained its annual activities within a specific area, there seem to be no clear territorial boundaries at all. Individuals or whole families have the possibility to move over vast distances, and sometimes even from one band society to another. It seems as if it is personal and economic advantages rather than social laws that determine whether an individual changes group affiliation (Riches 1982).

The subsistence or settlement strategies – connected to the open territorial ideology – among Eskimos may be called collecting. This strategy may be said to have been most favourable for people who lived from reindeer hunting in arctic and/or subarctic conditions. The economy presupposed a fairly complex settlement system since many more people cooperated in the collective hunt. Base settlements were established, but these were surrounded by a whole network of special camps. The latter were usually of a temporary character, comprising, for example, places for spending the night, lookout points, special butchering places, and places where the surplus meat could be stored. These groups' exploitation areas were of a significant size (Binford 1978). It is realistic to assume that this applied both to the hunting people of North America and Greenland and to the Late Palaeolithic reindeer hunters in Northern Europe.

During the Hamburg culture a similar material culture was adopted over a large area in Northern Europe, which should be viewed as an expression of a similar identity perception and an open society. In the Late Palaeolithic societies, during the Hamburg culture and even later during the Ahrensburg culture, we can presume an organization with weakly united groups where there were no clearly defined territories. The society was most likely organized in kin communities where social relations were established and preserved through various bonds of kinship, but individuals and the nuclear family had the freedom to move from one band to another. The feeling concerning us–them was probably weak among the population in the Late Palaeolithic. This could have been one way to handle the dramatic environmental changes in this period. In the flexible societies of the Late Palaeolithic the people had the ability to change and influence their own life. They were not slaves of the environment. The open ideology as regards territoriality and group organization may have facilitated the colonization process (Andersson 1992, 1996; Andersson and Knarrström 1999).

Reasons for moving

The capacity for movement was inherent in the Late Palaeolithic mobile way of life, but what were the reasons for entering a new landscape? We can discuss the motivations for colonization in terms of "push" and "pull" factors. Push factors are those conditions experienced by a given population that make the occupation of a different area more attractive than staying as part of the original population. Pull factors are the conditions that make particular migration and colonization destinations viable options (Anthony 1997; Rockman 2003).

Social pressure as a push factor

Within the open territorial thinking in the Late Glacial societies, journeys for different reasons probably occurred frequently. The process would be simplified if the pioneers had a cognitive map covering a large area, *i.e.* a mobile way of life. Journeys brought new knowledge about previously unknown landscape and beneficial information about potential areas for further exploitation. Among historic hunter-gatherers such as the Ojibway Indians in North America, exploration and scouting of new and useful land was a customary part of the mobile way of life (Zedeno and Stoffle 2003). Journeys and tales about new landscapes could have been associated with a great portion of social prestige.

Internal social pressure between different segments of the society might be a push factor to move. Studies of traditional societies have shown that the younger generation could sometimes be denied the opportunities for prestige and social advancement (Anthony 1997). The structure of Late Palaeolithic society was based on kin groups where power probably lay with the elders of the group. Ethnographic parallels show that it was usually the elders who had the greatest power. Because of their age, they were considered to be in close contact with the ancestral spirits and the founders of the community, and it was the ancestors who once claimed the land. The ancestral spirits had a continued role to play by functioning as judges of how daily life should be lived, and here the old people in the community served as the intermediate link who could pass knowledge on to the young. This view served to legitimate the prevailing social relations.

The benevolence of the spirits was preserved through set, recurrent rituals controlled by the leading stratum of society (the elders) and the places in the landscape associated with them. The social identity is constructed and reconstructed in relationship to place and ancestral associations. An integral part of the process of growing up is that each community member learns his or her unique complex of relationships to place. As people move through their lands, not only do they learn about the relationship between place and their ancestors, they also learn about themselves and their particular rights and responsibilities in this land-based scheme of existence. The bond to the landscape was simultaneously a force behind the mobile way of life (Smith 1999).

In a situation like this, there were opportunities in the Late Palaeolithic for the younger generation to avoid having the older generation exert power or control over them. Journeys and expansion to new, formerly unexploited areas meant that bonds and obligations between the generations were weakened. Knowledge about a new world strengthened the travellers' social prestige at home. When new sites and places came into use, the ancient system of norms, the underlying structures, changed. In the new world with its open horizon they could create new meanings (Fuglestvedt 2001). Descriptions of the new land, sometimes perhaps obtained a second-hand or third-hand information, certainly stimulated curiosity and adventurousness among listeners. Perhaps these stories more and more contributed as a push factor to growing movements northwards.

Ritual practice as a pull factor

There might also be ritual reasons for movements to new places. Shamanism and ritual journeys occur over the world but are especially associated with religions and societies in the northern hemisphere (Eliade 1958). The journey is central in connection with the training of shamans and usually consists of an inner journey performed in a state of ecstasy, but it can also be a real physical movement. Through journeys a shaman is believed to be able to contact good and evil spirits on "the other side". The purpose is to search for knowledge of various kinds. Perhaps the first visits to South Scandinavia were connected to ritual travels as a part of the shamans activity – a kind of pilgrimages. A large number of ethnographical studies of "small-scale" societies, both hunter-gatherers and farmers, have shown the mutual relationship between myths, rituals and the landscape (Kelly 2003). Perhaps the new ice-free landscape in Late Glacial time was regarded as a source of new but previous hidden knowledge and thereby worked as a pull factor to perform a journey. A mission to seek knowledge of the unknown land could enrich the known world.

In hunter-gatherer societies where hunting for big game is important, the shamans also have a special task. Through inner or real ritual journeys the shaman is able to control the movements of game in the landscape (Fuglestvedt 2001). Objects probably associated with shamanism have been found in Late Glacial contexts. From the site of Poggenwish in the tunnel valley at Ahrensburg there is a find of a worked reindeer skull with antler – a *Tanzmaske* – which Rust associated with shamanism (Rust 1958:108f).

Economic advantages as a pull factor

If a familiar biotope was already established in the new landscape, economic and probably also religious constraints for moving northwards were removed. The traditional view of the people of the Hamburg culture as reindeer hunters is mainly based on the topographic locations of the settlements at high points in the terrain, as well as narrow valleys and around prehistoric lakes. It is reasonable to assume that the places reflect the hunt for migrating reindeer herds. The settlements offered a good view of the hunting grounds, preferably beside tunnel valleys which channelled the migrating reindeer closely together. A large amount of the animal bones from the settlement sites of Stellmoor, Meiendorf and Poggenwisch in northern Germany come from reindeer. There is no doubt that reindeer hunting was the driving force in the economy in this region (*e.g.* Burdukiewicz 1986; Fischer 1991; Holm and Rieck 1992; Knarrström 2004). In a society where everything in nature is believed to have a soul, we would not underestimate even the symbolic value of the reindeer. The reindeer were not primarily food and secondarily of symbolic meaning; they were both simultaneously. We know that big game hunting is essential as a metaphor in many rituals. This occurs repeatedly in almost every historic hunter-gatherer society, from Africa to North America (Fuglestvedt 2001). We have good reason to believe that the reindeer in the Late Palaeolithic was viewed as a legendary and holy animal. Depictions of reindeer from different places in Europe dated to the Late Palaeolithic or the Mesolithic should be interpreted in this way. Moreover, Rust suggested that the complete or near-complete reindeer in the Stellmoor assemblages were offerings (Rust 1943:133f). However it should be pointed out that this theory has been criticized by scholars who believe that they represent storage (*e.g.* Grønnow 1987). If the most important animal, economic and religious, was already present in the new land it would be legitimate and a pull factor to move northwards. People belonging to the Hamburgian culture probably occupied parts of southern Scandinavia seasonally in connection with hunting expeditions (Figure 2).

Conclusion

The open ideology in the Late Palaeolithic as regards territoriality may have facilitated the colonization process. Furthermore, the Late Glacial hunters lived in a high mobile settlement pattern which included movements over vast areas. They had the flexibility to meet a surrounding world with constantly changing climate, vegetation and coastlines.

We can probably assume that the Late Glacial population to some degree knew the South Scandinavian landscape through the oral tradition before they seasonally or permanently settled down in that area. The landscape would have been recognized through previous shorter journeys or hunting expedition. Groups of people had learned the new landscape and named specific landmarks. Their tales were passed on to others and in this way the new land received a history before it was permanently populated.

The colonization of South Scandinavia in the Late Glacial period occurred step by step and had a mixture of reasons. If we now turn back to the set of four broad behavioural categories mentioned above, we can arrange the following succession: journeys/pilgrimages – regular movements – migrations.

FIGURE 2. Reindeer. Photo: Thomas Andersson.

1. The first visit to the new land was performed through so-called temporary *journeys*. Prestige and curiosity would have been forces behind the journeys. Having carried out expeditions and acquired knowledge about unknown areas led to social advancement. To some extent social stress motivated younger hunters to gain prestige *vis-à-vis* the older and more established hunters. A further incentive, as we have seen, could have been ritual journeys or *pilgrimages* to the unknown, through which people also learned more about the known.
2. In this manner a new landscape was recognized and thereby started up the subsequent *regular movements* – in this case in the form of ordinary hunting expeditions. During the earliest phases it was expeditions of short duration. The archaeological evidence suggests that the first pioneers during Hamburg culture did not represent the first colonization leading to settlement of that area.
3. It is probably not until the Bromme culture period that permanent settlements became established in South Scandinavia and we can talk about a concrete *migration*. The people who had been to the new land spread information about its qualities. Meetings with new humans, animals, spirits and natural phenomena formed the oral tradition and became a part of the cultural memory. The first subjective experience of the new world by a few people gradually became an objective possibility for everybody.

English revised by Alan Crozier

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SABINE STEN & STIG WELINDER

The eternal traveller from Barum

THE BARUM GRAVE was found in 1939 by two farmers digging for gravel in a slope at a lake shore in South Sweden. They removed the skull, a few vertebrae, parts of the right arm and leg, and possibly another few bones. Thereafter the rest of the skeleton was professionally excavated by Folke Hansen at Lund University. He uncovered the skeleton, made a drawing and took three photos, in addition to writing a short report. He also published a short article (Hansen 1941). Two of the photos have been printed before (Hansen 1941:fig. 1; Hultgren 1990:3, 7; Sten *et al.* 1990:fig. 1). The third is given as Figure 1. The drawing is fairly unknown (Figures 3–4; Hultgren 1990:8). Another few bits of information are to be found in local newspaper articles printed at the time of the excavation, and in letters exchanged between the staff at the museums in Lund and Stockholm.

This is the total extent of the empirical knowledge there is, besides the re-erected skeleton itself and its two artefacts now in a showcase at the Museum of National Antiquities in Stockholm. The scientific reports on the various analyses of the skeleton are summarised in Sten *et al.* 1990. The age of the burial has been determined, so far, by a radiocarbon dating in 1996. The calibrated result was about 6800 BC (Sten *et al.* 1990:80f). The skeleton once belonged to a woman, 35–45 years old when she died, and about 150–155 cm. tall (Gejvall 1970, 1990:13–14; Sten *et al.* 1990:77, 79)

We will contribute our ideas to the discussion of the furnishing of the Barum grave, the position of the body at the time of the burial, and the rituals involved in the burial.

FIGURE 1. One of the three photos by Folke Hansen from the excavation of the Barum grave in 1939. Observe the right shoulder blade, and the position of the lower jaw just above the left thigh bone (ATA 2584/39, RAÄ, Stockholm).

The eternal traveller

A long and sometimes heated debate surrounded the Barum skeleton until it was accepted that it was a Mesolithic woman (Hultgren 1990:9). During the time of the debate – and still – she has been moved and moved again in her showcase at the Stockholm museum. Before us we have six different photos of different arrangements of the skeleton, the first from 1943, followed by 1970, 1973, 1996, 2005, and one of unknown age (Hultgren 1990:24; Sten *et al.* 1990:fig. 2).

The basic pose has always been in a sitting position suggested already at the time of the excavation (Figure 2). In particular the arms have changed their position, however, and the slotted bone point has rested against the woman's

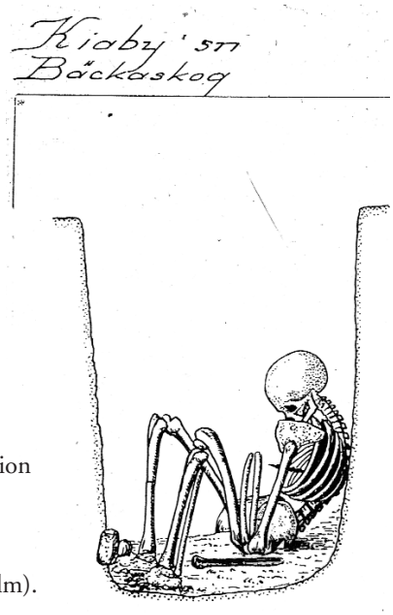

FIGURE 2. Reconstruction drawing of the Barum grave from 1939 by an unknown artist (ATA 2584/39, RAÄ, Stockholm).

right thigh, on her right foot, on her right shoulder, and in another few positions. Since the 1990s the hands have met on the woman's lap. In the most recent re-assemblage of the skeleton, in 2005, the woman is looking slightly more downwards, and her legs are slightly inclining to the right. Otherwise she looks as she has done since the 1940s. As concerns the slotted bone point, the curators at the museum have given up: the point is now simply lying on the floor of the showcase.

The position of the body

The position of the body in the burial pit has to be reconstructed from the drawing and photos by Folke Hansen during the excavation. The photos were taken at about the same time as the drawing was made. There are some bones visible in the photos that were not drawn, and some bones were added to the drawing during the course of the excavation. The skeleton seems never to have looked like the drawing at any given moment. This causes a lot of trouble when trying to reconstruct the original position of the body – there are difficulties even in reconstructing the position of the skeleton at the time of excavation. We will first make a general attempt, then discuss problematic details.

There are figures in the drawing indicating the height above the bottom of the burial pit of some of the bones (Figures 3–4). Thus, the left knee was found 15 cm. above the bottom resting on the right knee. Both legs were on the bottom of the pit, one upon the other. The left leg is intact and complete, with the kneecap and all foot bones in their anatomically correct places. In all likelihood this leg has not been disturbed since the burial. The conclusion is that the woman was buried sitting, with her legs bent and leaning sideways to the right.

The main part of the skeleton of the woman's torso was found in place: the hipbones, the spine, and the ribs (Figures 3–4). The top of the remaining part of the spine was 28 cm. above the bottom of the pit. According to the excavation report some vertebrae had been removed before the drawing was made. The back of the woman's head, thus, may have been situated 30–40 cm. above the bottom of the pit: it is reasonable to conclude that as a person 150–155 cm. tall, she had not been placed sitting upright, but rather leaning back against the wall of the burial pit.

The arms are not particularly problematic. The woman's hands were in her lap. Other details are more problematic, but starting with the general description above, the body was originally placed in the pit in quite another position than it has had during the latest 60-some years in the showcase. Our suggestion gives quite another first impression (Figure 5): the woman was leaning back in a sitting position with her legs drawn up but to the side, not with the knees close to the chin as in the showcase today (Figure 2).

The burial of the young man in grave XV at the Mesolithic burial ground Skateholm II comes to mind. Excavated

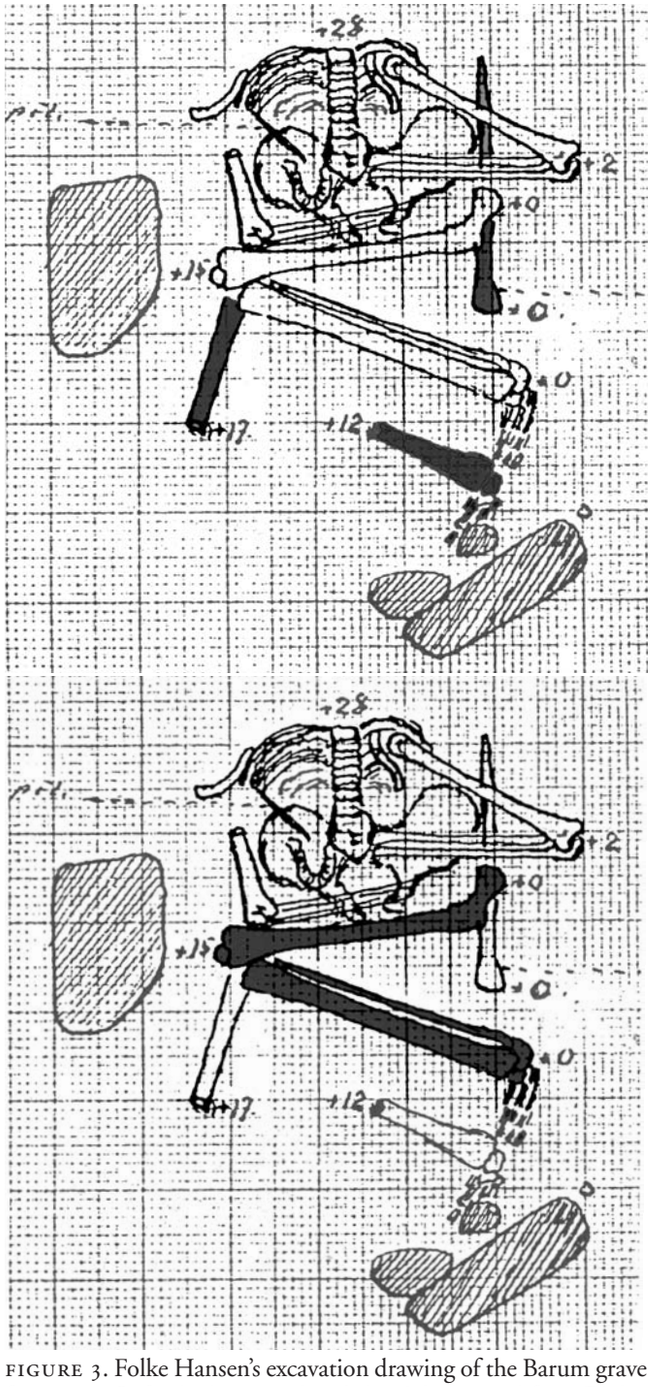

FIGURE 3. Folke Hansen's excavation drawing of the Barum grave from 1939. Left: the bone tool and the right leg and foot. Right: The left leg and foot (ATA 2584/39, RAÄ, Stockholm).

and reconstructed by Lars Larsson, he rests half lying on his back with his hands in his lap, legs almost stretched out before him (Larsson 1988:144).

The problem

All reconstructions of the Barum grave, including our own (Figure 5), presuppose that the woman's body was placed complete and intact in the burial pit. This assumption has

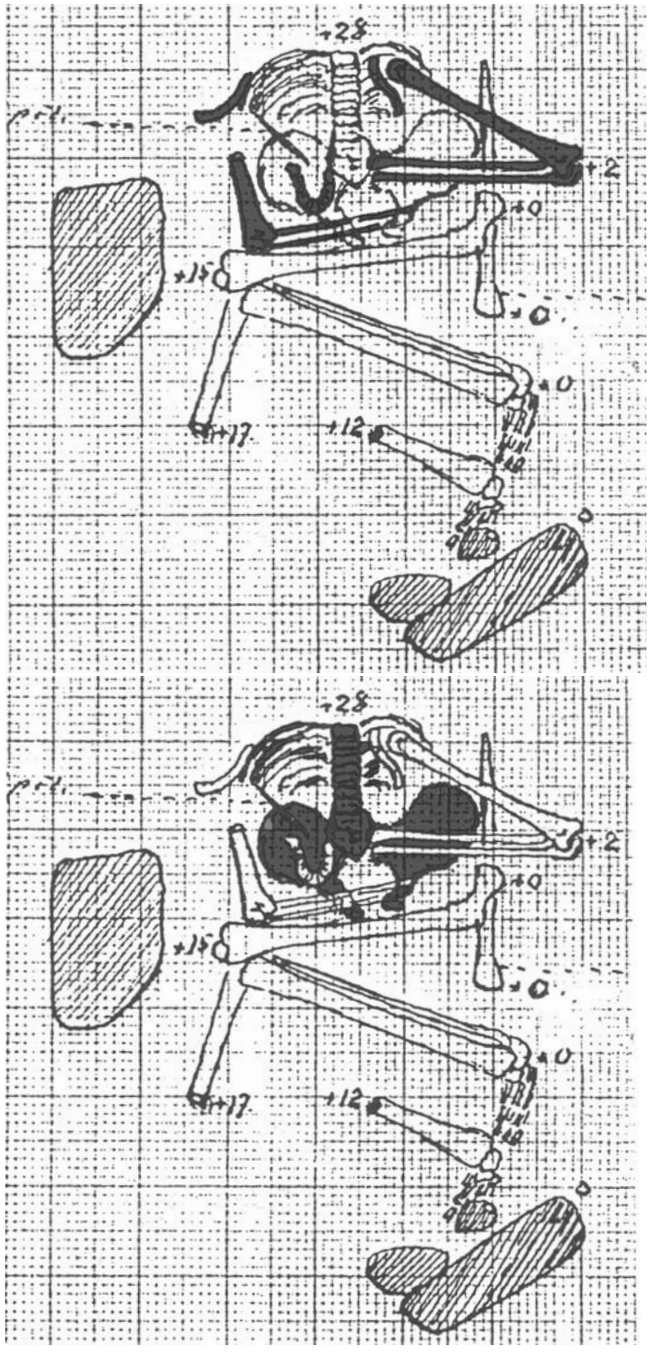

FIGURE 4. Folke Hansen's excavation drawing of the Barum grave from 1939. Left: the collarbones, the arms, and lower jaw. Right: the backbone and hipbones (ATA 2584/39, RAÄ, Stockholm).

never been questioned. That is exactly what we intend to do in the continuation.

There are, however, questions that cannot be answered and some obscurity concerning the state of the skeleton at the time of the excavation, for instance, the position of a number of bones. Obviously not all bones observed by Folke Hansen *in situ* were included in the drawing. That is valid for example for the shoulder blades, which are seen obviously out of position in the photo Figure 1 but not in the drawing (Figures 3–4). Other examples to be discussed below are more ambiguous. Accordingly, it is difficult to tell which bones that were observed *in situ* were in anatomically correct positions, and which were not.

In the following we will base much of our discussion on the "anthropologie de terrain" on how human bodies decay and succumb, especially how skeletons fall apart (L. Nilsson 1998; Nilsson Stutz 2003:131–159).

The pit

Folke Hansen reported the width of the burial pit as either 50 cm. (the report) or 60 cm. (Hansen 1941:16). The depth of the pit is reported everywhere to have been 1.2 m. (Hansen 1941:14).

According to the original position in the pit suggested by us, the body would have needed a funnel-shaped pit with a width of 90 cm. at the top, less at the bottom. It may be noted that it is impossible actually to observe the edges and the shape of the pit in either the drawing or the photos (Figures 1, 3–4).

The burial pits are crucial in the "anthropologie de terrain". It makes a big difference whether the pit was filled immediately when the body was placed in the pit or if the pit was left open for some time. In the former case there was much less space for the skeleton to disarticulate.

The skeleton is impregnated with soot and pollen (Sten *et al.* 1990:81–82). The pollen assemblage is dominated by alder, birch, hazel, and pine, and additionally a little oak and elm. This is a flora characteristic of zone BO 2 according to T. Nilsson (1964:12). The radiocarbon age of that zone is 8,500–7,900 BP (T. Nilsson 1964:47–49). Thus, the pollen grains penetrated the skeleton at the time of the burial. The same ought to be the case with the soot particles.

The question is how the pollen grains and soot particles came to be found in the skeleton. Were they stuck to the hair and clothes of the woman and penetrated her skeleton after she had been covered by earth? If they were not present, and if the pit had been filled with earth, then the particles would have had to move through this earth, transported by percolating water. In that case, it is, however, reasonable that post-BO 2 pollen grains ought to have also moved through the pit filling and likewise have penetrated the skeleton: *e.g.,* pollen grains of beech, lime, and a variety of pollen types characteristic of the open cultural landscape. Alternative ideas are that the body was placed in the pit in a partly de-fleshed – and possibly smoked – state, or the pit was not filled immediately after placing the body in it.

There are no traces of explicit de-fleshing, burning or anything on the skeleton (Sten *et al.* 1990:77, 84). The above suggestions are merely suggestions. However, a little charcoal and some pieces of brittle-burnt flint were found in the burial pit (Beausang 2005:92, referring to a letter from 1940). In some way fire was involved in the grave ritual.

It has been argued that the Skateholm II bodies had been placed in filled pits (L. Nilsson 1998:Table 2). In those graves where the bodies had been placed in elevated positions, these positions had been preserved and the bones most easily disarticulated, like hand and finger bones, the lower jaw, the kneecaps and so on, were still in their original positions. The vertebrae still formed a connected spine in most of the graves in question, and the ribs remained separate from one another. Our discussion goes on.

The head and lower jaw

The woman's skull had been removed by the farmers before the arrival of Folke Hansen, like a few of the uppermost vertebrae. Possibly, the collarbones and shoulder blades were disturbed in the process and documented out of the anatomically correct position (Figures 1, 4). This may not have been the original position before the discovery of the grave.

The lower jaw was uncovered by Folke Hansen in a position where no disturbance by the farmers had taken place (Figures 1, 4). It was resting on the right part of the hipbone. Unfortunately there is no measurement of the level of altitude.

In relation to the uppermost documented vertebra (Figure 4), the lower jaw had moved at least 20 cm. both sideways and downwards. This seems unlikely, if the skull was intact when the body was placed in the pit and the pit filled immediately thereafter. On the other hand, the lower jaw is one of the bones that comes loose first when a body decays, and then, in an unfilled pit, falls down to the position where the Barum woman's lower jaw was actually found during the excavation. Another possibility is that the skull was placed in the pit in two parts or that it was placed in the lap of the woman

The trunk and the breastbone

The trunk was excavated with the spine, hipbone and most of the ribs in position (Figures 1, 4). In the photos it is seen that a few ribs are out of place, possibly due to the same reason as the collarbones and shoulder blades. Especially the position of the ribs indicates that the trunk was covered by earth soon after its burial. This contradicts the position of the lower jaw.

The breastbone was not included in the drawing (Figure 4). During the excavation, close to all the bones of the woman's skeleton were collected, some of them by meticulous sieving. Including the bones taken care of by the farmers, very little of the skeleton is missing in its showcase today: one front tooth, a few bones to be mentioned below, and the lower two thirds of the breastbone. The circumstances around the finding of the remaining third of the breastbone are not known. It cannot be seen in either the drawing or the photos (Figures 2, 4). A reasonable idea is that it was shifted out of position like the collarbones (Figure 4). Possibly it was found during the sieving, possibly during the excavation but omitted from the drawing like the shoulder blades.

Anyhow, it is remarkable that two thirds of the breastbone is missing. It is possible that the complete breastbone was never deposited together with the body in the burial-pit. One idea is that the body had been cut open to remove the woman's heart before the deposition in the pit. A fascinating possibility is that the breastbone was damaged in the process and partly removed.

The arms and hands

The left arm of the woman was drawn close to its anatomically correct position (Figure 4). The right upper arm was partly removed by the farmers before the excavation. It is not known whether it was broken already before that (Figure 4). The arms may have been only slightly displaced.

It is remarkable that the hands are completely missing in the drawing (Figure 4). Folke Hansen may have deliberately omitted them, but they are not seen in the photos, either (Figure 1). The two photos not published here shed more light on this and other problems referred to in our discussion. The hands were probably not excavated in connection with the arms but found during the sieving. Almost all the hand bones are present.

The implication of the above argument is that the hands were deposited separately and not fully intact in the burial pit. The alternative is that the hands had totally fallen apart. This is reasonable according to the "anthropologie de terrain", but the implication of that is that the pit was not filled before the total decay of the body.

The legs and feet

In all the various reconstructions the Barum woman is sitting with her legs drawn up towards her chest (Figure 2). This is not self-evident. The right leg had, according to the excavation report, been partly removed before the excavation proper, while the left leg lying on top of the right one was totally intact with all foot bones and the kneecap in position. The latter is valid for the foot bones in the right leg, too (Figure 3).

FIGURE 5. Experimental reconstruction of the Barum grave. Photo: Sabine Sten 2006.

The height measurements of the leg bones in

relation to the bottom of the pit indicate that the legs were one upon the other at the bottom of the pit. We suggest that the legs had not collapsed and fallen sideways from an upright position, but that they were originally placed in a horizontal position (Figure 5). To us it seems impossible that the legs would have collapsed from the upright position in Figure 2 to the horizontal position in Figure 3.

It is remarkable that the head of the left thighbone was found *c.* 10 cm. from its original position in the body with all the tiny bones in the leg still in order. The head of the right thighbone seems to have moved even more; it is however not visible in the drawing (Figure 3) or the photos. Again it is tempting to consider the possibility that the body was deposited in the pit in several parts.

The slotted bone point

The slotted bone point was found during the excavation after the first bones had been removed from their *in situ* positions. It is seen in one of the photos in a position lower than for example the right thighbone and the lower jaw. In the drawing it is on top of the right half of the hipbone (Figure 4). It is not situated explicitly underneath any bone, and it was given no height indication. It is, however, only half its length in the drawing and in another position than in the photo, so there are problems.

One interesting suggestion is that the slotted bone point had originally been placed on the chest or stomach of the woman. There are several parallels in other Mesolithic burials (Hanlon and Nilsson 2004:229). Another suggestion, proposed already at the time of the excavation (Figure 2; also Albrethsen and Brinch Petersen 1977:24) is that the woman was slain by the weapon. Today the anomaly between the sex of the deceased person and the hunting-tool in relation to what is known from other Mesolithic burials is no longer a problem (Hanlon and Nilsson 2004:229), although ethnographic cross-cultural data still suggest women did not take part in at least big game hunting with bows-and-arrows or spears in hand (Murdock and Provost 1973:Table 1).

Several of the micro-blades were not excavated in association with the slotted bone point but found during the sieving of the filling of the pit. Thus, it cannot be taken for granted that all the micro-blades were originally inserted in the bone point. More artefacts with inserted micro-blades or single micro-blades may have been present in the pit. The Tågerup woman with, among other things, two handle cores among the flint that was ritually deposited in her pit comes to mind (Ahlström 2003:fig. 60.2; Karsten and Knarrström 2003:77–81).

Handle cores, micro-blades, and slotted bone daggers and points formed a ritual and perhaps self-identifying complex in North Europe at *c.* 7500–4500 BC (Knutsson *et al.* 2003:418–420, 423–425; Larsson 2005).

The bone chisel

The other artefact associated with the Barum woman, a bone chisel, creates no problem regarding its position in the pit (Figure 3). The list of suggestions concerning its function is, on the other hand, impressive: net needle, digging-stick, bark lever, dagger, flying knife, seam-smoother, and a blank for a flint-edged tool (Sten *et al.* 2000:84; Beausang 2005:92). The last suggestion is interesting in relation to the technological complex mentioned above.

The bone chisel has got a worn edge along half of its length (Sten *et al.* 2000:84). There are no marks on the skeleton indicating that the slotted bone point and the bone chisel were once used as knives or whatever in carving the flesh off the skeleton and partitioning the latter, although that is a fascinating idea in relation to some of the problems indicated by us.

The Skateholm humans and dogs, and the Allerum dog

At the Skateholm Mesolithic burial grounds, dated generally later than the Barum grave, there is an immense variation in rituals (Larsson 1988), including also the burial of dogs (Larsson 1991). Dog bones were found in the refuse around the huts, dogs had been killed violently and thrown into the burial pits, and dogs had been reverently buried like some of the humans, in some cases with red ochre and grave goods, *e.g.,* a flint knife in the belt.

The buried dogs indicate the complex relations between humans and animals, which are characteristic of, perhaps most, pre-industrial societies (Jennbert 2002). In the Skateholm hunter-gatherer society, dogs were the border between animals and humans, and sometimes they transcended that line. Sometimes the dogs were humans, and the humans sometimes were dogs (Evans and Welinder 1997:287).

The Allerum dog was deposited in a shallow lake around 7,000–5,000 BC (Lidén 1942:22–23; Liljegren 1975:47, 141). It was reported found with a slotted bone point among its ribs. A hunting accident has been suggested (Lidén 1942: 16–19).

Within a small area in the same peat bog another few Mesolithic artefacts have been found: an antler axe, a pecked axe, and a bone chisel like the one in the Barum grave (Lidén 1942:fig. 15, 18–19). Thus, the Allerum dog was found at a sacrificial site (Karsten 1994:166–168), and probably the dog and the slotted bone point, a hunter and a hunting tool, were also sacrificed.

Humans, dogs, handle cores and slotted bone points formed a ritual complex in the Scanian Mesolithic. The body of the Barum woman was handled and buried within the conceptual world of this ritual complex. The associated myths may have told about humans and dogs, weapons and hunting, fire and food. Most of it is seen in the pit of the Barum woman.

The final station of the eternal traveller

If it is taken for granted that the Barum woman was placed in her pit as a full, intact body, it is quite possible within the frames of the "anthropologie de terrain" to reconstruct her travel from an upright sitting position to the problematic heap of bones excavated in the bottom part of the pit. If that assumption is not taken for granted, there are other – and fascinating – possibilities.

The Barum woman after death perhaps stayed for a long time with her tribe members, her body handled by them in various ways. Perhaps she started a long journey for a remote world, her body intact or not. Perhaps she … Only one thing is certain, her life after death as an archaeological item of debate has not finished travelling.

Abbreviations

ATA = Antikvariska Topografiska arkivet.
RAÄ = Riksantikvarieämbetet.

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TOM CARLSSON

Axe production and axe relations

Introduction

GREENSTONE AXES ARE one of the most significant Mesolithic artefacts in central Sweden. The grand old man of Swedish archaeological typology, Oscar Montelius, even used them as proof of human existence in the Upper Stone Age in this area. As no two axes look alike, however, it is impossible to create more specific chronologies based on typology. One could suggest that criteria other than form were significant: this is clearly seen at the Late Mesolithic site of Strandvägen in central Sweden. The differences between the shapes of the axes are notable. Instead of the form, it might have been the ground and polished surface which was the significant element of these axes. Thus, this article has two purposes: one is to describe Mesolithic axe production at the Strandvägen site. A second aim is to go beyond the functional aspect of an axe and interpret its significance: in this case, the polished surface.

The Strandvägen site

This article gives only a very brief introduction to the site because it has been described in more detail elsewhere (Carlsson *et al.* 2003; Carlsson 2005). The site is located by a calm backwater after the first rapids in the river Motala Ström, in the town of Motala, Östergötland province. The area provides a good idea of the Mesolithic environment, since the location today is virtually identical to what it was 7,000–8,000 years ago. The settlement and stone knapping activities were situated on the back of a gentle moraine slope giving protection from the westerly winds coming off Lake Vättern. During the Atlantic period the Litorina Sea incorporated Lake Roxen as a broad bay, so there was a salt sea only some thirty kilometres away. Motala Ström was almost certainly important for communications, as the simplest way to travel in any direction was via the lakes. A simplified reconstruction of the local environment during the Atlantic period shows it as an area where several different ecological zones meet. In the south there was an extensive area of small lakes, swamps, and dried eskers sticking up, while in the north, large forests spread over rocky terrain: a favourable settlement location, indeed.

The investigation of occupation layers with well-preserved organic finds took place both on land and under water. Two Mesolithic house structures, pits, hearths and approximately 180,000 artefacts were documented, including quartz, ultramylonithic quartz and flint from different areas. The organic material is impressive and includes more than 50 leister points and decorated antler objects. In the water, just beyond the settlement, marine archaeologists excavated two concentrations of larger stones. According to the finds of leister points close to them, the stone foundations had been used as fishing places (Bergstrand 2005). It must be noted that the entire site could not be excavated, but only the part that was in the way of a new railway bridge. There is a great deal to suggest that the site covered a much greater area. A large number of radiometric datings testify to intensive use of the site around 5,500–5,000 BC.

In his study Lars Larsson has suggested that the overall interpretation of the site and its different characteristics is very close to what scholars in other archaeological periods would call a central place. Moreover, he says, "The combination of ecological environments that existed at the outflow of Motala Ström was exceptional" (Larsson 2005:29).

Axe manufacturing

Production of Mesolithic greenstone axes is not unknown in archaeological contexts. From the Swedish west coast, Lihult Culture axe production is known from several places (Bengtsson 2003). At the site of Margreteberg on the western shore of Lake Vänern, more than seven hundred axes as well as a large amount of greenstone flakes and debris were found in what seems to be the largest concentration of greenstone axes in Sweden (Nordqvist 1997:67). In the Swedish eastern archipelago, production is known at the Eklundshov site (Lindgren 1997, 2004).

At the Strandvägen site a total of 104 axes (in pieces or complete) were found spread all over the settlement area. A short distance from the house, a concentration of 30–40 whole and fragmented axes suggests an area for axe production (Figure 1). Traces of axe making were found within a restricted area: among other things there was a small amount of workpieces for greenstone axes, along with flakes of greenstone and several heavy hammerstones of red porphyry. These finds and a number of large grindstones within the same area suggest that not only were axe edges polished and sharpened on the site but also that all parts of the axe-making process were carried on here. Heavy basalt greenstones, probably found in the surrounding neighbourhood, were brought home. By knapping flakes from the

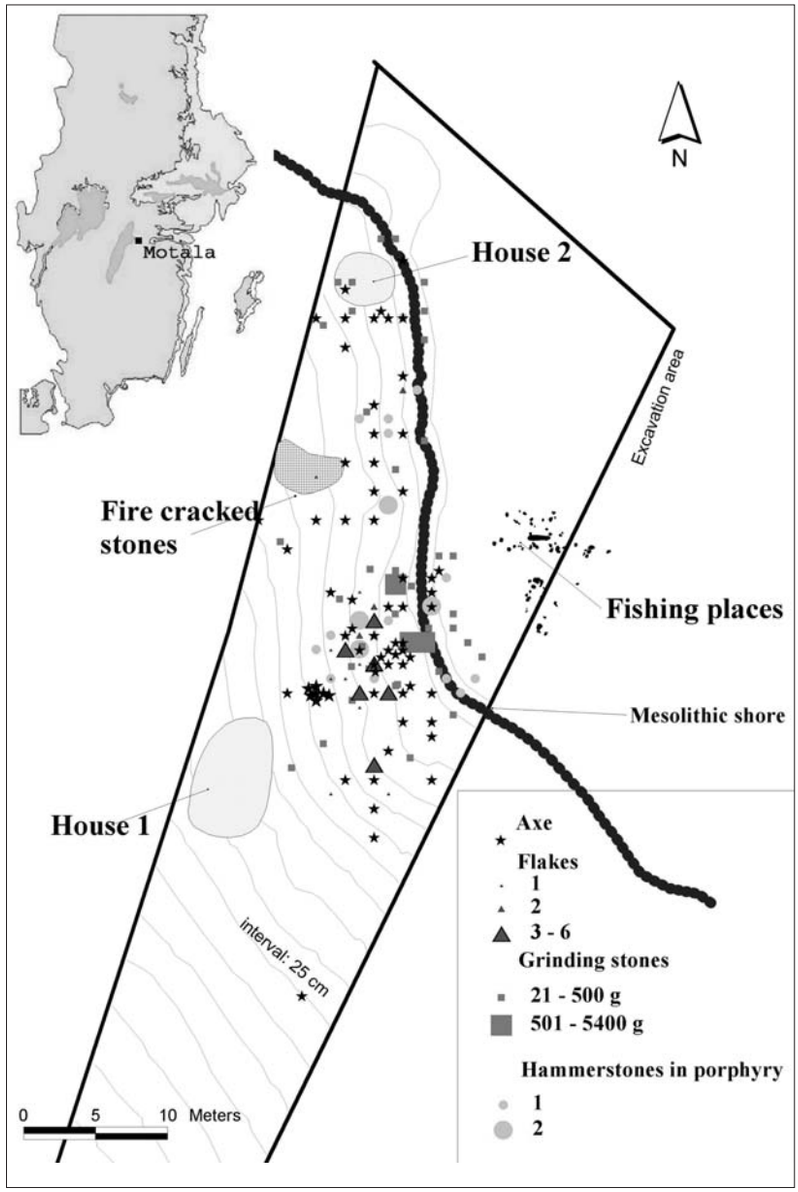

FIGURE 1. Artefacts associated with axe manufacturing at the Strandvägen site and a map showing the location of the site during the Late Mesolithic.

FIGURE 2. Grinding stone of Visingsö sandstone from the Strandvägen site. Drawing by Anna Molin.

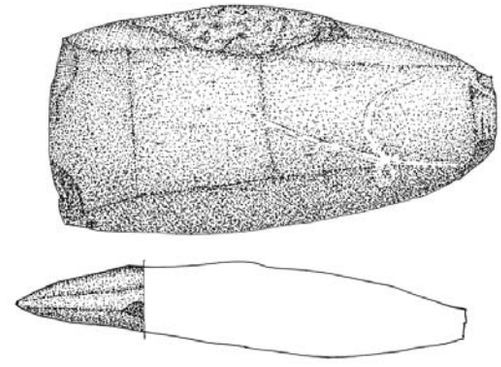

FIGURE 3. Ground and polished axe from the Strandvägen site. Drawing by Anna Molin.

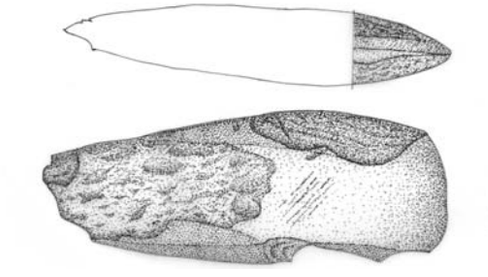

FIGURE 4. Ground and polished axe from the Strandvägen site. Drawing by Anna Molin.

workpiece, the future axe was given a sufficiently good look and shape. The next step was to peck the body of the axe with a heavy pecking stone before finally grinding and polishing it. Judging by the number of workpieces and the amount of debitage, it seems that it was not industrial manufacture of axes that took place. We should instead envisage axe production sufficient to cover the needs of the local people. However, recognising greenstone debitage is not an easy task since vitrification causes changes to the surface, shape and even the colour of the flakes. The relatively small amount of debitage might therefore be a result of a natural process in the damp environment.

The grinding stones are all made of yellowish sandstone (Figure 2). Grinding was done on one or several surfaces. No production or shaping of these stones has been noticed. These sandstones are not indigenous to the area: in other words, they must have been brought in by the inhabitants of the site. Petrographic thin-section analyses on the grinding stones showed that the material was the Visingsö sandstone. This type occurs within limited areas around Lake Vättern and very sporadically in other places. The nearest occurrence to the settlement site is Lemunda, by the lake approximately 15 km. to the north of Motala. The shore at Lemunda still contains potential grinding stones. In a canoe this journey of 15 km. would not be a problem. However, the thin-section analyses from the Strandvägen sandstone grinding stones indicate that the material is almost identical to sandstone from the southern end of Vättern, at least 60 km. away (as the crow flies). Regardless of the source, the grinding stones link different areas and different local communities around Lake Vättern together.

Ten of the axes are the well-known pecked axe (Sw.

trindyxa). Only the edges were ground. Twenty-eight axes have their entire bodies ground into different forms (Lindgren 1997:59). Three axes are knapped without any traces of pecking and only the edges are ground. The rest of the axes are more or less in fragments; in some cases only the base or the edge is missing, while in other cases only a small ground or pecked greenstone represents an axe. An overwhelming number of the larger fragments are ground and polished. In the form variations and appearance the axes resemble the eastern Swedish axes with their polished surfaces and great variation in shape (Figures 3 and 4). The datings also agree with them, around 6,000–4,500 BC (Lindgren 2004:48). It is worth stressing that no flint axes or any other typical Neolithic axes were found. Only one axe does not match the others (Figure 5). In a feature consisting of fire-cracked stones, knapping debris, organic artefacts and so on, a small ground axe was found. Based on ^{14}C datings, the feature was used between 5,300 and 5,200 BC (6,265 +/–60 BP Ua-26922). Could the axe be a replica of an image of a faraway tradition? Is it actually a false LBK (Linear Pottery Culture) axe, a shoe-last celt without the shaft hole? Some copies from the late Ertebølle are known from Scania but these imitations are usually made of porphyry and have shaft holes (Klassen and Jonsson 1999). However, the Ertebølle tradition in Scania had its own tradition of flint axes and probably had much closer contacts to the south: size, shape and the shaft hole could be copied from one axe to another. In central Sweden the production, shaping and so on often had to be transmitted via memories and tales in its own local traditions. I am not going to stretch my interpretation too far in this matter, but this is worth keeping in mind when long-distance contacts are discussed (Figure 5).

The absence of axe typology

The great variation in appearance has created problem for archaeology in eastern central Sweden when trying to understand the chronology of the Mesolithic. The Swedish scholar Knut Stierna concluded in the 19th century that "no two axes look the same" (Stierna 1871). In preparation for the international congress of archaeology in Stockholm in 1874, Oscar Montelius studied the collections at the Museum of National Antiquities. His aim was to discuss whether or not there had been an Old Stone Age (Mesolithic) population in central Sweden. Among the stray finds in the museum there was nothing striking that could give its name to any new cultural group. The lack of flint made classification impossible, so the finds could not be linked to known chronologies. The collections consisted mainly of simple greenstone axes. What Montelius had noticed was a Stone Age culture that distinguished itself from the previously known ones, and he presented these new findings at the congress (Montelius 1870–1873). Anyhow the lack of characteristics must have been frustrating for the grand old man of archaeological typology.

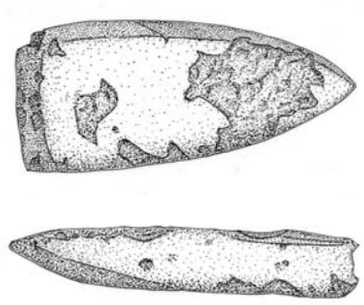

FIGURE 5. Ground and polished axe from the Strandvägen site. Drawing by Anna Molin.

In general, one can make a distinction between the pecked axes, the Lihult axe and the ground greenstone axe for the late Mesolithic in central Sweden. Chronologically the pecked axe occurs from 7,000 to 3,000 BC and the two latter from 6,000 to 4,500 BC (Lindgren and Nordqvist 1997).

Conclusion

Hopefully, at least some readers have been convinced that axe production was carried on at the Strandvägen site. The production might not be so impressive but nevertheless it is an interesting activity with many related associations. Stones for axes and sandstones for grinding linked people to places in the landscape and connected people to people.

Typology is a secondary problem. Measuring length and weight for Mesolithic greenstone axes would thus give us no more clues than a non-correlation diagram to put in the dustbin. For the user, the Mesolithic hunter-fisher-gatherer, the lack of typology was of course not a problem. Any large stone with a sharp edge might have been good enough to cut a piece of wood and certainly the whole axe body did not have to be polished. Nonetheless, in a social context the exterior might have been just as important as the sharp edge. Polishing an axe is not functional in a functionalistic sense. Function here is a social function that goes far beyond typologies and evolutionistic explanations. Cooney has suggested (2002) that grinding and polishing Neolithic flint axes was a matter of releasing and enhancing the character of the rock. The personal image of the greenstone axe – the colours, the patterns, the lines and so on – might have reflected the origins of the individual stone. The shores and the slopes, or wherever in the landscape the greenstones were collected, could well have influenced the people living in that landscape and been reflected in the choice of stones they collected. Interconnected qualities and relations were an important part of the people's perception of their place in the universe and within their own group. Myths, events and experiences were woven together. The grinding and polishing made these connections visible, as it were: the polished axes retold these tales and stories. The polished surface of the individual stone axe became a token of embed-

ded tales. The material culture thus joined together physical places with memories, myths, events, tales and people. This had nothing to do with a transformation from nothing (a dead stone) to something (a functional-social item) but rather a reinforcement of expression of an object that already had a meaning in its own. Knapping, grinding and polishing only improved communication between the object and man.

Badley (1984:11) somewhat ironically stated that "successful farmers have social relations with one another, while hunter-gatherers have ecological relations with hazelnuts".

I hope to have emphasised that the Mesolithic hunter-gatherers, at least, had relations with greenstone axes, too.

English revised by Carole Gillis

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CHRISTINA LINDGREN

The importance of being a traveller

MESOLITHIC MAN WAS on the move. Being on the move has in one sense become the essence of being Mesolithic. The constant search for resources – the moving between sites – the search for new places for settlement in the archipelago, it is all about moving about. This constant moving from place to place is mostly defined as a group moving; it could be all inhabitants in a settlement in a seasonal move, *e.g.* to the summer camps, or it could be different minor task groups moving to where the fish spawn.

But there is also the travelling of individuals, individuals setting out on journeys to distant areas, perhaps meeting "the others". As always in archaeology, dealing with the individual is a problem (if you are not dealing with graves, when it can be really problematic!) they are so seldom visible in the archaeological record. In this article I will try to argue for the possibility to discuss individual journeys and what they could have meant in Mesolithic society. The starting point for my ideas is a few artefacts of distant origin found on Mesolithic sites in eastern central Sweden.

Both archaeology and anthropology have a long history of dealing with non-local artefacts as indicators of exchange between groups in different areas. This exchange is often between areas several hundreds of kilometres apart. The evidence for these exchange systems is often the presence of exotic raw materials or artefacts made in distant areas. Such examples are well known from both western Norway (Bergsvik and Olsen 2003) and England (Edmonds 1995:49). Perhaps the most famous exchange network is the Kula system in Melanesia (Malinowski 1922). These exchange systems are often based on a reciprocal idea whereby things were exchanged with other things or with luck, status or wealth. They are based on a mutual idea of what exchange between people or groups meant.

But are there any alternatives to exchange systems or distributions systems? Are there alternatives where the object itself has no given meaning or purpose in the interrelationship between groups? What is the possibility of non-local objects turning up at sites where they didn't belong, where they were just strange for most of the inhabitants but special to some? These objects were then perhaps reduced to personal memories of journeys in the past. But what do personal journeys in the past tell us about the people who made them? Do they say anything about the social organisation and cultural identities? Why travel?

Quartz and flint – local and exotic

The first question we should ask is whether it is at all possible to identify such personal journeys in Mesolithic societies. I will show here some examples of a category of artefacts found on Mesolithic sites in eastern central Sweden that could be a starting point for a discussion of personal journeys.

The tool-kit of the Mesolithic in eastern central Sweden is up to 95 % made of quartz (Lindgren 2004:35) (Figure 1). Quartz is locally found as nodules in eskers or as veins in bedrock outcrops. Within eastern central Sweden quartz is regarded as a local raw material. This assumption, however, should be treated with some scepticism, as quartz generally occurs in many different areas in Sweden; geologically quartz is one of the most common minerals on earth. Today it is not possible to separate different types of quartz spatially. But if we regard quartz as the local raw material it is very well suited for the purpose. It is easily accessible, its flaking properties make it well suited for small objects such as knives, scrapers, or projectile points. So no doubt Mesolithic men and women were content with what they had at hand.

On several Mesolithic sites, however, we also find small amounts of flaked flint. The amount of flint is shown in Figure 1 and is usually less than 5 %. Flint is not locally found in eastern central Sweden. It is found in southern and western parts of Sweden and on the island of Gotland. The flint objects found on Mesolithic sites in eastern central Sweden must have been brought there from these areas.

During the early part of the last century, the non-local flint in eastern central Sweden was explained as mainly a question of import (Ekholm 1915:6; Olsson, 1917:9; Schnell 1930:17; Engström and Thomasson 1932:31). This import was believed to be necessary to make up for the poorer raw material that was available locally.

The flint found is of several different types; both light grey and black flint of probably south Scandinavian origin, dark-speckled flint from the Kristianstad area in eastern Scania, and the so called Cambrian flint from western Sweden occur (Figure 2). There does not seem to be any predominant type of flint that would single out one geographical area as being more important than any other. There are, however, no indications so far of any flint from the island of Gotland. The Baltic island of Gotland is situated only 100 km. from the archipelago in eastern central Sweden and

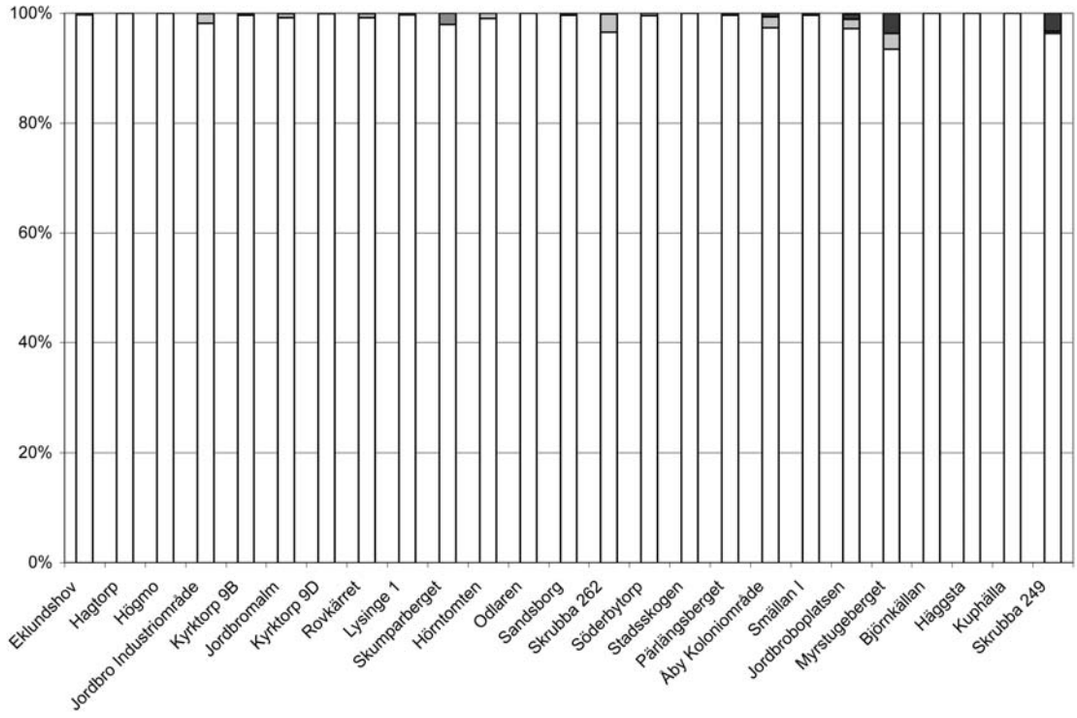

FIGURE 1. Quartz is the predominant raw material at Mesolithic sites in eastern middle Sweden, while other raw materials usually only make up for less than 5 % of the total lithic material (from Lindgren 2004:34 fig. 2:4).

Type of object	Eklundshov	Jordbro Industriområde	Kyrktorp 9B	Kyrktorp 9D	Rovkärret	Skumparberget	Jordbromalm
Microblade	17	14			1		2
Blade				2			
Scraper	2						
Tools		5					
Core fragment		1					
Microliths	1						
Flake with retouch			1				
Flake	1	9	3	1	3	1	7
Waste with retouch			1				
Waste	2	13					
Splinters	3						

FIGURE 2. Flint objects found on Mesolithic sites show a variation in types, except for microblades.

because they lived in an archipelago it is difficult to imagine that the sea voyage to Gotland would have been an obstacle for Mesolithic man. Obviously there are other reasons for not transporting flint from Gotland to the archipelago. It is, however, quite possible that contact between the two areas was sustained but that it did not materialise in the different raw materials.

If the flint comes from several different places, the types of objects are also of several types. There is a small dominance of microblades (Figure 3) but there are also occasional scrapers as well as plain flakes and pieces of waste (Figure 4). The microblades that are the most frequent type are clearly not manufactured on the site. There are no microblade cores, neither conical ones nor handle cores, and there are almost no splinters or any other waste that indicates the working of flint on these sites. On the surrounding mainland there are numerous examples of the manufacturing of microblades in flint, quartz, and quartzite. But on the sites in the archipelago there are no indications of microblade production; the microblades must have been brought there as ready-made tools (Lindgren 2003:179; 2004:71).

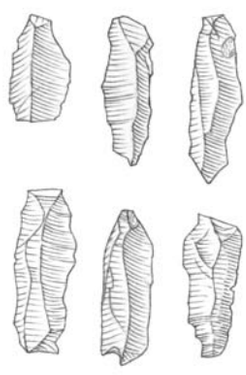

FIGURE 3. Microblade of flint found on the Mesolithic site of Eklundshov.

The microblades were no doubt brought there inserted in slotted bone points, an object that is well known from southern and western Scandinavia as well as Baltic areas (Lidén 1942; Larsson U-K 1973; Edgren 1997). Usually the slotted bone point has six or eight microblades, glued to a slotted bone point with birch tar. Finds of concentrations of microblades have been interpreted as being the remnants of slotted points where the point itself has decomposed (Larsson 1978:113). Other concentrations have been inter-

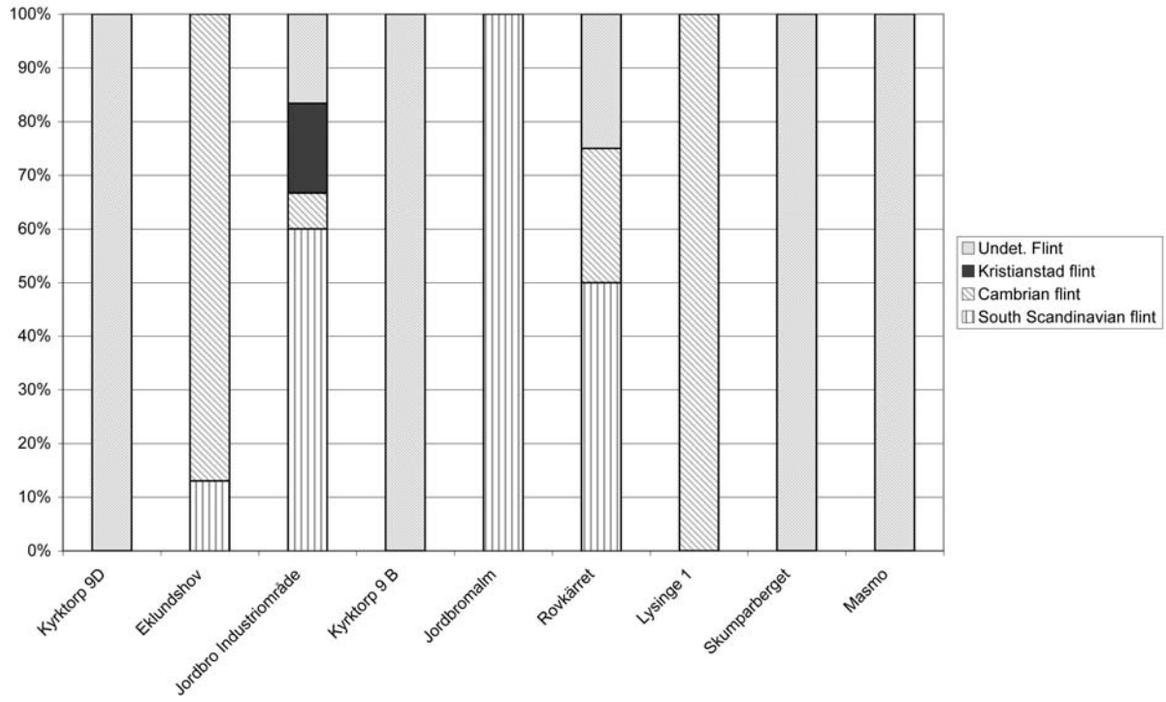

FIGURE 4. Bar chart showing the variation between different types of flint from sites dating to before 4,500 BC (from Lindgren 2004:72 fig 3:12).

preted as being actually caches of microliths, put in some sort of package and thrown into the water (Larsson 1978:70). Even though the microblades of flint found on some sites are numerically dominant, there are still so few of them that they probably come from only two or three slotted bone points.

All in all, the small amount of flint found on these sites in the archipelago does seem to be quite disparate in several ways. The flints come from several areas and are of many different types. There is actually nothing to indicate a structured, planned and organised exchange of certain objects or raw materials between different defined areas. Instead these artefacts seem to be random or coincidental in their presence. The only structures that can be seen in the occurrence of flint objects are that they do occur at every large site in the archipelago and that they were not manufactured there.

Flint and journeys

So how can these bits and pieces of microblades and flakes and scrapers be an indication of individuals being on journeys? I believe there are two arguments to be made here.

The first argument is that there is almost no system in the choice of the type of objects that are brought here from distant, flint-rich areas. There is not one type of object that dominates, not even one category, such as projectile points. Even if there is a dominance of microblades, the objects of which microblades are parts often include several microblades, which still leaves us with just a few objects. If these artefacts were brought here in an exchange system, maybe one would expect a more uniform collection of tools. These tools would then represent the mutual idea of wealth or status or whatever was the meaning of the exchange.

The second argument is that these objects are made of different types of flint and therefore must come from different areas in the south and in the west of Sweden. It is obviously not one single area that was preferred and that was the source of distribution. One should not expect such a variety of flint if it were the raw material, not the type, that was of interest. Instead one would expect flint from one area, or flint with similar colour or texture. The types of flint show as little structure as the types of objects.

So what does this lack of structure in how the flint was brought home from distant areas tell us? Basically it only tells us that people sometimes moved over large areas, by foot or canoe, and that during these journeys they also picked up, were given, took, objects exotic to them. Such exchange is not based on a need for the raw material; the purpose of the exchange was not to obtain flint. Quartz and flint are pretty much interchangeable raw material when it comes to small tools. They do in fact have very different knapping qualities but neither is better than the other when it comes to functions of cutting and scraping. The flints were not further worked at the sites in the archipelago, as is seen later in the early Neolithic when thin-butted flint axes were knapped and broken, probably in ritual contexts (Kihlstedt and Lindgren 1999; Larsson 1989). The fact that flint was exchanged was only a side effect of the social contact between groups, not the sole purpose of it. The isolated artefact seems very much like a souvenir, something to

bring home to show off: "I made it, I was there and I came home to tell about it."

But why flint? Of course several other perishable materials could also have been brought back. But no doubt bringing home objects that were familiar – a scraper, flake or a slotted point but made of a strange-looking material – certainly had an effect on those back home. In non-flintbearing areas it is easy to argue for long-ranging networks through the occurrence of non-local flint at the sites. But it is much harder to argue that this was a bilateral system with objects making their way to distant homes of strangers in both directions. Quartz, the predominant raw material in eastern central Sweden, is a common mineral found in most of Sweden. It is therefore very difficult to argue for the appearance of quartz tools in flint-rich areas as indications of distant contacts. But looking at some lists of artefacts from sites such as Ageröd I and Henninge Bro in Scania, we see the constant odd quartz flake or waste (see for example Althin 1954:75, 86; Larsson 1978:114). It is an intriguing thought that these single quartz flakes and waste are the equivalent of the single flint flakes and waste found on sites in the archipelago some 600 kilometres to the north.

But why make the journey? What are such journeys all about? Journeys are always made with a purpose, even if it is only to see what it looks like over there. Today we make journeys to Mesolithic conferences, to holiday resorts and to visit relatives, and there are several other purposes we can list. In Mesolithic time journeys to distant parts of the known world could also have been made for different reasons. To travel alone far away is an undertaking that is very personal, it concerns the individual. In some cultures travelling away and returning home is part of different rites of passage, something you do to transform from one identity to another or to meet and connect to other people. In such a case small ordinary objects can have served as symbols of the travel, evidence that you had completed a successful journey.

Whatever the reason was for such journeys, it seems to be a well-established part of Mesolithic society in the archipelago. These odd pieces of flint do occur on several sites, mainly large aggregation sites. This could be an indication that such journeys were an integrated part of social reproduction. Another reason for this is that during the late Mesolithic, when so many things seem to have changed in the society, these odd pieces of flint seem to lose their importance. These changes are connected to individual and collective ideas (Strassburg 2003:292; Nilsson Stutz 2003:367; Lindgren 2004:272). At this time the odd pieces of flint from distant areas disappear and are replaced with larger amounts of flint and also perhaps some small production of flint transverse arrowheads. Furthermore, the Cambrian flint from western Sweden also disappears from the archipelago. These changes could also be an indication that those actions for social reproduction were altered during the late Mesolithic (Lindgren 2004:262) and the importance of the personal journey was lost. But the consequences of these journeys lived on in the established networks over large parts of Sweden. These Mesolithic networks later played a crucial role in the rapid spread of the TRB culture at the end of the Mesolithic.

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GERALD MUNT & CHRISTOPHER MEIKLEJOHN

The symbiotic dog

Why is the earliest domesticated animal also important symbolically?

Introduction

THIS PAPER EXAMINES the symbolic importance of dogs, a topic that Lars Larsson has written about many times, within a framework of why the dog was domesticated in the first place. We come to this topic from differing perspectives, one of us (GM) with an interest in iconography, the other (CM) fascinated by the dog burials of South Scandinavia and questions surrounding burial ritual and status. The paper stems from a project undertaken by GM on domestication and Brian Hayden's concept of "accumulators".

Dogs are the earliest recorded domesticate. They also play an important role in human symbolism. Why is this so? Theories of dog domestication fit into two general approaches. The first emphasizes economic and social value of dogs while alive, as pets, hunters, guard-dogs and scavengers. We refer to these below as symbiotic. The second, proposed by Hayden (1990), sees their role as luxury food related to the origins of inequality. We argue below that the former best fits current evidence, and also best explains aspects of symbolism that involves the dog. We also feel that the work of Lars Larsson is critical in understanding the relationship between symbolism and burial ritual. His evidence from the Skateholm site complex shows that dog burials incorporate a symbolic language speaking to our relationship with dogs (Larsson 1990). The dog was buried "as an individual in its own right, as a companion, to a deceased person, but also as a sacrificial object, the role of which was connected with rituals relative to the refilling of the grave" (*ibid*.:159). We focus on Europe and the Near East.

The earliest domestication of the dog

Early dog domestication centres in Germany, Scandinavia, and England in Europe, and in the Levant and the Zagros in the Near East. The domestication in Europe and the Near East are generally seen as independent of each other (Crockford 2000).

To date the earliest morphologically distinguishable dog or dog-wolf comes from the classic site of Oberkassel, *c.* 14,000 bp (see Musil 2000). At least three other sites in the same general area show similar evidence over the next two millennia. These have been shown to be morphologically distinct from Upper Palaeolithic wolves (*ibid*.; see also Benecke 1987), and are associated with a broadly-based regional culture (Crockford 2000) dedicated to hunting large herd animals (Musil 2000; *contra* Tchernov and Valla 1997, and see Olsen 1985 for similar claims for the Ukraine).

In the Near East the earliest Zagros dog remains, from Palegawra Cave, date to *c.* 12,000 bp (Davis and Valla 1978; though see Dayan 1994). Other finds in this region (*e.g.* Jarmo) are much later (Clutton-Brock 1995). In the Levant the dog is domesticated by the Natufian period, initially reported by Bate at Wadi el-Mughara (Davis and Valla 1978; Clutton-Brock 1995). Evidence includes a puppy buried with a human at Mallaha. Possible earlier evidence from the Kebaran period is controversial (Dayan 1994; Tchernov and Valla 1997). Many dog burials, some associated with human burials, are from the Natufian and date from *c.* 12,500 to 10,000 bp, a period that saw the transition to full sedentism. Tchernov and Valla (1997) argue for a commensal relationship between dog and man resulting from sedentism. The Natufian evidence from sites such as Mallaha and Hayonim argues for association of dogs with status or ritual, and Crockford (2000:296) suggests that "ritual" may have been one of the dog's early roles.

Theories for dog domestication

As noted above we separate ideas surrounding dog domestication into two primary groups. Most recently Brian Hayden has placed dogs within a framework of agricultural development tied to the rise of "accumulators" (1990; 2000), a model that suggests that early domesticates were used as luxury food in ritual feasting. Focus is on the animal in death. Other theories focus on the animal in life, and included several themes; the role of dog as hunting companion (see Musil 1984; 2000), as pet (proposed by Galton in the 19th century; see Serpell 1989), and in a number of related symbiotic roles between dog and human communities (see *e.g.* Clutton-Brock 1995). For the last, Olsen (2000) lists "dietary, fur-bearing, companionship, hunting, herding, security (guard dogs for humans or herds and watch dogs) haulage (by sled and travois) and military".

Which model does the evidence support? We focus on archaeological rather than ethnographic data for the simple reason that dogs can be demonstrated ethnographically to have had so many uses. We examined data from about 25 sites between 14,000 and 5,000 bp and begin with Hayden's ideas.

The luxury food hypothesis

Hayden's model (1990) came from dissatisfaction with economic arguments for agricultural origins, especially those related to scarcity. Perceived problems included lack of evidence. He turned the economic model on its head, arguing for the initiation of agriculture by rising elites associated with emerging complex hunter-gatherers. The driving force was surplus rather than scarcity. Agricultural products were chosen for reasons related to the needs of the elite and for the expansion and maintenance of power; "the first domesticates as prestige items used by accumulators … explains the otherwise mystifying nature of many of the first domesticates, including dogs, gourds, chili peppers and avocados" (Hayden 1990:31).

This hypothesis requires establishment of two points, that dogs were eaten and that they were a specialty food. Ethnographic examples exist for dogs as food, and dogs have been eaten as famine food. Archaeological evidence for dogs being eaten includes cut marks, burning and disarticulation to access marrow. We find no evidence for this is in the literature for initial European and Near Eastern sites. Though absence of evidence is a difficult starting point, it does provide an entry point for discussion.

To prove that dogs were raised for luxury food is harder to demonstrate than that they were eaten. Other situations where domesticated animals are seen as luxury foods have used the age of the animals eaten (*e.g.* Llamas; Miller and Burger 1995). Another line of evidence might be the size or appearance of the dogs, usually different in those raised for food than in those used as guard dogs or for hunting. There might also be evidence of dogs related to feasting or ritual centres or hearths.

The earliest evidence for dogs as food in Europe and the Near East postdates 10,000 bp. In Europe these date to the Mesolithic. A small dog from Saint-Thibaud-de-Couz in the French Alps has bite marks on the humerus (Chaix 2000), but with no apparent comment on their source. Evidence has been presented for Mesolithic Denmark (Degerbol 1961) and for Vlasac in Serbia (Bokonyi 1975), where bones were broken for marrow. These cases are scattered, not very compelling, and are long after initial domestication.

In the Near East dogs do not appear to have been eaten in the Natufian (Tchernov and Valla 1997) or in Iraqi Khuzistan (Hole *et al*. 1969). In the latter case this is despite the fact that wolf was eaten prior to domestication and that fox was eaten throughout occupation of the sites.

Hayden's model also requires evidence that dogs were raised for food. The dog at St.-Thibault-de-Couz (Chaix 2000) was 10 months old, an age consistent with use for prestige food. However, presence of pathology argues for culling as much as for harvesting. Moreover, Chaix argues against inequality and accumulation for both the site and context. For Denmark, Degerbol (1961) based his assumption that dogs were being eaten on cut marks, with the bones too fragmentary for further analysis. Moreover, the numbers of bones with cut marks might support a model that dogs were raised for food. This example is, however, unique. Bokonyi (1975) did provide evidence for marrow extraction at Vlasac. However, he also noted that the dogs were designed for running, a morphology different than in dogs raised for food. The mental image one gets is more like a Saluki than a New Guinea food dog. We thus found minimal evidence for eating of dogs in either early Europe or the Near East.

The hunting hypothesis

The most often discussed symbiotic model sees the dog as hunting companion. Musil (1984; 2000) tied domestication of wolves to hunting horses in the Magdalenian, based on the German sites of Kniegrotte, Teufelsbrucke and Oelknitz. Later findings at a number of sites in the same area have reinforced this position. Horses, in fact, increase in importance throughout the Magdalenian period at Kniegrotte, within a time frame of 13–12,000 bp (*ibid.*). Similar models are developed by Clutton-Brock (1995) for the Natufian with the combination of microblades and dogs seen as increasing hunting efficiency. The subsequent efficiency then contributed to the increasing scarcity of herd mammals.

At Vlasac Bokonyi (1975) argued for dog morphology conducive to running in a hunting and fishing economy. Evidence from Seamer Carr in England (Clutton-Brock and Noe-Nygaard 1990) was also argued as related to a site highly dependent on hunting. A further source of information occurs in rock and wall art depicting hunting with dogs. Examples have been described from Çatalhöyuk (Fairservis 1975) and for the Tassili-n-Ajjer in North Africa, though the latter date is unclear (Thurston 1996).

Evidence for dogs in hunting is more compelling than is the case for their use as luxury food. However, there is little evidence for selective breeding for hunting. The dog in Çatalhöyuk art is massively built, as are the dogs described from Jarmo (Lawrence and Reed 1983) and those in both Jarmo and Khuzistan figurines (Hole *et al.* 1969; Morales 1983). By 5,000 bp Saluki-like dogs are present in Khuzistan (Hole *et al*. 1969).

The pet hypothesis

Also of a symbiotic nature is the relationship between master and pet. Serpell (1989) has surveyed ethnographic information on pets in hunting and gathering and simple agricultural societies. Dogs are universal, and present regardless of economic function. They are treated with affection and with a general refusal to eat them. Serpell notes, however, that the prohibition against eating pets does not prevent the species from developing a commercial utility as an item of food. He argues that pet keeping was widespread during the Palaeolithic and that current domestic species probably began as pets. Pets generally met two conditions, that they

were able to breed in captivity and that they developed an economic value.

Most evidence is ethnographic. Archaeological evidence is limited and the strongest argument comes from dogs buried with presumed owners. Many later burials with dogs appear to be related to ritual (see further below). However at Oberkassel and Mallaha dogs are merely buried with humans, consistent with simple pet keeping. Examples also occur in the Scandinavian Mesolithic (Larsson 1990; Nielsen and Brinch Petersen 1993).

The multi-causal/guard dog/scavenger hypothesis

We finally look at the more diffuse symbiosis involved between dogs, human settlements and their inhabitants. Clutton-Brock (1989:2) spoke early for multi-causality, suggesting that "[t]he wolf was the first animal to be domesticated … probably not for its meat but either as object of affection, as a helper in the hunt, or as a useful scavenger of human debris – most likely … for all three reasons". Previously she had described human/wolf affinity (Clutton-Brock 1981), both being social hunters of large herd animals in the Upper Pleistocene. Such a relationship allowed for communication between species based on body language. The wolf would adopt humans as their pack. She has also argued for a situation where "family groups of semi-tame wolves … lived by scavenging the debris from around human hunting camps" (Clutton-Brock 2000:5). Tchernov and Valla (1997) argue in similar vein for the Natufian. Wolves established commensal relationships with emerging sedentary communities, and puppies became the progenitors of the dog-wolf.

Clutton-Brock (1981:39) also saw barking as selected early in the domestication process, as it is "never well developed in any canine living wild" (the only dog that doesn't bark readily is the Basenji). This may be the oldest evidence of selective breeding. The rationale is for a barking watchdog (see also Olsen 1985:17–19). Humans came to value wolves growling at intruders from positions outside the camp. There are also literary references, and an Indian folktale has humans attracted to the dog because of its bark (Beck *et al.* 1987).

If wolves were initially attracted to settlements as scavengers, territoriality would have acted in favour of humans. Olsen (1985) saw complimentarity between the role of guard dog and scavenger. Wolves attracted as scavengers would have also acted as a warning device. This combination also shows up strongly in Egyptian mythology where the jackal becomes a God associated with the dead. Anubis and Khentamenty both fill this role. It is of interest here that the jackal was worshipped though never domesticated. We see such a symbiotic origin as most clearly providing a framework wherein dog burials take on a symbolic or ritual nature.

The symbiotic dog and ritual burial

To take this discussion from the origin of dogs and their burial by humans to why the dog becomes a focal point for symbolism and ritual we use three archaeological sites. We have already noted Hayonim and Skateholm, sites with dogs but prior to other domestication. We add Botai in Kazakhatan as a Neolithic site and culture with other domesticates.

The earliest clearly ritualized dog grave, *c.* 11,000 bp and in late Natufian context, is from Hayonim terrace (Tchernov and Valla 1997), associated with evidence of inequality and trade. It contains three humans and two dogs, with the dogs buried first, limestone blocks placed above and tortoise shells beside (the tortoise is, interestingly, associated with the underworld in Vedic Literature: viz Keith 1925). Two humans were placed above them, followed by another layer. Finally a third human was placed on top, together with gazelle horn cores, and covered with stone. This "can safely be construed as a rite" (Tchernov and Valla 1997:72).

Larsson's work at Skateholm site (1984; 1989; 2004) has highlighted the role of dogs in Mesolithic southern Scandinavia between 5,500 and 7,000 bp. Most striking are cases with dogs buried alone, but accorded great ceremony. At Skateholm II (Larsson 1989) a dog strewn with red ochre has a "single flint flake in a position that suggests that it was deliberately deposited". A more striking case (*ibid.*) has a dog buried with "a red deer antler, … three flint blades [and] … an antler hammer", objects usually found in male graves. Larsson views the latter buried as a proxy for its master. Extension from this might see the dog honoured for attributes associated with warrior or guardian.

At the later Skateholm I (Larsson 1984) there is a clear sense that the dog filled multiple roles. Eight dogs are buried in separate graves, none "related spatially to any human graves" (Larsson 1989) and all at the site periphery. Six of eight are at the extreme south of the site, the other two in the southern half but on the east side. The peripheral location, the fact they were single burials, and the lack of relationship to human graves differ from the pattern at Skateholm II. It is not a huge leap to hypothesize that these dogs were seen as providing real or symbolic protection to the encampment. It is interesting to note the combination of scavenging/guarding also evident in the Egyptian jackal-god (see above).

Similar conclusions have been made about dog burials at Botai, a steppe Neolithic culture focused on hunting horses and dated to *c.* 5,600 bp (Olsen 2000). They were buried "in distinct pits, either in the floors of houses, in niches in the walls, (foundation pits), or just outside house walls" (*ibid.*: 75). Many pits were on the west side of the huts, some with grave goods. Olsen suggested a ritual use associated with the dog's guardian role and saw a precursor to the dogs of Yama in the Rig-Veda.

While realizing dangers in extrapolation we suggest that European and Near Eastern mythology and astronomy

show fascination with the relationship between dogs and death, but not in the context of food. In Near Eastern religions the dog was associated with the Lord of Death (*e.g.* Anubis, Cerberus, Khentamenty, Osiris: see Keith 1925; Kees 1961; Olsen 2000) or with the crone aspect of the Goddess (*e.g.* Isis, Sarama, Hecate: see Keith 1925; Kees 1961; Allen 1963; Ghosh 1983). Examples occur in Egypt, Greece and the Rig Veda. Nordic tales have a dog as guide in the underworld (Davidson 1943). These myths and stories, like the burials at Hayonim and Skateholm, argue that a ritual role for the dog has ancient origins. In Western Astronomy the dog and the stars Sirius and Procyon have a long history of association (see *e.g.* Allen 1963). Antiquity of this relationship is suggested by the fact that Sirius is the brightest known star; while in Chinese astronomy a constellation containing Sirius is called the celestial Jackal while a nearby one is the celestial Dog (Stahl 1988).

Conclusion

We have argued for a model stemming from symbiosis for both the origin of the domestic dog and its symbolic place. Hayden's competitive feasting model fails to explain current evidence. Lars Larsson's work at Skateholm and beyond reinforces the hypothesis of symbiotic multi-causality and show how relationship with the dog while alive can be transferred to ritual in death.

Evidence from Skateholm and elsewhere shows incorporation of the dog into ideology. The dog's value in life was clearly symbolic, possibly to later become the guardian of the dead. Whether Skateholm and Hayonim are early examples of this cannot be fully determined. As Larsson (1990:153) says "[t]he symbolic language expressed in the burial custom may to a greater degree than that which was current and intelligible, have contained elements whose implications were only vaguely understood or which have, in the course of time, received a different meaning than that which was originally intended". The impact that the Mesolithic had on later societies is just beginning to be understood.

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ANNE BIRGITTE GEBAUER & T. DOUGLAS PRICE

Smakkerup Huse: A middle and late Ertebølle site on northwest Zealand

WE WOULD LIKE to begin this paper with a big congratulation to Lars Larsson for his contributions to Mesolithic Archaeology. Doug first met Lars in 1972 when he visited our Mesolithic excavation in the Netherlands on his honeymoon. It was a good indication of his dedication. Over the last 35 years we have visited each other many times, participated together in a number of conferences, and shared an important friendship. Lars has pushed his studies into a number of different areas but in his heart he remains a Mesolithic person and this paper is dedicated to that part of him. Here we report our excavation at Smakkerup Huse, a middle and late Ertebølle site, with well preserved organic remains and even some Mesolithic art, certainly dear to that part of Lars.

Smakkerup Huse was excavated as part of the Saltbæk Vig Project intended to investigate the introduction of farming to Scandinavia through a regional study of the Stone Age habitation around the inlet of Saltbæk Vig. The project was done in collaboration between Kalundborg and Omegns Museum and the University of Wisconsin-Madison (Hede 1999, 2003; Larsen 2000; Price *et al.* 2003, Price and Gebauer 2005).

Smakkerup Huse is located at the inlet of Saltbæk Vig on Northwest Zealand just north of Kalundborg (Figure 1). The prehistoric site was located directly on the coastline at the bottom of the Saltbæk Vig at the junction of the Bregninge River and the inlet. Today the water level in the inlet is kept artificially at 1.5 m. below modern sea level making it possible to excavate the site on dry land. This area would have been a small island during the high sea levels of the High/Late Atlantic and Subboreal transgressions. The island was about 1 square kilometre in size as defined by the 2.5 m. elevation curve.

During four field seasons in 1989 and 1995–97 the prehistoric coastline was explored over a stretch of about 40 metres. This northwest facing coast was heavily exposed to erosion by the sea, and the deposits on land such as living area, kitchen midden and burials etc. were eroded by the Subboreal transgression. Only the off-shore activities were preserved including an *in situ* fishing and boat landing area from middle Ertebølle, as well as discarded waste, and material washed out from the cultural layers on land dating from both middle and late Ertebølle. A sheltered area in the lee of the east side of a small point on the shoreline protected the in situ fishing area.

The sedimentary sequence at Smakkerup Huse displayed a complicated interaction of transgressions and regressions by the sea as well as the effects of the isostatic rebound of the land following the last glaciation (Figure 2). Three episodes of transgression were represented: High/Late Atlantic, and an early and a later highstand during the Subboreal transgression (Hede 2003; Price *et al.* 2003; Price and Gebauer 2005). Three horizons of finds were distinguished at Smakkerup Huse. In general 12–16 % of the finds derive from middle Ertebølle (layer 27/33), the bulk of the cultural remains come from late Ertebølle (layer 5/26, 5G/17). The mixed deposits from the Subboreal (Layer 3) include material eroded from settlements through middle and late Ertebølle as well as the early Subboreal representing 20 % of the flint. Organic remains such as fauna, fish bones, nutshells, and wooden objects were not preserved in the mixed Subboreal layer.

The intact fishing area and boat landing was found in the first marine horizon related to the High Atlantic transgression and regression and the middle Ertebølle habitation (Figure 3, layer 27/33). A scattered pavement of cobble stones extended 3–4 m. along the coast and the same distance from the shore. The most landwards distribution of the marine gyttja is used as proxy for the coastline. In addition four large flat stone slabs and about ten smaller flat stones were placed as stepping stones to facilitate traffic 6–7 m. from the shore through the reeds to open water. Similar stone pavements have been found at other Ertebølle sites like Tybrind and Bloksbjerg (Andersen 1985; Westerby 1927). A wreck of a dugout canoe with a fireplace was lying at the end of stone filled area perhaps indicating open water. Mainly within the cobble stone area a total of 48 bone awls were found, some stuck between the stones of the pavement. The bone awls were probably used as spear tips for fishing. No leisters have been found at this site. A wicker fragment might be part of a fish trap. The wicker was made using heather or willow in the same double plaiting-single twig pattern as another piece found at Tågerup (Karsten and Knarrström 2001:289). Wooden stakes made of hazel were found both in vertical and horizontal position (17 versus 25 stakes). The hazel stakes might have been used for stationary fish traps like at Halskov (Pedersen 1997:124), or for tying smaller fish traps or canoes but the position of the stakes did not reveal an obvious pattern. The stakes were made from coppiced hazel. The growth rings indicate that

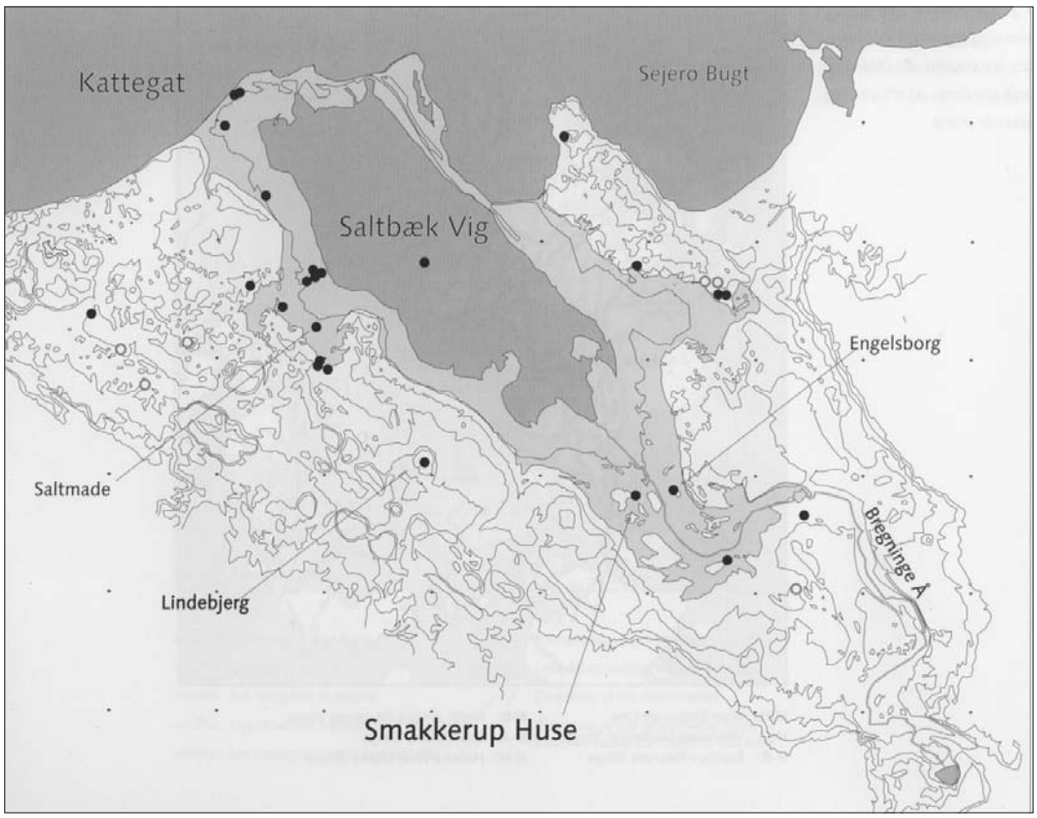

FIGURE 1. Saltbæk Vig area with the location of Smakkerup Huse, other Ertebølle sites and the early Neolithic Lindebjerg site (black dots). Ertebølle stray finds (open circles). Grid units are one square kilometre.

most of the stakes were cut in their 7th year when the diameter was around 3 cm. The cutting took place both in spring and in the fall. This distinct harvesting pattern shows evidence of active forest management in the middle EB as seen at Halskov (Christensen 1997:156).

Other cultural remains found in this layer include discarded waste and washed out materials from the settlement on land. A large pair of red deer antler attached to the skullcap was located next to a stepping stone. Several points had been removed by cutting or broken off. The antler rack might have been placed here to preserve it for the future or it might have been considered as garbage and tossed out after the best parts had been used. An antler axe with shaft hole near the base of the older Ertebølle type (Andersen 1998) also belongs to this horizon together with a pointed antler weapon with a shaft hole, an antler retouchoir, a cut piece of antler and one of bone, a bird bone needle, and a hairpin, 4 bone points and 2 fish hooks. Closest to the coast

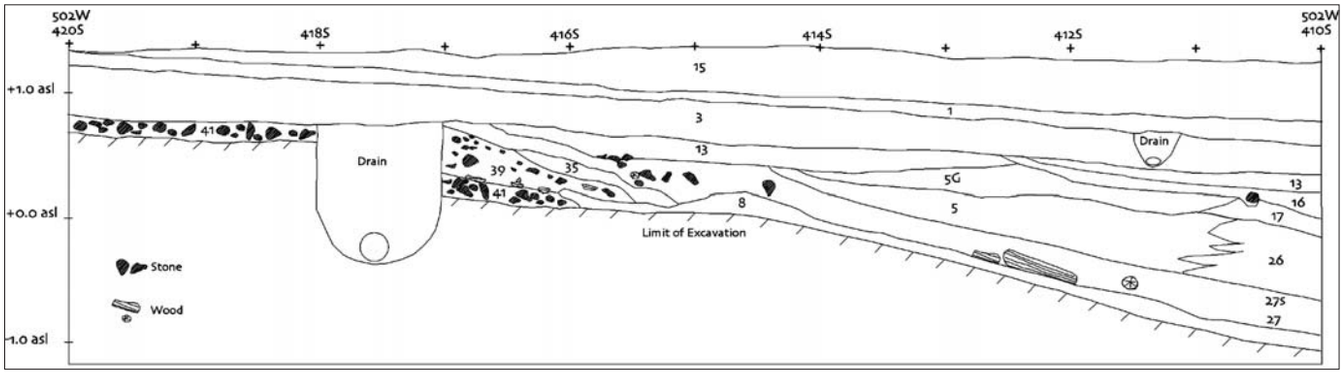

FIGURE 2. Section showing the west wall of the fishing area (Figure 3) at Smakkerup Huse. 41: Glacial beach ridge. 8: Brown freshwater peat 5,430 BC 39: Grey sand with gravel. High Atlantic transgression. 35: Grey sand. High Atlantic transgression. Drowned tree trunk 5,060 BC 33/27: High Atlantic marine gyttja and shell layer from middle Ertebølle with in situ fishing area. Dugout canoe 5,130 BC, bone point 4,990 BC, burned nutshell 4,940 BC 5/26; Sand bar (5) seawards grading into sandy shell gyttja (26), late Ertebølle. 5G/17: Transgressive surface layer of more coarse-grained sediments similar to layer 5/26 from late Ertebølle, dog bones 4,230–4,000 BC, cow bones 3,950–3,700 BC 16: Brown sandy gyttja, early Subboreal littorina transgression. 13: Greyish brown gyttja mixed with sand, early Subboreal transgression at a time when the isostatic uplift outpaced the sea level rise. 3: Sand including increasing amounts of gravel, pebbles and boulders landwards. Transgressive surface of erosion deposited during renewed sea level rise during the Subboreal transgression. Early Neolithic. 1: Plough zone. 15: Railroad bed.

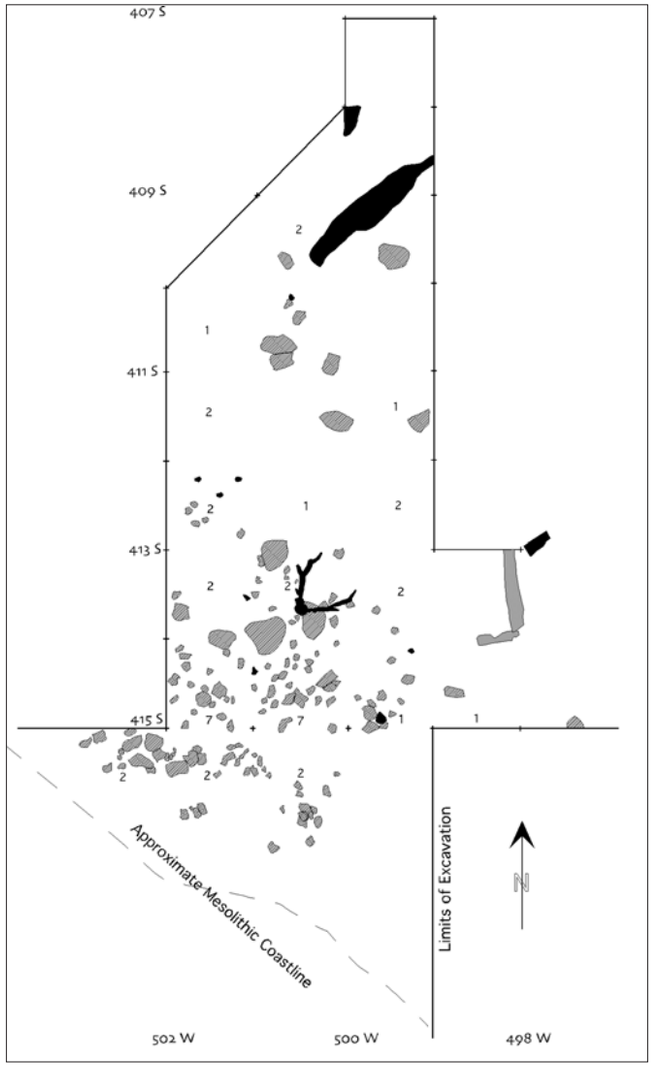

FIGURE 3. *In situ* fishing and boat landing area with stones (hatched), fragments of dugout canoes (black), an antler rack (black) and slabs of bark (grey). Numbers indicate bone points per square metre. Grid unit one square metre.

in a zone about 1.0–1.5 m. wide the sediments were almost completely organic and packed with wood chips, probably from production of canoes, burned and worked pieces of wood, wooden sticks, twigs and roots, pieces of bark, nutshells and cooking stones. Among the washed out materials retrieved further from the shore were two sheets of bark, perhaps intended as floor cover, similar to what was found at Lystrup Enge (Andersen 1996). Several pieces of tree fungus appeared; one fragment had been worked to felt-like appearance. Most cultural remains were recovered within 5 m. from the shoreline; beyond this distance only a few wooden stakes and boat fragments were found.

The flint found at Smakkerup Huse comprised 26,693 pieces including unretouched pieces, cores and burned pieces etc.; only 2 % of the flint or 588 pieces were retouched (Price and Gebauer 2005:130). Projectile points were by far the most common type of retouched flint (55.8 %), followed by axes (9.2 %), retouched blades (17.5 %) and retouched flakes (8.8 %) Other tool types like scrapers, drills and burins only made up between 6–10 % of the retouched flint in the individual layers. The proportion of axe types varied from 71 % core axes and 29 % flake axes in Middle Ertebølle to 22 % core axes and 78 % flake axes in late Ertebølle. Specialized core axes are present in both horizons, but those from the middle Ertebølle period derive from the western end of the site that might be somewhat younger than the deposits at the eastern end. Projectile point types showed little change over time. The middle Ertebølle type, the Stationsvej type, was dominant throughout the sequence constituting 50–79 % of the points in the middle and late Ertebølle layers as well as the mixed deposits from the final Subboreal layer (Petersen 1984). Between 2–7 % of arrowheads of the Trylleskov type was present throughout the sequence. The latest type, the Ålekistebro type, was absent in the middle Ertebølle layers and made up 10 % and 27 % of the arrowheads in the late Ertebølle and the final Subboreal layers respectively. There is no evidence of polished flint or other flint artefacts typical of Funnel Beaker below the mixed Subboreal layer.

The pottery in the middle and late Ertebølle layers includes 17 sherds: one from an oval lamp, 8 sherds belong to a small cup with a pointed bottom typical of Ertebølle, a low neck fragment with a splayed rim is also typical Ertebølle, and some side sherds. None of the sherds are particularly thick-walled; four sherds are less than 1 cm. thick and could be interpreted as Funnel Beaker sherds (Gebauer 1995; Nielsen 1998). However, thin-walled late Ertebølle pottery has also been found at Ringkloster (Andersen 1998).

Except for the appearance of cattle in the late Ertebølle layers, the fauna reveals no substantive evidence of changes in the economy through time at Smakkerup. The three big game animals: red deer, roe deer and wild boar make up 95 % and 93 % respectively in the middle and late Ertebølle layers. Fur-bearing animals might be slightly more important in the middle Ertebølle; while more species are represented in the much larger bone material from late Ertebølle (12 versus 18 species).

Marine foods are important in both periods. Evidence for fishing is provided by the fishing area mentioned above as well as fish hooks, fish bones, bone awls, vertical wooden stakes, canoe fragments and by a late Ertebølle, fish eating dog with a stable carbon isotope value – 10.2 per mille. Fishing was dominated by gadids (70 %) and flatfish (18 %); other species included garfish (7 %), eel (2 %) and miscellaneous (3 %), in all 12 species. Interestingly only 2 % of the fish are freshwater fish in spite of the location of the site at a river mouth. The species and the small size indicate near shore fishing in shallow water during the summer months, perhaps using stationary fish traps (Enghoff 1986). Big individuals of cod and whiting could be caught using line and hook. Hunting of marine mammals and birds appear to be limited. Shellfish collection took place all along. A number of burned oyster shells are evidence of use for human con-

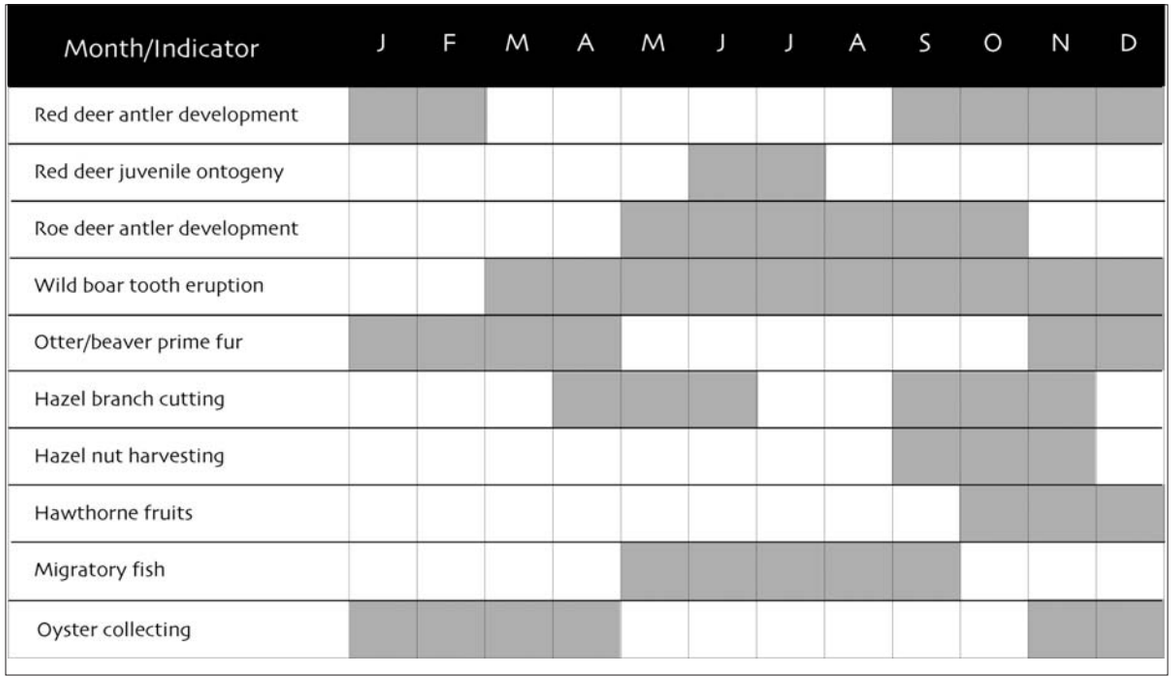

FIGURE 4. Seasonal indicators at the site of Smakkerup Huse.

sumption probably during the cooler months of the year (Milner 2002). Other molluscs like common periwinkle, cockle, and blue mussel were likely eaten, but there is no direct evidence to prove it. A regular shell midden was not found but could have been eroded.

Plant materials include both edible food and raw materials that could be used for medicinal or practical purposes. Roasting or charring show evidence of human use in some cases (hazelnuts, acorn, tubers, common reed, horse tail, sticky willy, rush and lime), while uncharred plant remains can only be considered potentially useful (raspberry, apple, white goosefoot, curly duck, nettle, white hawthorn and ditch-grass). Further testimony to the importance of plant resources was provided by the find of a digging stick similar to the one from Lindholm in the late Ertebølle layers (Dencker 1997:90). The active forest management and systematic harvest of hazel stakes should also be considered in this context.

Two species of domesticated animals were found, *Canis familiaris* and *Bos domesticus*. Dogs were found in both middle and late Ertebølle layers. Cattle were found in the late Ertebølle layers dating from 3,930 and 3,920 B C. The five cow bones could be from the same individual but come from different parts of the animal. Aurochs had long been extinct on Zealand during the late Mesolithic; these bones can only derive from domesticated animals. The cattle were slaughtered at an adult age suggesting that pasture and fodder was available and providing evidence of herding and the beginning of animal husbandry in an Ertebølle context. Cattle bones have been found at a number other Ertebølle sites of such as Bloksbjerg (Westerby 1927), Dyrholm (Mathiassen *et al.* 1942), Norsminde (Andersen 1991), Ølby Lyng (Petersen 1970). A contemporary find of cattle at Åkonge has been placed in the earliest Funnel Beaker (Fischer 2002). Interestingly the early Neolithic settlement and long barrow at Lindebjerg dated at 3,960–3,660 or 3,790 cal. BC is located only 4–5 km. or an hour on foot from Smakkerup Huse (Figure 1) (Liversage 1981; Fischer 2002:366).

The presence of several domestic cow bones in an Ertebølle context suggest a gradual influx of new elements where the flint technology is the last domain to change. The early domesticates are predated by the introduction of pottery and import of several types of Neolithic copper and ground stone axes from Continental Europe (Klassen 2002). It should come as no surprise that other elements of Neolithic life could be introduced piecemeal, including the domesticates themselves. A similar scenario is reflected in the Mesolithic-Neolithic transition in Schleswig-Holstein (Hartz *et al.* 2002:336). Universally the Neolithic is defined by the presence of domesticated animals and/or cereals. The upper horizon of Smakkerup Huse should be considered Neolithic no matter if the material culture reflects Ertebølle tradition.

The seasonal indicators from various animals and other resources indicate an all year round presence at Smakkerup (Figure 4). Unshed red deer antler indicates that the animal was killed between September and February. Unshed roe deer antler indicates the period of May–November. Red deer calves are born early June and could be hunted in July and August. The birthing time of wild boar in the past is unknown, but spring seems likely, which means piglets could be slaughtered from March to December; the same period as the wild boar tooth eruption took place. Fur animals would primarily be hunted in the winter. The growth

rings on the hazel stakes indicate that some were cut in spring and others in the fall. Hazelnuts and hawthorn were collected in the fall. The eels were present in the summer and early fall; probably most of the fishing took place in summer. Oysters are best late winter and early spring before they spawn.

The diversity of the subsistence base shows that this was not a specialized seasonal habitation, but rather a more permanent, year-round residence for a group of people. If sedentism is defined as a place where at least a part of the population remains the entire year, this seems like the most likely scenario at Smakkerup Huse. Examples of year-round settlements include other sites like Bjørnsholm (Andersen 1993) and Fiskerhuset (Johansson 1999). The site seems to fit the concept of a large permanent habitation located as the main settlement in a fjord during a considerable period of time. There was no apparent break in the presence of cultural remains throughout the sequence between middle and late Ertebølle deposits. However, the focus of the habitation might have moved along the coast or between islands at the river mouth. A minor move toward west seems to take place in the middle Ertebølle period where younger elements like specialized core axes and a lamp sherd dated to 4,466 BC appeared in the western end of the investigated area. Likewise the settlement might have relocated to another island in the Bregninge Å delta for a period of time or spun off a satellite settlement here at Engelsborg (Figure 1). At Engelsborg a late Ertebølle midden was found without shells but including fireplaces, a number of specialized core axes and a few Ertebølle pot sherds. The outcast layer was gone, no organic material preserved, and no material was available for a carbon 14 dating. Similar longevity of Ertebølle habitations at favourable locations but with linear moves along the coast or among islands in the same lagoon is seen at sites like Bjørnsholm (Andersen 1993:43) and at Skateholm (Larsson 1989:370).

Finally there is the painted pebble (Figure 5). A white quartzite pebble, the size and shape of a medium size potato, painted with a design of curvilinear bands and three dots, two at the wide end and one dot at the other end. The paint contained charcoal but the original colour is not known. The closest parallel in terms of painted stones are the Azilian pebbles (Straus 1985). However, the Azilian pebbles are painted in red colour on dark, flat pebbles; and the Azilian pebbles are found in S. Germany and France at least 3,000 years earlier than the Smakkerup pebble. In terms of contemporary art, perhaps the closest parallel are the much more sophisticated designs on some of the paddle oars found at Tybrind Vig (Andersen 1984, 1987). The similarities include a composition that covers the entire surface of the object, the solid curvilinear bands, and the almost symmetric design. In contrast the designs on other decorated objects of bone and antler and a couple of flint nodules are incised, more geometric, and in some cases the decoration was added sequentially over a period of time.

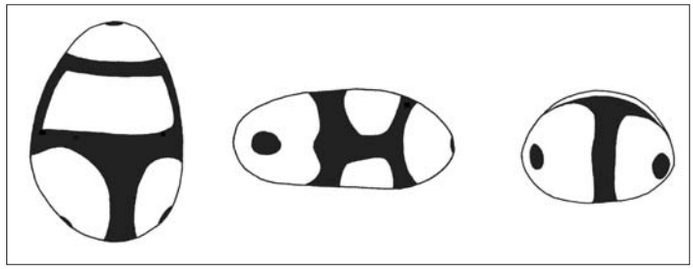

FIGURE 5. Painted pebble from Smakkerup Huse emphasizing the black lines and dots. Length: 77 mm. Drawing by Kurt Pedersen.

The painted pebble was found at such a seawards position, 10–11 m. from the shore, that current or wave action of the sea could not have deposited the stone. The stone must either have been thrown out from the settlement or dropped from a boat either by accident or by choice. Also the colour pigment could only have been preserved if the stone was embedded immediately in the dense marine shell gyttja, which provided a waterlogged, anoxic, and low energy environment. L. Larsson (2000:36) has suggested that ornamented objects were deposited in the vicinity of, but at the same time outside of the settlement when the use of the artefact was to be terminated, but it was still too powerful to be regarded as ordinary refuse. The painted pebble at Smakkerup Huse may have been deposited in a similar intentional manner possibly together with an amber pendant found close by.

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CATRIONA PICKARD & CLIVE BONSALL

Late Mesolithic coastal fishing practices

The evidence from Tybrind Vig, Denmark

Introduction

TYBRIND VIG, OFF the island of Fyn, Denmark, is justifiably one of the most famous archaeological sites in Europe. Discovered by recreational divers in 1975 and excavated between 1978 and 1988 by a team led by Søren Andersen, it was the first submerged Mesolithic settlement to be extensively and systematically investigated.

Relative sea level has been rising gradually in this part of Denmark since the Mesolithic in response to isostatic crustal subsidence, and the site now lies under 2–3 m. of water and *c.* 250m from the present shoreline. The wet conditions and the stabilising effects of eelgrass led to the preservation of an unparalleled array of archaeological materials including wooden artefacts and textiles, providing a unique insight into the activities of a coastal hunter-gatherer community. A full report of the Tybrind Vig excavations has yet to be published, but the main findings have been presented in articles by Andersen (1980, 1981, 1983, 1984, 1985, 1987a, 1987b, 1995) and others (Trolle-Lassen 1984, 1990; Malm 1995; Kubiak-Martens 1999).

Today, Tybrind Vig (*vig* = inlet or cove) is a small bay on the west coast of Fyn. At the time of the Mesolithic occupation it was a sheltered inlet or lagoon, fringed by reeds and protected from the more open marine environment of the Lillebælt by a reef or barrier island. There was a connection with the sea in the northwest and another (probably) in the southwest. The influx of freshwater from streams draining the surrounding slopes likely resulted in brackish or estuarine conditions in the lagoon itself (Figure 1).

A number of Mesolithic sites have been found around the Tybrind Vig lagoon, all belonging to the Ertebølle culture (Albrectsen 1960). The site investigated by Andersen was situated close to the northern opening of the lagoon, on a spit at the mouth of a small river. With the exception of a small area in the northwestern part of the site little remained of the actual settlement, probably due to erosion of the Mesolithic land surface when the area was flooded by the sea. The majority of the archaeological finds occurred in waterlain sediments (mainly organic-rich mud or *gyttja*) along the former shoreline. The main concentration of material occupied an area about 50m long by 10m wide, assumed to have been adjacent to the former settlement. At the time of the Mesolithic occupation this area is thought to have lain largely within the zone of reedswamp along the shore, but extending into the open water beyond. Although sometimes referred to as a "refuse zone" or "layer" (cf. Malm 1995), the nature of the finds suggested to Andersen that this was not simply an area where rubbish from the settlement had ended up, but one in which fishing activities were also conducted (Andersen 1985:55).

Many characteristic Ertebølle artefacts were found at Tybrind Vig, including pottery in the upper part of the gyttja layer. Radiocarbon and stratigraphic evidence suggest there was activity on the site at intervals throughout the Ertebølle period, *c.* 6,600–5,200 BP (5,500–4,000 cal. BC). What sets Tybrind Vig apart from other Ertebølle sites is the range of evidence it provides of coastal fishing practices during the Late Mesolithic. Fish bones were abundant and an array of fishing equipment and fishing-related artefacts was recovered. Preliminary reports of the Tybrind Vig excavations (Trolle-Lassen 1984; Andersen 1985, 1987a) describe these finds and offer some interpretations of the evidence, but to date there has been no in-depth analysis of fishing patterns or the strategies employed. The purpose of the present paper is to examine this aspect of the site, based on the published data (Figure 2).

The Tybrind Vig fishbone assemblage

A list of the fish species identified at Tybrind Vig is given in Figure 2. The preliminary accounts of the excavations provide no details of the number of identifiable specimens (NISP) or minimum number of individuals (MNI) of each species, but do give qualitative information on relative abundance. Cod (*Gadus morhua*) was dominant, with flatfish (brill [*Scophthalmus rhombus*], dab [*Limanda limanda*] and plaice/flounder [*Pleuronectes platessa*/*Platichthys flesus*]), spurdog (*Squalus acanthias*), and three-spined stickleback (*Gasterosteus aculeatus*) described as common (Trolle-Lassen 1984).

A number of taphonomic factors, including butchery practices, selective preservation and recovery techniques, may influence the composition of a fish bone assemblage. For present purposes, however, it is assumed that these have not seriously affected the Tybrind Vig assemblage, and that gadids, flatfish and various fatty species were the focus of fishing activities at the site.

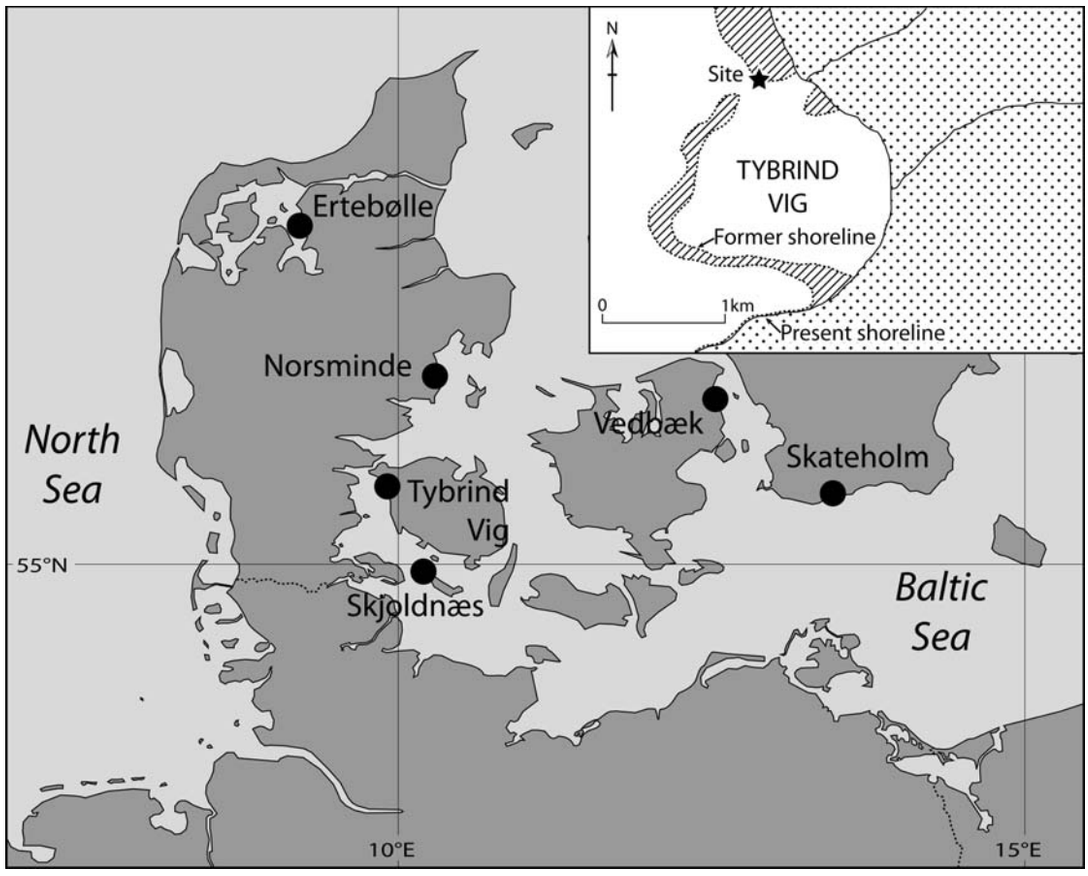

FIGURE 1. Location of Tybrind Vig and other Late Mesolithic sites mentioned in the text (after Andersen 1987a; Kubiak-Martens 1999).

Fishing equipment

The archaeological correlates of the four main types of fishing gear used in traditional fisheries[1] – traps/weirs, nets, spears, and hooks – have all been recovered from Tybrind Vig. Made predominantly from organic materials, which would not have survived on the majority of terrestrial sites, they indicate the range of gear operated from a single site for subsistence fishing in the Late Mesolithic.

Traps and weirs

In this article a distinction is made between fishing traps and weirs. A "trap" is a small, portable device, while the term "weir" refers to a larger, fixed structure designed to impound fish. Two types of trap have been identified at Tybrind Vig (Andersen 1995:55). The first is a round, throated trap (cf. Trolle-Lassen 1984:fig. 8). The second, a throated trap with a semicircular mouth, is inferred from the recovery of a wooden rod with perforations at both ends (Andersen 1995:fig. 15). Suggestive of the use of coastal weirs is the recovery of hundreds of pointed hazel stakes up to 4 m. long found in the "refuse area" and another ten stakes standing vertically in the gyttja further out from the shore. The latter have been interpreted as the remains of a wattle guiding fence that would have led into a throated trap (type 1, above) (Trolle-Lassen 1984; Andersen 1995). The form of this trap and fence is analogous to weirs used in traditional Scandinavian coastal eel fisheries (Fischer 1993; Malm 1995; Pedersen 1995).

Nets

Although no fishing nets were recovered from the site several fragments of textiles woven using the "needle netting technique" indicate that the manufacture of nets was within the technological capabilities of Tybrind Vig's inhabitants. Remains of plant-fibre nets have been recovered from a number of Late Mesolithic sites in the circum-Baltic region, including Kunda and Narva in Estonia, Lundfors in Sweden, and Vis I in Russia (Clark 1975; Lõugas 1996; Burov 1998).

Also suggestive of net fishing at Tybrind Vig is a wooden float with a single perforation. The form of this float is analogous to the type used in traditional net fishing (*e.g.* Nelson 1899). Similar Mesolithic examples were found at Antrea/Kamennogorsk (near Lake Ladoga in Russian Karelia) in association with stone sinkers and the remains of a seine net (Clark 1975:221–4). Although this type of float is generally employed in net fishing, it can also be used in line fishing.

Common Name	Scientific	Habitat	Salinity Tolerance	Seasonal Availability
Black Goby	*Gobius niger*	Demersal Soft substrates	Euryhaline	Year round
Brill	*Scophthalmus rhombus*	Demersal Soft substrates	Euryhaline	Year round
Bullrout	*Acanthocottus scorpius*	Intertidal	Euryhaline	Year round
Cod	*Gadus morhua*	Coastal and offshore	Age dependent Young – euryhaline	Warmer months
Cuckoo Wrasse	*Labrus mixtus*	Hard substrates	Marine	Summer – inshore Winter – offshore
Dab?	*Limanda limanda?*	Demersal Soft substrates	Marine	Summer – inshore
Eel	*Anguilla anguilla*	Various	Catadromous	Year round Concentrated at migrations
Greater Pipefish	*Sygnathus acus*	Intertidal	Euryhaline	Year round
Herring	*Clupea harengus*	Pelagic	Marine	Year round
Mackerel	*Scomber scombrus*	Pelagic	Marine	Winter – open ocean Spring – inshore migration Summer – inshore spawning Autumn – offshore migration
Plaice/Flounder	*Pleuronectes platessa/* *Platichthys flesus*	Demersal	Euryhaline	Year round
Salmon	*Salmo salar*	Various	Anadromous	Year round Concentrated at migrations
Salmonid	Salmonidae			
Spurdog	*Squalus acanthias*	Benthopelagic	Euryhaline	Late summer – inshore
Three-spined Stickleback	*Gasterosteus aculeatus*	Benthopelagic	Euryhaline	Year round
Viviparous Blenny	*Zoarces viviparous*	Demersal Hard substrates	Euryhaline	Year round

FIGURE 2. Fish species identified at Tybrind Vig (after Andersen 1987a:table 4), and their habitat, salinity tolerance and predicted seasonal availability based on modern fish behaviour.

Fish spears

There is clear evidence of the practice of spear fishing at Tybrind Vig. Among the very numerous wooden artefacts from the site are what Andersen (1987a:271) has identified as *leister* prongs. Around a hundred examples were recovered and two forms are evident, a "long variety" and a "short variety" (Andersen 1985:fig. 15). Several of these were found embedded in the gyttja layer in an upright position or pitching at a steep angle, and are assumed to have been lost during fishing in the open water beyond the reed beds. No hafted examples were found at Tybrind Vig, but a rare find from the underwater site of Skjoldnæs off the island of Ærø (Skaarup 1995a:fig. 3) reveals the technique used to attach the prongs to a wooden spear shaft.

Andersen has also suggested that the numerous slender bone points recovered from Tybrind Vig (Andersen 1995:fig. 20) may have been employed as the central points of leisters. Leisters do not require a central point to function effectively, and this would have been undesirable if the fish had been intended for storage. These points could have served a range of other functions. For example, they could have been employed as awls, clothes fasteners, or as "eel-slitters". Alternatively, they may have served as the prongs of fish rakes. The fish rakes used by Native Americans of the Pacific Northwest Coast and the New Zealand Maori were set with up to 50 small wooden or bone points. They were used to rake large quantities of small fish concentrated in surface waters – particularly migratory or shoaling species such as eel, eulachon and herring – directly into boats (Best 1929; Kroeber and Barrett 1960; Stewart 1977).

Hooks

At least ten fishhooks were recovered in the Tybrind Vig excavations, along with a number of fishhook blanks. The hooks, up to 3 cm. long, are made from red deer rib bones and have a U-shaped, barbless, crook. One example has a short section of line (made from plant fibre) attached, which shows the method used for securing the shank to the line (Andersen 1987a:fig. 159). Hooks of this type were commonly used in cod fishing by Northwest Coast Indian groups (Croes and Hackenberger 1988; Croes 1997).

Line weights have not been reported from Tybrind Vig, but these are rare finds on European Mesolithic sites generally. This may reflect the widespread use of unmodified

pebbles as line sinkers, not recognized as artefacts, or the limited need for sinkers in Mesolithic coastal line-fisheries.

Other fishing-related artefacts

Tybrind Vig is unique in the number and quality of paddles preserved. Remains of at least ten paddles were found, all made from ash, with a heart-shaped blade (Andersen 1985, 1987b; Malm 1995). Unusually, four of the blades were decorated. The decorated paddles have exceptionally long shafts and very thin blades. Andersen (1987b:104) suggested they might have been ceremonial items or status symbols, with the decorative motifs serving as marks of ownership.

The remains of three dugouts made from the trunks of lime trees were recovered. Based on the most complete example, these were approximately 10 m. long, 0.50–0.65 m. wide, with a U-shaped cross-section, and weighing between 200 and 500 kilograms. A large stone found inside the most complete of the dugouts was interpreted by Andersen (1987b:95) as ballast, or a "stabiliser", or an "anchor stone" used to hold the vessel underwater to prevent it drying out and splitting.

Hearths of sandy clay and small stones were found in two of the dugouts at Tybrind Vig. It is possible, as Andersen (1987a:276) has suggested, that fires were set in the hearths to act as lures in night fishing. This practice has been observed in traditional eel fisheries in the region. Andersen (1987b:100) further speculates that the hearths may also have served as both a practical and symbolic means of maintaining fire during seasonal voyages between settlements. Ethnographic sources suggest other possibilities. Australian Aborigines placed clay hearths in their eucalyptus bark canoes when fishing (Sollas 1911). The hearths provided a source of warmth and were used for cooking some of the catch when on long expeditions. The fires were lit both day and night and were not used specifically to act as lures. It is possible that the Tybrind Vig hearths served a similar function. Consistent with this interpretation of boat hearths as cooking facilities is the hearth from the Øgaarde III boat of Late Neolithic date, which contained charcoal, charred twigs and burnt fish bones (Skaarup 1995b).

Stable isotopes and the importance of fishing at Tybrind Vig

In addition to fish and other marine resources, there is evidence that wild terrestrial herbivores, birds and plants also contributed to the food supply at Tybrind Vig (Trolle-Lassen 1984; Andersen 1987a; Kubiak-Martens 1999). An important question therefore is what proportion of the diet was obtained from marine resources, and by extension how important were these resources in the local Late Mesolithic economy?

In principle, stable carbon and nitrogen isotopes in human bone can be used to determine the relative contributions of marine and terrestrial food sources to diet. Remains of 4–5 individuals were recovered from Tybrind Vig, although several of these were represented by just a few disarticulated bones. The only (substantially) intact burial was that of a young woman (15–17 years of age at death) and a new-born child, found in the north-western part of the site (Andersen 1985:56–7).Radiocarbon dating of collagen from the woman's skeleton yielded an age of 6,750±80 BP (K–3558; Andersen 1987*a*:265), while the δ^{13}C value of –15.7 ‰ (see Richards *et al.* 2003:table 2) suggested a diet with a significant contribution from marine and/or estuarine sources.

Richards *et al.* (2003) also performed collagen stable isotope analyses on the Tybrind Vig skeleton, obtaining a δ^{13}C value of –17.6 ‰ and a δ^{15}N value of +8.5 ‰. From this they concluded that the individual had a predominantly terrestrial diet. These values are significantly lighter than those obtained from burials at the Late Mesolithic settlement of Vedbæk, also sited on a coastal lagoon (Richards *et al.* 2003:table 2) which indicate a population subsisting largely on marine resources, and there are other reasons to suspect the Tybrind Vig stable isotope measurements – collagen yield from the bone sample was very low, while the C/N ratio lies outside the range usually considered to be indicative of well-preserved collagen. Moreover, ultrafiltration (routinely used by some radiocarbon laboratories to remove potential contaminants from bone collagen) was not included in the collagen extraction procedure.

Clearly, new stable isotope analyses of the human remains from Tybrind Vig are needed. Until then, the question of the relative importance of marine and terrestrial resources in the diet, and hence the economy, of the Late Mesolithic inhabitants remains open.

Discussion

Information obtained from knowledge of fish biology and behaviour, ethnographic analogy and fishing technology can be combined with the artefactual and faunal evidence to reconstruct fishing strategies at individual sites. Tybrind Vig is an ideal site for this type of analysis because of the wide range of fishing gear and fish species recovered.

Location of fisheries

The archaeological remains demonstrate the breadth and sophistication of Later Mesolithic fishing activities at the site. The range of fishing gear recovered from Tybrind Vig suggests that fishing was undertaken in a number of different locations, and this is confirmed by the species of fish represented at the site.

The recovery of *in situ* fish trap fragments at Tybrind Vig demonstrates fishing of inshore waters adjacent to the Mesolithic settlement (cf. Andersen 1987a). From ethnographic analogies, the two types of fish trap identified at the site suggest different conditions of use (cf. Best 1929; Dos-

edla 1984). The round trap is likely to have been used over soft substrates – this is supported by its association with a wattle fence or weir, the stakes of which were driven into the soft sediment. If, as hypothesised by Andersen (1987a, 1995), the inhabitants of Tybrind Vig also used semicircular-mouthed traps, these would have been more suitable for use on hard/coarse substrates.

The presence of two distinct forms of wooden point, interpreted as leister prongs, supports the inference of fisheries in different locations. As Andersen (1995:57–8) observed, the long, slender form would be better suited for use over soft substrates, and the shorter, wider form for use over coarse substrates.

The form of the paddles and the dugouts recovered from Tybrind Vig also implies use of different fishing grounds. The long, slender dugouts would have required skill to operate. According to Andersen (1987b:99) this type of dugout is unlikely to have been used in rough/exposed waters and was probably confined to inland and inshore marine waters.

Fishing in more than one location is indicated not only by the distinct forms of fishing gear recovered at the site, but also by the differing salinity tolerances of the fish species represented. Several of the marine fish species identified are *euryhaline* (tolerant of a wide range of salinities) and as such could have been taken in the brackish waters of the lagoon. They include flatfish (Pleuronectidae), young cod, black goby (*Gobius niger*), three-spined stickleback, viviparous blenny (*Zoarces viviparous*) and greater pipefish (*Sygnathus acus*). Some of the other species identified at the site, *viz.* herring (*Clupea harengus*), mackerel (*Scomber scombrus*), and cuckoo wrasse (*Labrus mixtus*) are less tolerant of very low salinity and are more likely to have been taken in the marine environment of the Lillebælt than in the brackish waters of the lagoon. Moreover, the Tybrind Vig site was ideally situated for the exploitation of fish both within and outside the lagoon.

Methods of capture

The wide diversity in fish sizes and species at Tybrind Vig and other Danish Mesolithic sites (*e.g.* Ertebølle, Norsminde and Skateholm in the neighbouring Scania region of Sweden) has been interpreted by some analysts as evidence for the primacy of trap/weir fishing, a *non-selective*[2] technique (*e.g.* Enghoff 1983, 1986, 1991, 1994a, 1994b, 1995; Trolle-Lassen 1984; Andersen 1985, 1995; Malm 1995), and Malm even suggested that "Stationary fish traps … existed off all coastal Ertebølle Culture settlements" (Malm 1995:391).

It is probable that traps, which constitute an efficient fishing method in that they require relatively little input in terms of labour compared to yield, were commonly used for fishing during the Mesolithic period in Scandinavia. This is supported by numerous ethnographic accounts of traditional fisheries that use traps in conjunction with weirs. However, the suggestion that trap/weir fishing would have been conducted at *every* coastal Ertebølle site derives from a misunderstanding of the capabilities of the fishing gear and a tendency to treat each fish assemblage as the product of a uniform set of behaviours. Stationary trap/weir fishing has been described as the most restricted technique in terms of the conditions under which it is effective; its use is largely confined to calm conditions and soft, level substrates (Morill 1980; Owen and Merrick 1994). Nets, spears and leisters would have been used in areas where local topography precluded use of traps or weirs. Moreover, the use of traps cannot be conclusively demonstrated from the structure of a fish bone assemblage. A single species of fish may be caught by many different methods; use of different types of *selective*[3] gear over an extended period of time may produce archaeological assemblages comprising a wide range of species and sizes, suggestive of the use of non-selective fishing gear. The wide range of fish species and sizes identified at Tybrind Vig is consistent with a non-selective fishing technique such as trap/weir fishing. Equally, this diversity could represent a palimpsest resulting from numerous fishing trips on which a range of more selective fishing techniques, such as spearing and angling, were employed (cf. Colley 1983, 1984, 1986a, 1986b; Owen and Merrick 1994). Pertinent to the reconstruction of Mesolithic fishing methods is the overall duration of the fishing activities. In theory, for fishing practices to be accurately reconstructed from faunal remains, it would be necessary to be able to distinguish the products of individual fishing expeditions (Balme 1983; Bowdler and McGann 1996). In practice this is almost impossible to achieve.

The fish bone assemblage

Inferring the primacy of trap fishing produces a one-dimensional view of fishing activity in the Danish Mesolithic. The presence of a wide range of fishing gear suggests a much more complex situation. It seems unlikely that trap fishing would have been used for *all* subsistence fishing in the Danish Mesolithic given the time and effort put into the manufacture and maintenance of other types of fishing gear.

Further insight into fishing practices at Tybrind Vig can be provided by an analysis of species biology. The fish bone assemblage can be subdivided into five groups based on behaviour and vulnerability to capture:

SMALL FATTY SPECIES

The capture of a number of very small species (*e.g.* greater pipefish, black goby, and viviparous blenny) was possibly a by-product of the weir/trap fishery at the site, which probably was intended primarily for the capture of anadromous and catadromous species. However, several of these smaller species may have been actively sought. The three-spined stickleback, which is described as common in the faunal

inventory, was the focus of a traditional fishery in Denmark (documented between the 16th and 19th centuries); it was exploited for its oil content (used as a fuel) rather than as a food fish. It is possible that sticklebacks were also taken in nets. The spines of the stickleback make it particularly vulnerable to entangling in small-mesh nets.

A number of other fatty species which are, or were historically, known to be taken primarily for the rendering of oil have been recovered from the site (mackerel, herring and spurdog). Although it is possible that these species were taken solely for their flesh, it is worth noting that the specialised exploitation of fatty species (such as eulachon [*Thaleichthys pacificus*] and Pacific herring [*Clupea pallasi*]) for oil rendering has been observed among several Pacific Northwest Coast Indian groups including the Kwakiutl, Bella Coola, Haisla, Eyak and Coast Tlingit (Kvause 1956; Olsen and Hubbard 1984; von Brandt 1984; Kirk 1986; Renker and Gunther 1990). The surplus production of oil allows these groups to trade with their neighbours for a number of terrestrial and aquatic resources (including fish considered to have more palatable flesh) which are not readily available within their territory (Kirk 1986). The identification of "blubber lamps" at Ertebølle sites (Mathiassen 1935) provides a possible domestic use for fish oils.

COD, CUCKOO WRASSE AND BULLROUT

Size data are given only for cod recovered from the site, which are estimated to have ranged between 25 and 60 cm. in length. Although as suggested by Enghoff (1994) cod of this (relatively small) size could have been taken by traps, they are more likely to have been taken with hook and line. This is implied by the types of fishing gear recovered, ethnographic studies, and the presence of other fish species at Tybrind Vig that most likely were taken with hook and line. The presence of the solitary and relatively sedentary species, cuckoo wrasse, is most consistent with the existence of a line fishery at the site. Moreover, the habitat of all three species (rocky substrates) is inconsistent with weir capture. Cuckoo wrasse, cod and bullrout are most suited biologically, and most commonly observed ethnographically, to be taken with hook and line (see Pickard 2002). Although cod of the size identified at Tybrind Vig could have been taken at any time of the year in inshore waters, it is possible that they were fished along with other marine species at the outer reaches of or, more likely, outside the lagoon. The form of hook used at Tybrind Vig (*i.e.* lacking a barb), is consistent with active- rather than set-line fishing.

Ethnographically, fishing is practised on two levels. The first uses large-scale, communally-owned gear for catches that are shared between participants or kin groups. Among all groups practising large-scale communal fisheries, fishermen will also fish on an individual basis with catches retained for their own households (Pálsson 1991). Often this is done on days when weather conditions limit the use of large-scale gear or prevent fishing at sea. In these situations passive gears are often avoided, and particularly those methods that might reveal their location to other fishermen. This secrecy is necessary to prevent catches being stolen or good fishing grounds becoming over-fished (Kroeber 1976). The most common method used in these small-scale, individual fisheries is the hook and line. It is possible to conduct successful line fishing in most weather conditions. The cod fishery evident at Tybrind Vig could reflect this form of activity.

FLATFISH

Dab and flounder and/or plaice are among the species recorded at Tybrind Vig (Figure 2). These flatfish can be taken by a number of methods. They are vulnerable to hook fishing with baited bottom-lines and are commonly taken in this manner in traditional fisheries. Most species of flatfish can also be caught at low tide by hand or with leisters/spears/harpoons. Occasionally, they are taken in traps, usually at night when swimming freely in search of food.

MIGRATORY SPECIES: MARINE

Herring, mackerel and spurdog were recorded at Tybrind Vig (Figure 2). All three are fatty species, which were exploited for their flesh and oil in traditional fisheries. They are taken most effectively in encircling nets such as seines set out from the shore or between boats. Of the three species, herring and spurdog are most susceptible to capture at night; both species make diurnal movements from bottom waters to the surface to feed. Concentrations of these species can be increased through use of artificial light sources set on the shore or on boats. Andersen (1987a) argued that fires set in boats were used in the night spearing/leistering of eel, based on the presence of hearths in two of the Tybrind Vig dugouts. But it is just as likely that the fires, if they were used in fishing (as discussed above), were to attract shoals of herring and spurdog. Mackerel, on the other hand, concentrate in surface waters during the daytime.

MIGRATORY SPECIES: ANADROMOUS/CATADROMOUS

Mature salmon (*Salmo salar*) and eel (*Anguilla anguilla*), both of which have two major spawning runs (spring and autumn), could have been taken in coastal, estuarine or freshwater during migration. In traditional fisheries, both weirs/traps and spears are commonly used for the capture of anadromous/catadromous fish. During spawning migrations, traps of the type found at Tybrind Vig would have to be monitored and hauled at regular intervals to prevent them from being damaged. The weir fence may also have been used as a barrier to concentrate fish that can then be speared/leistered/harpooned or gathered in collecting bas-

kets and dip-nets. Outside the spawning season, traps could be left unattended for up to several days. Ethnographic records indicate that such traps are employed in areas with little tidal action or at low tide in the tidal reaches of marine and estuarine waters, and are generally set with baits and hauled daily, usually at dawn and/or dusk. However, traps and weirs are not the sole means of fishing for salmon. In the Baltic region in historical times seines were often used for traditional salmon fisheries in rivers and estuaries.

The exploitation of salmon and eel would not necessarily have been temporally restricted to spawning runs. Significant numbers of mature salmon and eel (generally males) are found in inshore waters and the lower reaches of estuaries throughout the year. These resources would be most readily exploited in shallow or surface waters with fish spears or leisters. Eel, particularly immature or brown eel, which lies buried in soft substrates when resting, has often been observed ethnographically to be fished "blind" with long-pronged leisters analogous to one of the forms recovered at Tybrind Vig.

Activity scheduling, seasonality and site function

The evidence of fishing activities has some bearing on other aspects of the archaeological interpretation of Tybrind Vig, including seasonality and site function. Fifteen fish species were identified on the site. From what is known of the seasonal movements of these species, it is conceivable they were all caught during a restricted period in the late summer (cf. Figure 2), although most species would have been available more or less throughout the year in the lagoon, in the rivers leading into the lagoon, or in the Lillebælt beyond the lagoon.

However, this should not be considered in isolation from other evidence. From her study of the remains of food plants from Tybrind Vig, Kubiak-Martens (1999) concluded that the site must have been occupied during at least two periods of the year (early to late summer and autumn), but conceded that it was probably occupied at other times and possibly all year round. Moreover, among the birds represented at Tybrind Vig there are summer and winter visitors (cf. Andersen 1987a:table 4), and an analysis of tooth development in immature red deer (*Cervus elaphus*) suggested hunting activity at the site during the greater part of the year, from late spring to early winter (Carter 2001).

Other lines of evidence suggest that Tybrind Vig was more than a temporary or seasonal extraction camp. These include the presence of human burials, the sheer diversity of food remains (comprising *at least* 15 species of fish, 4 species of shellfish, 11 species of birds, 6 species of marine mammals, 5 species of large land mammals, and 23 species of edible plants), the presence among the artefact inventory of a range of "personal gear" (cf. Binford 1979) including highly curated items such as the dugouts and decorated paddles, and the heavy investment in fixed facilities such as fishing weirs. Good fishing places along the coast and the facilities stationed there would have been highly valued by Mesolithic people. Judging from ethnographic evidence, such areas and installations are likely to have been owned and defended, and establishing a permanent settlement in the immediate vicinity of the Tybrind Vig lagoon would have been an effective means of achieving this.

Conclusions

Arguably, the range of fishing activities attested at Tybrind Vig is greater than from any other single European Mesolithic site. It is clear from the diversity of fish species and the types of fishing gear recovered that a number of different fishing grounds were exploited. Fishing was conducted inshore in the immediate vicinity of the settlement, further out in the lagoon, and beyond the lagoon in the marine waters of the Lillebælt. It is also possible that migratory species were fished in local streams. The fishing gear represented at the site reflects a sophisticated technology with a clear understanding of fish biology and behaviour.

Determining site function and seasonality at Tybrind Vig is complicated by the loss of the "habitation zone". However, a number of different lines of evidence can be combined to provide a convincing case for sedentary, or at least semi-sedentary, settlement of the site.

Whether marine/estuarine or terrestrial resources were more important in the Late Mesolithic economy remains unresolved. The results of stable carbon and nitrogen isotope analyses of human bone collagen are equivocal, and new analyses are needed combined with isotopic studies of the local food web.

Notes

1 The term *traditional fisheries* refers to all recent and historically observed fisheries that employ pre-industrial technologies. These tend to differ in attitudes to fish stocks from modern, commercial enterprises (Bartosiewicz and Bonsall 2004:270–271, table 8).
2 The term *non-selective* refers to a fishing method that can be used to capture a wide range of fish species and sizes.
3 The term *selective* refers to a fishing method that captures a limited range of fish species and/or sizes.

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SØREN A. SØRENSEN

Limhamn axes in Denmark

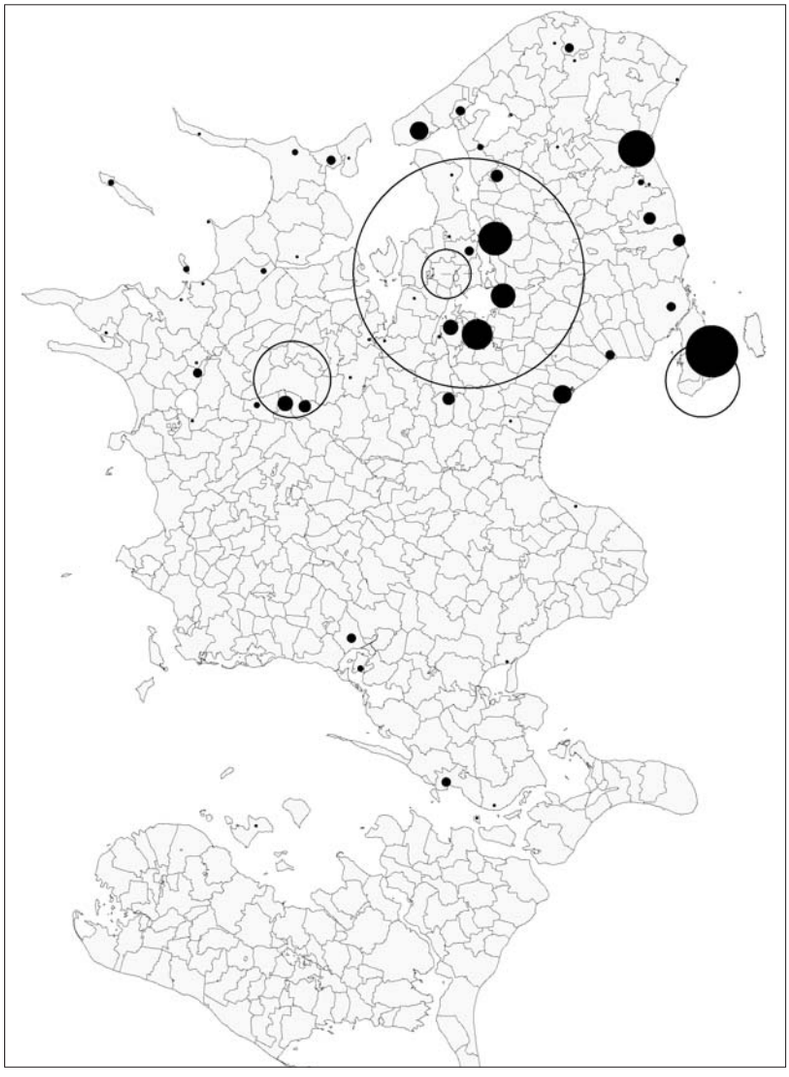
IT IS A WELL-KNOWN fact that modern national borders often constitute an obstruction for archaeologists wishing to carry out scientific studies on material from either side of these borders. The present border between Denmark and Sweden, which runs down the strait of Øresund, is a good example of this. Studies concerning the Mesolithic period in Scandinavia reveal far greater similarities than differences between material from Zealand and Scania. These similarities are greater than, for example, those seen between Zealand and Jutland and between Scania and Central Sweden. Investigations of the Mesolithic of Zealand and Scania have, in other words, always been two sides of the same coin. It therefore gives me great pleasure to be able, through this article, to be part of this celebration of Lars Larsson, who has not only been a dominant figure in the study of the Scanian Mesolithic, but equally has contributed to a better understanding of the Mesolithic in Denmark.

One of the artefacts that demonstrates the close connections between Zealand and Scania in the Mesolithic is known as the Limhamn axe. The term was used for the first time in Sweden in 1903 by the archaeologist K. Kjellmark (Kjellmark 1904), and a few years later it was introduced into Danish archaeology when C. A. Nordman described non-flint stone axes found in Denmark (Nordman 1918: 137–150). The characteristics of Limhamn axes are as follows: They are made of stone other than flint, most commonly diabase or basalt, and usually have a cross-section in the form of a pointed oval. Their surface is partly polished leaving clear traces of the preceding sculpting. The length of the Danish Limhamn axes varies, for the most part, between 11 and 15 cm., but there is a small group of about 10 axes which are smaller than 10 cm., most of them being about 8 cm. in length. This latter group comprises a distinct sub-group, made using the same Limhamn technique but apparently for another purpose. The Danish material also includes one very large axe, about 30 cm. long, and by far the longest axe of this type found in Denmark (Figure 1). As already indicated by the name, Limhamn axes are closely connected with Sweden and are, in fact, much more numerous there than in Denmark. Jennbert (1984:102) mentions 633 Limhamn axes found in Scania.

In 1939, the late professor C. J. Becker published an updated study of Limhamn axes from Denmark. This included a complete gazetteer for all the axes known from the country at that time (Becker 1939). The total then was only 66, but subsequently this number has increased considerably. Two publications from 1984 (Jennbert 1984; Petersen 1984), still use the old distribution, as described by Becker in 1939, to show the geographical extent of the Danish Limhamn axes. This was one of the main reasons that I felt it opportune to collect information on new finds of Limhamn axes in an attempt to test the results of Becker's almost 70-year-old study. Another reason was that I have been carrying out excavations at the site of Lollikhuse by Roskilde Fjord where the greatest number of Limhamn axes in Denmark has been found. The total number from this site alone is presently 45 – inclusive of broken pieces – representing more than 10 % of the known Limhamn axes from Denmark.

The reason the Limhamn axes attract particular attention in Denmark is that there is no pronounced tradition in the country of making tools of stone other than flint during the Mesolithic. This is readily explained in terms of the abundant flint resources available to the Mesolithic population and, accordingly, the use of flint for most stone artefacts. Pecked axes and Limhamn axes are, however, two distinct exceptions to this rule. The Pecked axe is chronologically older than the Limhamn axe, with its first appearance being as early as the Maglemose culture. It has also a much more extensive geographical distribution. In Denmark, the earliest Pecked axes are, as mentioned above, from the Late Maglemose culture, but they first became common during the Kongemose culture, the period from which they are mostly known on Zealand. In the Early Ertebølle culture, Pecked axes were still a common type even though they appear to be rarer in Jutland and on Funen than on Zealand and in Scania. On Zealand, the Pecked axe is replaced by the Limhamn axe midway through the Ertebølle culture but the number of Limhamn axes does not reach a peak until the very latest Ertebølle culture. Limhamn axes never reached Jutland and Funen. Here, instead, we see a few Pecked axes throughout the Ertebølle Culture even though they never became numerous in this part of the country.

The number of Limhamn axes known from Denmark has today increased to about 400. With very few exceptions, these have all been found on Zealand. Even though the number of axes has increased considerably since Becker's work in 1939, we still see the same geographical distribution, with a marked concentration in central and north-eastern



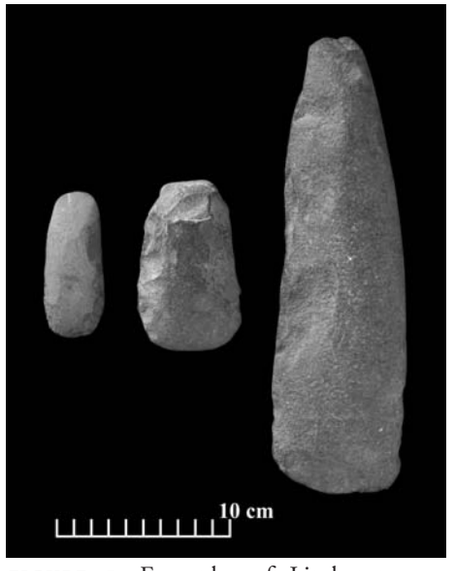


FIGURE 1. Examples of Limhamn axes found in Denmark. The largest axe measures about 30 cm. in length, but most of the axes are about 11–15 cm. long. A small sub-group of about ten miniature axes is also well known.

FIGURE 2. Map showing the distribution of Limhamn axes in Denmark, except Bornholm. The circles indicate the number of axes found in each parish. For practical reasons, the largest circles have not been filled in.

Zealand (Figure 2). From time to time, this has prompted the question of whether Limhamn axes could have been imported from Scania or whether they were produced locally. In Sweden, Limhamn axes are concentrated in Scania even though they spread up into west-central Sweden where, after about 4,500 BC, the type replaced the Lihult axe (Larsson, Lindgren and Nordqvist 1997:70). In other words, the Limhamn axe has a rather limited distribution centred on the Øresund region.

The question of whether the Danish Limhamn axes were produced locally on Zealand or whether they were imported from Scania is not as simple to answer as it might seem. Even though there are no primary occurrences in Denmark of the types of stone normally used to make Limhamn axes, pieces of basalt and diabase large enough to make an axe are easily found in moraine deposits all over the country. In other words, the lack of primary rock resources in Denmark cannot be used as an argument in favour of the Danish Limhamn axes being perceived as a result of an exchange network across the Øresund in the Late Ertebølle culture. The next logical step is then to look for traces of production of Limhamn axes on some Danish Late Ertebølle sites. This evidence could be in the form of semi-finished pieces and flakes arising from the manufacturing process. Concerning the latter, no such non-flint stone flakes have ever been described from Danish Ertebølle sites, nor do I know of any unpublished finds in museums. The only example that comes to mind comprises some flakes from a non-flint stone axe found at Gøngehusvej, Vedbæk (personal communication from Erik Brinch Petersen), but this site is considerably older than the presence of Limhamn axes in Denmark. The lack of non-flint stone flakes in Danish collections could be explained by there being no tradition of looking for such flakes and the difficulty in recognising them for archaeologists only used to looking at flint. In order to test this hypothesis, all the excavators at Lollikhuse were told to pay particular attention to the presence of non-flint stone flakes. However, if we were expecting to find evidence of the manufacture of non-flint stone axes in this way, then the results of this test were rather disappointing – only two dubious flakes were located. It should also be borne in mind that this site alone has produced more than 10 % of the total

Danish finds of Limhamn axes. If any traces of the manufacturing of Limhamn axes in Denmark were to be found, this would seem to be the obvious place – but the result was negative. The same applies to semi-finished pieces – none whatsoever were found. A few axes have been heavily reworked, which could lead to their being misinterpreted as a semi-finished axe. There is but a handful of coarse non-flint stone axes from Denmark, but none of these can with certainty be interpreted as a semi-finished example of a Limhamn axe.

The conclusion must be that we have, at best, only a few vague indications of the production of Limhamn axes on Danish soil, although it would be no surprise to find some signs of production along the Danish Øresund coast, being as close as it is to Scania. However, it seems obvious to proceed further to Scania in our search for production sites for Limhamn axes.

Large quantities of non-flint stone flakes, in addition to semi-finished examples of Limhamn axes, have been found on several of the larger Ertebølle sites in Scania (Lidén 1938; Althin 1954). These finds clearly show that the production of Limhamn axes took place here. Sites with the greatest number of Limhamn axes and the largest quantities of non-flint stone flakes are to be found at Kullen, Jonstorp and Ringsjön (op. cit.). It is worth noting that the Ringsjön site is located on the Rönne River which flows into Skälderviken where we also find the Jonstorp and Kullen sites. These three sites seem to have received impulses from two different traditions, namely the southern flint tradition and the northern non-flint stone tradition, but still with a predominance of flint tools at the sites. In other words, we have here three sites in the border area between two different tool-making traditions where a variety of non-flint stone artefacts were produced in addition to artefacts of flint. If the published sites showing traces from the production of Limhamn axes are representative of the original distribution of such sites, then it becomes apparent that there were a few sites where Limhamn axes were produced in great numbers. From here they were probably distributed to neighbouring areas in Scania and Northern Zealand. There are several interesting aspects inherent in the study of such local Mesolithic distribution and contact networks, but these lie beyond the remit of this article and will not be dealt with here. Let us consider instead the use to which Limhamn axes probably were put. So far, no hafted examples of Limhamn axes have been found, but use as an ordinary axe seems obvious. As Limhamn axes are always found on sites which also have large numbers of flint axes, mostly flake axes but also a few core axes, we must expect these axes to have had distinct separate functions. Furthermore, we should not forget axes made from a third kind of material, namely antler axes. Experimental studies have shown these to be rather effective for woodworking (Jensen 1991).

Antler axes are known from throughout the Mesolithic and further up into the Neolithic and Bronze Age. However, on the basis of typological differences, it is possible to allocate the majority of antler axes to fairly limited periods of time. If we take a look at the frequency of antler axes, as they occur on Ertebølle sites all over Southern Scandinavia and Northern Germany, some rather distinct differences become apparent within the area. West of the Great Belt in Jutland, on Funen and the islands around Langeland, antler axes occur frequently on most of the sites. The situation is similar in Northern Germany, but as soon as we move east of the Great Belt, antler axes become less common. The picture is not so clear at the beginning of the Ertebølle culture, when there still are some antler axes both in graves and on settlement sites on Zealand and in Scania. However, in the Late Ertebølle culture there are virtually no finds from these areas. It is also striking that the latest type of antler axe, the T-shaped example, which occurs in great numbers west of the Great Belt and in Germany, has so far only been found in two cases east of the Great Belt; one on Zealand and one on the island of Møn.

If we wish to quantify the differences we can take a look at some of the largest known Ertebølle sites. Size is, in most cases, estimated on the basis of the number of flint axes found at a site. One of the largest sites in Jutland is Dyrholmen, where 1,042 flint axes were found, and this site has no fewer than 92 antler axes (Mathiassen 1942). Another large site is Ringkloster, from where there are 88 antler axes (Andersen 1998:35), or the classic kitchen midden from Ertebølle, with 856 flint axes and 38 antler axes (Madsen *et al.* 1900). In Northern Germany, the largest known Ertebølle site is Rosenhof, with 1,256 flint axes and 40 antler axes; 39 of the latter are of the T-shaped type (Hartz *et al.* 2002). If we then turn to the area east of the Great Belt, a completely different picture emerges. At the largest of all Ertebølle sites, namely Lollikhuse with more than 1,624 flint axes, there is only one known fragment from an antler axe, and this is not because the conditions for the preservation of bone and antler at the site were poor. Another of the largest Ertebølle sites on Zealand is Even Øst where 1,007 flint axes were found and where there were no antler axes at all (Johansson 1999). The overall picture for Zealand is rather constant with no more than one or two antler axes being found even on the largest sites. The situation is much the same in Scania, with just a few antler axes on each site, or none at all. At Bökeberg III (Karsten 2001), only one antler axe was found and there are none from Tågerup.

If we look at the distribution of all the known axe types found at Ertebølle sites, it is striking that on sites with many antler axes, *i.e.* those west of the Great Belt and in Northern Germany, we only find very few non-flint stone axes. The opposite is the case on sites from Zealand and Scania, where there are many non-flint stone axes and only a few antler axes. At the end of the Ertebølle culture, antler axes seem to vanish almost completely from sites on Zealand and in Scania. At the same time, the Limhamn axe appears for the first time. It is difficult to determine whether there is a

connection between the two events as long as we do not know the exact use to which the different axe types were put, but it is tempting to see the Limhamn axe as a substitute for antler axes on Zealand and in Scania.

The chronology of the Limhamn axe is fairly well established for Danish finds. Even though we do not have an exact date for its first appearance, we know that most examples belong to the later part of the Ertebølle culture, *i.e.* between about 4,600 and 4,000 BC in calendar years. In other words, we see the introduction of the Limhamn axe on Zealand at about the same time as the Lihult axe is replaced by the Limhamn axe in West-Central Sweden (Larsson, Lindgren and Nordqvist 1997).

Conclusion

Today, almost 100 years since the term Limhamn axe was first introduced into Danish archaeology, the number of known specimens has increased to more than 400. Even though this number is considerably more than in 1939, when Becker published a first presentation of the geographical distribution of this axe type, the picture remains the same – we still see most of the axes concentrated in north-eastern Zealand.

Even though it is not possible to be certain, there is nothing to indicate that Limhamn axes were ever produced locally on Zealand. On the other hand, there are several sites in Scania, especially some near the Rönne River, where production has been documented and where the tradition of working stone other than flint to make various tools was an integrated part of tool manufacture. Based on these facts, it is tempting to see the Danish Limhamn axes as imports from Scania, but it is still not possible to reach any definitive conclusion on this question. There are, however, examples of other finds interpreted as possible imports from Scania. These comprise a number of tooth pendants and artefacts made from exotic faunal materials, which have been found along the Danish Øresund coast. These are seen as an indication of clear contacts between Scania and Zealand in Late Atlantic times (Petersen 1990).

Looking at the Ertebølle culture in general, there seems to be a kind of inverse proportionality between antler axes and non-flint stone axes. This is most clearly apparent in the latest part of the Ertebølle culture, the time when the Limhamn axes were in use. Here we see Zealand and Scania, on the one hand, with large numbers of non-flint stone axes and few if any antler axes, and Jutland, Funen and Northern Germany on the other, with many antler axes but only a few examples made of stone other than flint. This general picture might be weakened a little by the situation in Southern Zealand, Lolland Falster and Møn, where neither of the two axe types is very common. Flake axes of flint comprise the most abundant axe type on all sites from the Late Ertebølle culture, but as long as we do not know the uses to which the different types of axes were put, it is difficult to assess the significance of the different relative frequencies of the axe types.

Even though the Ertebølle culture only covers an area of about 450 x 450 km., and we find many examples of imported ideas, technology and artefacts from distant places, there is still some local variation in the frequency and morphology of some types over rather short distances. When studying these matters the present border between Denmark and Sweden is of no significance

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GUNILLA ERIKSSON

Immigrant, returnee or commuter?

Introduction

HUNTER-GATHERER SOCIETIES in general, and the Mesolithic in Northern Europe in particular, are generally associated with utilization of marine resources and a high level of mobility, illustrated by sites such as Skateholm in Sweden, Vedbæk in Denmark and Oronsay in Scotland (Albrethsen and Brinch Petersen 1976; Larsson 1988; Mellars 1987). There are sites of equal importance which differ from this emblematic image, however. One of the most important of those is undoubtedly Zvejnieki. This large Stone Age Complex is situated on a gravel ridge by Lake Burtnieki in the interior of northern Latvia (Figure 1). Besides a cemetery with more than 300 well preserved inhumation burials, chronologically spanning at least five millennia, there are adjacent settlement remains from both the Mesolithic and the Neolithic. The site was excavated mainly during the 1960s and 1970s under the direction of the late Francis Zagorskis, posthumously published in a Latvian monograph (Zagorskis 1987), recently translated into English (Zagorskis 2004). Only recently, small-scale excavations at Zvejnieki under the direction of Lars Larsson and Ilga Zagorska have been resumed (Zagorska 2006). Taken together, the number of burials, the long continuity of use, the excellent preservation conditions and, not least, the thorough excavation, make this a key site for understanding Mesolithic and Neolithic hunter-fisher-gatherer societies in Northern Europe.

Previous studies employing stable isotope analyses of human bone from more than 30 Mesolithic and Neolithic burials at the Zvejnieki cemetery had demonstrated that freshwater fish generally made an important contribution to the diet for this population. There was one exception, however. The man buried in grave 165 was the only one at this inland site to display unambiguous signs of having consumed any marine foodstuffs, although they were by no means the principal components of his diet (Eriksson 2006; Eriksson *et al.* 2003; Eriksson and Zagorska 2003). This of course aroused interest, and called for a more detailed study of which underlying mode of behaviour caused this – frequent travelling between the coast and the interior, or a change of residence? Due to the fact that teeth are formed during childhood, stable isotope analyses of his teeth could shed light on this enigma.

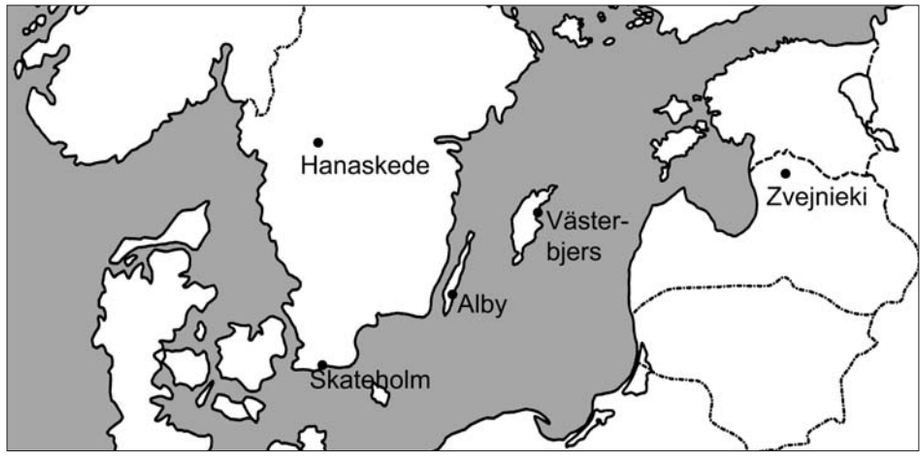


FIGURE 1. Map of the Baltic region, indicating the location of Zvejnieki and other Mesolithic and Neolithic sites mentioned in the text.

Material and method

Burial no. 165 was situated at the top of the gravel ridge, among burials from earlier periods. The size of the grave was 1.80 x 0.60 m., it had a depth of 0.35–0.40 m., and a fill of light grey gravel. A large boulder marked the grave (Figure 2). The interred was a male adult, 30–35 years (Gunita Zarina, pers. comm. 2006), buried in extended supine position with his head to the SW, turned to his left, arms close by the sides, knees and feet together. There was a uniform layer of ochre around the skeleton. Twenty-two tooth pendants were placed around his neck, one under his left arm, another under his head (Zagorskis 2004). The tooth pendants were predominantly made of teeth from dog (*Canis familiaris*), but also badger (*Meles meles*), grey seal (*Halichoerus grypus*), marten (*Martes martes*) and red deer (*Cervus elaphus*) (Lõugas 2001). There were also ten unmodified bird bones deposited in the grave, under the head, at the waist and pelvis and under the skeleton. The bird bones were of jay (*Garrulus glandarius*), mallard (*Anas platyrhynchos*), a small diving duck (*Aythya*

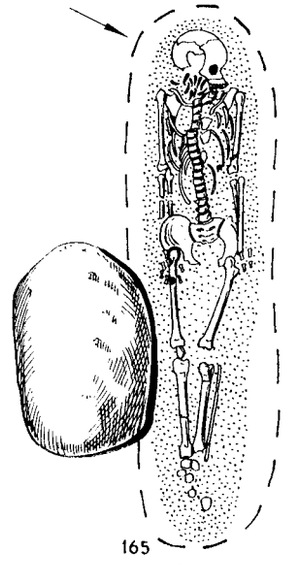


FIGURE 2. Burial 165 at Zvejnieki (Zagorskis 1987:42).

sp./Bucephala clangula), and one indeterminate middle-sized duck (Mannermaa 2006).

The burial has been directly radiocarbon dated (skull bone collagen) to 5,480±100 BP (Ua-19812, 4,450–4,230 cal. BC, 1 sigma) (Eriksson *et al.* 2003). The radiocarbon date placed this burial, previously tentatively assigned on archaeological grounds to the Late Mesolithic, chronologically in the Middle Neolithic according to Latvian chronology. One should be aware that the Mesolithic in the East Baltic countries is by convention generally defined as non-ceramic, *i.e.* the Neolithic is considered to begin once pottery is introduced. This is in contrast to the Scandinavian chronology, according to which the radiocarbon date for the burial would instead place it in the Late Mesolithic.

Lab code	Skeletal element	Age when collagen was formed	$\delta^{13}C$ (‰)	$\delta^{15}N$ (‰)	Bone powder (mg)	Collagen (mg)	Collagen (%)	C/N	% C	% N
ZVE 65	M_1	2–4 years	–22.0	13.5	86.4	2.5	2.9	3.6	41.2	13.3
ZVE 66	M_2	5–10 years	–20.9	12.6	81.0	2.1	2.5	3.5	45.6	15.0
ZVE 67	M_3	10–16 years	–20.6	13.4	53.7	2.4	4.4	3.4	41.0	14.0
ZVE 41	skull bone	20–35 years	–18.8	12.0	163.5	2.2	1.3	3.4	29.2	10.1
*ZVE 64**	*fibula*	*30–35 years*	*–21.2*	*13.6*	*61.2*	*0.7*	*1.1*	*3.7*	*34.9*	*11.0*

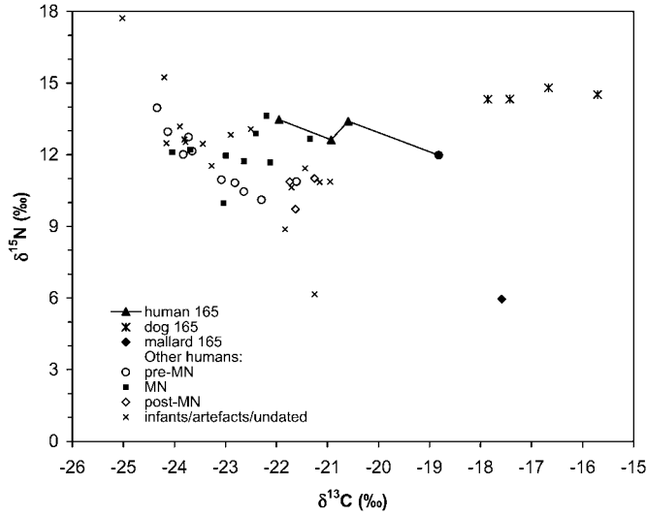
FIGURE 3. Stable carbon and nitrogen isotope values for burial 165. Data of ZVE 41 from Eriksson *et al.* 2003. *=ZVE 64 did not conform to the quality requirements.

Stable isotope analysis of human bone and teeth is a well-established method for investigating palaeodiet. The carbon isotope value, $\delta^{13}C$, distinguishes between marine and terrestrial or freshwater environments, and the nitrogen isotope value, $\delta^{15}N$, discriminates between trophic levels, *i.e.* levels in the food chain (or food web) (Minagawa and Wada 1984; Schoeninger and DeNiro 1984). The isotope values are measured and calculated against a standard (PDB for carbon and AIR for nitrogen) and expressed in ‰ (per mil, parts per thousand) (for a more detailed account of the method, see, *e.g.*, Schoeninger and Moore 1992; Schwarcz and Schoeninger 1991; Sealy 2001).

The analyses are performed on collagen, a protein present in many tissues of the body, among them bone and tooth dentine. The body uses the ingested protein from the diet to synthesize skeletal tissue, and the carbon and nitrogen stable isotope values of collagen therefore mainly reflect protein intake (Ambrose and Norr 1993). Due to collagen turnover and bone remodelling, the isotopic signature of bone collagen reflects an average diet of 5–20 years, depending on character of the bone element and age of the individual (see Lidén and Angerbjörn 1999 for a discussion of factors affecting collagen turnover). Collagen in tooth dentine, by contrast, is not subject to turnover, and the isotopic signature consequently reflects the time of tooth formation, *i.e.* childhood. As a result, analysis of both bone and tooth from one individual can be employed in order to trace intra-individual change in diet, *i.e.* life history.

The fact that various tooth types form in a particular order, can also be utilized to trace changes in diet during childhood. This has not previously been employed on material from Zvejnieki, but the sampling strategy has been successfully used on skeletal material from the Pitted-Ware cemetery at Västerbjers on Gotland, in which case samples from the first, second and third molar from each individual were systematically analysed, along with skull bone (Eriksson 2004). Since the portion of each tooth sampled was formed at a certain age

FIGURE 4. Plot of the human stable carbon and nitrogen isotope values for burial 165, showing the changes during his lifetime (triangles denote childhood/adolescent values; circle the adult value). For comparison, isotopic data for other analysed burials at Zvejnieki are included (pre-MN = Mesolithic and Early Neolithic, MN = Middle Neolithic, post-MN = Late Neolithic and Bronze Age). Data points from undated burials, from artefacts made of human bone or teeth, and from infants, which are likely to exhibit elevated $\delta^{15}N$ values due to breastfeeding, are marked separately. Included in the plot are also analysed grave goods from burial 165: four dog-tooth pendants and a bird bone. Data from Eriksson (2006) and the present study.



during childhood (Hillson 1996), the specimens represented the young child, the older child, the adolescent and the adult, respectively. This is an important advance, since what is analysed is, in effect, the children that survived into adulthood – a category otherwise severely under-represented in archaeological research. The same approach, although with the inclusion of deciduous teeth, is also viable in studies of breastfeeding patterns and weaning age, because children who breastfeed get elevated $\delta^{15}N$ values due to the trophic-level effect – they are "preying" on their mothers, so to speak (Fogel *et al.* 1989; Katzenberg *et al.* 1996).

Stable isotope analysis of the faunal remains at an archaeological site has proven immensely important in the evaluation and interpretation of stable isotope data of humans from the same site. At Zvejnieki, extensive analyses of ani-

mal bones and teeth, both from graves and the settlement layers, have been carried out, firmly establishing the stable isotope ecology at the location (Eriksson 2006). Thanks to that, it was possible to detect the high quantities of freshwater fish consumed by the Zvejnieki population, especially during the Mesolithic and Early Neolithic.

From grave 165, four of the dog tooth pendants have been previously analysed with respect to stable isotopes, all of which showed signs of considerable marine protein input during tooth formation, that is, the dogs fed on marine foods at least as pups (Figure 4). In addition to the tooth pendants, a bone of mallard has been analysed, again showing unambiguous signs of marine diet, well in accordance with the ecology of this duck.

In addition to the human skull bone (frontal bone) previously analysed from burial 165, samples from the left fibula and the three lower left molars of the interred were analysed. The fibula, with its relatively small size, can be expected to have a faster collagen turnover than the skull bone, and the sample should accordingly represent a shorter and later period in the life of the man. The three molars, on the other hand represent the periods of his life when he was a young child (first molar), an older child (second molar), and an adolescent (third molar), respectively. For approximate ages assigned to each sample, *i.e.* the age when the collagen was formed, see Figure 3.

Collagen was extracted according to Brown *et al.* (1988). For stable isotope analysis approximately 0.5 mg of collagen from each sample was placed in a tin capsule and combusted with a Carlo Erba NC2,500 analyser connected via a split interface to reduce the gas volume to a Finnigan MAT Delta+ mass spectrometer at the Geochemical Laboratory at the Department of Geology and Geochemistry, Stockholm University. From these measurements the reproducibility was calculated to be better than 0.15 ‰ for $\delta^{13}C$ and $\delta^{15}N$.

The hypothetical outcomes of the analysis, and the interpretation of associated behaviour, would accordingly be:

1. He grew up at the coast and later moved to Zvejnieki, in which case all teeth should display marine isotopic signatures
2. He grew at Zvejnieki, then moved to the coast, and later moved back to Zvejnieki, in which case the teeth should display isotopic signatures similar to the rest of the Zvejnieki population
3. He travelled frequently between the coast and the interior, in which case the fibula should display approximately the same isotopic signature as the skull bone, and, depending on when this commuting behaviour was initiated, one or more teeth could also display the same intermediate isotopic signatures.

There are of course possible variations to these general scenarios. The model of interpretation only takes into account two possible residential locations, and it is also based on the assumption that living by the coast implies some marine input to the diet. Nonetheless, the main point is that the sampling strategy enables tracing of life history change for one individual.

Results and discussion

Results of the stable isotope analyses are presented in Figure 3 and 4. All specimens yielded collagen, but whereas collagen from the skull and all teeth conformed to quality standards (DeNiro 1985; Ambrose 1990), collagen from the fibula, in contrast, was less well preserved, with an atomic C/N ratio outside the acceptable range 2.9–3.6, and therefore the data has to be excluded from further discussion.

The molar teeth exhibited $\delta^{13}C$ values increasing with age, ranging between –22.0 and –20.6 ‰, which is considerably lower (more negative) than for the skull bone, –18.8 ‰. Compared to other analysed and radiocarbon dated Middle Neolithic burials at Zvejnieki (Figure 4b), only the first molar, representing the interred as a young child, falls within the range for the $\delta^{13}C$ values, –24.0 to –21.3 ‰, whereas by the time he was an older child, and later a teenager, his $\delta^{13}C$ values were already higher than for the rest of the analysed population (only a tooth pendant made of a human first molar from a Mesolithic burial has as high a value, –20.9 ‰, as the second molar from burial 165).

The $\delta^{15}N$ values for teeth from burial 165 ranged from 12.6 to 13.5 ‰, while the skull bone $\delta^{15}N$ value was slightly lower, 12.0 ‰. This is within the range, 10.0–13.6 ‰, for other Middle Neolithic burials. His highest $\delta^{15}N$ value was recorded at the age of 2–4 years, which could be an indication that he was not yet fully weaned by that age, since suckling children get elevated $\delta^{15}N$ values. The value then dropped by the time he was an older child, only to reach a new peak during his adolescence.

The basic interpretation, following the scenarios previously outlined, would be that he was a returnee, that is, he grew up at Zvejnieki, then moved to the coast and later moved back again. It is unfortunate that the fibula showed such poor preservation, given that data from the fibula would have offered an opportunity to detect the diet during his last few years prior to death, as opposed to the skull bone, which is likely to represent a considerably longer period. Therefore it is not possible to distinguish whether he was in fact a long-term migrant or regularly travelling between Zvejnieki and the coast.

The variation in stable isotope values for his teeth, representing the young child, the older child and the teenager, respectively, could be interpreted in two different manners. The variation in $\delta^{13}C$ could be regarded as a continuous process of gradually increasing quantities of marine protein input to the diet from early childhood to adolescence, finally peaking when the man as an adult consumed the highest amounts of marine foodstuffs. An alternative view would be to regard the isotopic variance for teeth as a result of seasonal differences. Since the portion of each tooth where the sample was drilled was formed during such a limited period, conceivably less than a year, seasonal differences are more likely to be recorded than for bone where the formation and remodelling processes take place during several years and any seasonal variation is levelled out. Moreover, previous stable isotope analyses of other Zvejnieki

individuals have indicated that seasonal differences in diet were in fact present (Eriksson 2006; Eriksson *et al.* 2003).

Isotopic investigations employing the same sampling strategy for tracing intra-individual changes, have been performed on skeletal material from a limited number of Mesolithic and Neolithic sites in the Baltic region, making an interesting comparison to the Zvejnieki case (Figure 1 for location of the sites). The oldest example is from Hanaskede, a stray find of a skull in the interior of the Swedish mainland, radiocarbon dated to 8,835±90 BP (Ua-10295), from which skull bone and the first and second molars were analysed (Lidén *et al.* 2004). From the famous Skateholm I cemetery, situated by a lagoon on the southern coast of Sweden, a canine tooth and the first and second molars from grave 7, radiocarbon dated to 6,200±70 BP (Ua-19882), were subjected to analysis (Eriksson and Lidén ms). From Alby on the eastern coast of Öland, a grave roughly contemporaneous with the Zvejnieki burial, dated by radiocarbon to 5,260±70 BP (Ua-2333), skull bone, an ulna, and all three molars were analysed (Lidén *et al.* 2004). From the Pitted Ware cemetery at Västerbjers on the eastern coast of Gotland, finally, a substantial number of individuals were analysed in the same mode, here exemplified with grave 24, radiocarbon dated to 4,135±50 (Ua-19395) from which again skull bone as well as three molars were analysed (Eriksson 2004). All were adult male individuals except for the Västerbjers burial, which was an adult female.

	Hanaskede	Skateholm I, grave 7	Alby	Västerbjers, grave 24	Zvejnieki, grave 165
$\delta^{13}C$ (‰) teeth	–18.7±0.5	–18.6±0.5	–14.6±0.3	–14.8±0.6	–21.2±0.7
$\delta^{13}C$ (‰) bone	–19.7		–15.2±0.0	–15.3	–18.8
$\delta^{13}C$ (‰) diff. teeth–bone	–1.0		–0.7	–0.5	2.3
$\delta^{15}N$ (‰) teeth	11.2±0.4	13.8±0.2	15.3±0.3	15.7±0.6	13.2±0.5
$\delta^{15}N$ (‰) bone	9.9		15.3±0.5	15.6	12.0
$\delta^{15}N$ (‰) diff. teeth–bone	–1.3		0.0	–0.1	–1.2

FIGURE 5. Comparative intra-individual isotopic data (mean±s.d.) for Zvejnieki burial 165 and other Mesolithic and Neolithic sites (see main text). Data from Eriksson (2004), Eriksson and Lidén (ms), Lidén *et al.* (2004) and the present study.

Comparative stable isotope data for the four sites and Zvejnieki are presented in Figure 5. Comparison between the average tooth value and the bone value for each individual reveals that at no other site there was such a large $\delta^{13}C$ difference as at Zvejnieki, 2.3 ‰, and only at Hanaskede there was a comparable difference in $\delta^{15}N$, 1.3 ‰. Accordingly, it can be concluded that the dietary shift recorded for the Zvejnieki individual was substantial, and greater than for any of the other individuals. Remains the question of how to interpret the variation in tooth stable isotope values – actual dietary change already during childhood or merely signs of seasonality?

The standard deviation of $\delta^{13}C$ for the teeth was 0.7 ‰, which is higher than for the comparison sites. For $\delta^{15}N$ only Västerbjers has a higher standard deviation, 0.6 ‰, as compared to 0.5 ‰ for Zvejnieki. In order to estimate the occurrence of seasonal differences in diet, the ideal would be to analyse both bone and teeth from a representative portion of the population. The prediction would then be that if there were in fact seasonal variation in diet, the standard deviation for teeth on the one hand, would be significantly higher than for adult bone on the other, provided the population had a fairly uniform diet. Although this has not been tested for Zvejnieki, this was in fact tested for the Västerbjers population, who despite a fairly uniform diet dominated by seal, did not display statistically significant differences in standard deviations for teeth vs. bone. There was, however, other statistically significant differences, where $\delta^{15}N$ tended to increase at the individual level from early childhood to adolescence. This points to variation connected to age, rather than season, and the standard deviation accordingly cannot be taken as an indication of seasonal differences at Västerbjers.

Following that line of argument, the variation for the Zvejnieki individual should not be interpreted as a seasonally changing diet, but, on the contrary, as an actual shift of diet initiated already during childhood, although on a small scale. Considering that a permanent change of residence in childhood would have resulted in a much sharper shift in diet, associated with much higher $\delta^{13}C$ tooth values, a continuous mixing of marine and freshwater diets are more consistent with the isotopic data. One could tentatively regard this as either regular trips to the coast, or as consumption of marine foodstuffs (such as seal) on a regular basis.

There is nothing very distinctive about burial 165 compared to other Middle Neolithic burials at Zvejnieki with regard to the manner of deposition. It does, however, stand out in two regards. Firstly it contained bird bones, which makes it fairly exclusive at Zvejnieki; bird remains were recovered in only 14 graves at Zvejnieki (Mannermaa 2006). Jay, with its distinctive blue colour, was recovered in two additional graves, both of Middle Neolithic date, whereas mallard or other ducks were present in graves of all dates (Mannermaa 2006). Secondly there were a notable number of dog-tooth pendants, 16 out of a total of 24 tooth pendants deposited with the interred. Although dog is the most common species for tooth pendants during the Middle and Late Neolithic (Eriksson *et al.* 2003), only one other burial contains more dog-tooth pendants, namely grave 153 (Lõugas 2001), which has been radiocarbon dated to the Early Neolithic. It is interesting that this latter burial also contained two complete birds, both ducks (Mannermaa 2006). In contrast to grave 165, however, none of the analysed dog tooth pendants from grave 153 showed any marine isotopic signals (n=3) (Eriksson 2006).

Conclusion

This study has demonstrated the great potential in employing stable isotope analysis to several skeletal elements from one individual to trace life-history changes in diet, an important improvement in isotopic studies in recent years. Based on the stable isotope data I suggest that the man interred in burial 165 grew up at Zvejnieki, then presumably moved to the coast for several years, only to return to Zvejnieki as an adult. Although it cannot be stated with certainty, due to lacking reliable data from the fibula, I favour the interpretation of migration, rather than the alternative scenario of continuous and frequent travelling between the coast and Zvejnieki. His coastal contacts seem to have started at a small scale already at a young age, but the actual change of residence must have occurred after adolescence. Future research will demonstrate if this individual at Zvejnieki was unique in terms of his demonstrated mobility, or if there are more, as yet undetected, migrants among the interred.

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ILGA ZAGORSKA

On the road to the eastern shore of the Baltic basin

EVEN IN THE DISTANT past, people were open to discovering and settling strange, unfamiliar lands. There was a desire to become acquainted with foreign lands, lands beyond the horizon, new territories having their own hills and valleys, rivers and lakes, prevailing winds and weather patterns, flora and fauna, a desire to make these new territories dear and familiar. This pioneering process might last several generations, or continue for millennia (Fuglesvedt 2003:79–96).

A vivid example of such a pioneering process is Northern Europe at the very end of the last glaciation, when the retreat of the ice sheet was accompanied by the re-colonisation of extensive land areas in the north. From Denmark and Sweden in the west to Lithuania and Latvia in the east, the former shores of the Baltic Ice Lake have furnished a rich corpus of archaeological material: animal bone, antler and bone artefacts, and especially flint tools (A. Fisher, L. Larsson, W. Taute, T. Terberger, R. Schildt, S. Sulgostowska, R. Rimantiene, T. Ostrauskas and others). A significant contribution to the study of the process of settlement of the western shore of the Baltic Ice Lake has been made by Professor Lars Larsson (Lund). Tracing the course of glacial retreat in Southern Scandinavia, he has distinguished the earliest reindeer-hunter settlements, from the Hamburg Culture sites of the Allerød, up to the more extensive settlement evidence in the Younger Dryas, with a flint and antler inventory characteristic of the Bromme and Ahrensburg Cultures, augmented with finds of sub-fossil reindeer remains (Larsson 1991a, 1991b, 1993, 1994, 1996, Larsson *et al.* 2002).

Settlement of the *eastern shore* of the Baltic Ice Lake occurred at a slightly later date. During the last, Weichselian, glaciation, the south-eastern part of Lithuania was ice-free. The rest of the East Baltic gradually became free of the continental ice sheet in the period 18,000–11,000 BP (Raukas *et al.* 1995). In Lithuania, the earliest evidence of human presence dates back to the second half of the Allerød, which saw climatic amelioration and the development of continuous plant cover and forest (Rimantiene 1994:34; Šatavičius 2004, 2005). In Latvia, the earliest traces of human activity are from the Younger Dryas (Zagorska 1999:131–156). In the Baltic, this period corresponds to Phase 3 of the Baltic Ice Lake (DR III), the shore formations of which are still clearly visible in the relief of western and central Latvia. The climate had grown cooler again, and the vegetation was park tundra, with pine, dwarf birch, black alder, dwarf willow, various sedges, *Artemisia* and mosses.

Whether *mammoths* were still living in Latvia at this time is hard to say. There are mammoth bones from the whole territory of present-day Latvia, but, so far, they remain undated (Lukševiča 1991:8–15). In Lithuania, mammoth finds relate to the Middle Phase of the Weichselian Glaciation, 46,000–30,000 BP, but no later (Daugnora 2004:9–16). On the other hand, in neighbouring Estonia, to the north, mammoth bones have been dated to various interstadials of the Weichselian Glaciation and to the very close of the glaciation, about 10,000 BP. The most recent finds, from Puurmani, evidently relate to influences from the northern part of European Russia: mammoth bones of a similar age have been found at Cherepovets, near Rybinsk (Lõugas *et al.* 2001:8). It seems, however, that the territory of Latvia was connected more closely with areas to the south and south-west, *i.e.* the lands of Central Europe, where mammoths were already extinct at the very end of the glacial. An answer to this question might be obtained if at least some of the mammoth bones found in Latvia were to be dated.

In Northern Europe, the most characteristic element of the Lateglacial fauna was the *reindeer* (Ukkonen 1993; Aaris-Sørensen 2000:36–44; Rankama *et al.* 2001:131–147). In the East Baltic, too, the reindeer (*Rangifer tarandus*) was widespread in the Lateglacial, from the former East Prussia (the present Kaliningrad Region) up to the north coast of Estonia. Some light has been shed on the distribution and age of reindeer remains in the East Baltic and their relationship to the earliest human settlers of this area by recently obtained radiocarbon dates (Ukkonen *et al.* 2006).

The largest numbers of reindeer bone and antler finds are concentrated in the Kaliningrad Region of Russia, *i.e.* the former East Prussia (Gross 1943:47; Paaver 1965:280–288). In Lithuania, there are 16 known findspots of reindeer antlers and bones, mainly concentrated in south-eastern Lithuania and along the west coast – on the Kuršiu Nerija Spit, near Klaipėda and Nida. These finds cover a fairly long period, from the very end of the Bølling up to the Younger Dryas (Daugnora *et al.* 2005:119–132). In Latvia, there is written evidence of 23 find-spots of reindeer bone, but not all the antler and bone finds are preserved. These finds are concentrated mainly in central Latvia, in the waters of a gulf of the former Baltic Ice Lake, in the very north-western part of the country, and across a somewhat wider area of eastern Latvia (Figure 1). Compared with the above-mentioned dated samples from Lithuania, they are slightly more recent:

TABLE 1. Site chronology. (After Ukkonen, Lõugas, Zagorska, Lukševiča, Lukševičs, Daugnora and Jungner, Boreas, 2006.)

No.	*Site place*	*Lab. Nr.*	*Age yr BP*	*Age cal. yr BP*
	Estonia			
1.	Kunda	Hela-597	10170± 95	12060–11580
2.	Kunda	Hela-598	9970± 85	11590–11280
	Latvia			
3.	Tīrelis Bog	Hela-602	10890± 135	13050–12850
4.	Odziena	Hela-604	11030± 80	13110–12990
5.	Nītaure	Hela-606	11565± 80	13760–13460
6.	Olaine	Hela-603	10780± 90	12930–12700
7.	Lake Lubāns	Hela-607	9980± 70	11560–11290
8.	Tetele	Hela-608	10345± 75	12500–12010
	Lithuania			
9.	Debeikiai	Hela-599	12085±100	14180–13900
10.	Rudamina	Hela-600	10435±95	12600–12170
11.	Ežerelio	Hela-601	10975±85	13100–12940

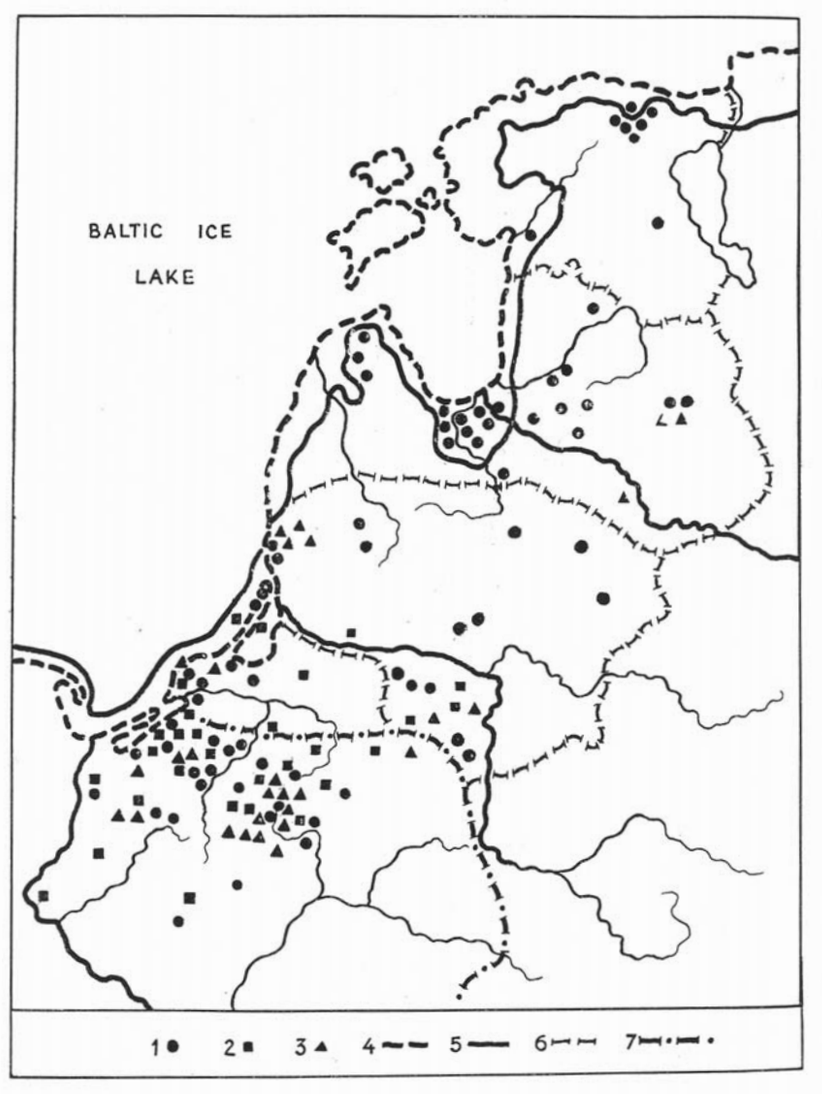

FIGURE 1. Distribution of finds of sub-fossil reindeer remains in the East Baltic (North-east Poland, Kaliningrad Region, Russia; Lithuania, Latvia, Estonia); 1, 2 – unworked reindeer antlers and bones; 3 – artefacts, made from reindeer antler or bone; 4 – Baltic Sea shoreline; 5 – present-day Baltic Ice Lake shoreline; 6, 7 – present borders of the countries (after H. Gross, 1943; K. Paaver, 1965; Daugnora *et al.* 2005; and Ukkonen *et al.* 2006).

they have been dated to the very end of the Allerød, the Younger Dryas and the very beginning of the Preboreal (Zagorska *et al.* 2005). In Estonia, a total of eight reindeer bone finds are known, mainly recovered from the deposits of Lake Kunda in the north of the country. Two of the dated Kunda finds have produced dates as late as the Younger Dryas–Preboreal transition (Ukkonen *et al.* 2006).

The finds of reindeer bones and the dates obtained for them are generally consistent with the course of deglaciation in the East Baltic. Corresponding to the direction of the melting and retreat of the ice sheet, the oldest reindeer bone finds come from the territory of Lithuania, and the most recent from Latvia and Estonia, providing a good picture of the rapid colonisation by periglacial fauna of the eastern shore of the Baltic Ice Lake at 12,000–10,000 BP. Thus, the youngest finds of reindeer bone are known from the shores of Lake Lubāns in Latvia (9980±70 BP) and Kunda in Estonia (9970±85 BP). Similarly dated is the antler of a tundra reindeer from the Masurian Lake District of north-eastern Poland: 10060±50 BP (Gizejevski *et al.* 2004). By comparison, along the western shore of the Baltic Basin in the Late Glacial, reindeer inhabited Denmark at around 12500–9700 BP, and southern Sweden at around 11700–9500 BP (Rankama *et al.* 2001).

Of archaeological importance is the dating of a reindeer antler from Olaine in Latvia. Palaeozoologist L. Lõugas (Tallinn) suggests that this robust antler, which still has part of the skull attached, might indicate that the animal had been killed by hunters (Figure 2). If so, then we can regard the period around 10780±90 BP as

being the time of the earliest known settlement in the territory of Latvia.

As already mentioned, archaeological evidence characterising the ancient *reindeer hunters* is preserved in Latvia only from the Younger Dryas onwards. Testifying to the presence of the earliest inhabitants of this area are stray finds of flint tools, archaic forms of bone and antler harpoons and settlement sites with a rich flint assemblage. As is known, the richest site from this period has been discovered at Salaspils Laukskola, by the former mouth of the Daugava, where the river entered the Baltic Ice Lake. An extensive range of flint hunting tools was found here, tanged points prominently represented among them (Zagorska 1994:14–28, 1996:263–272, 1999:131–156). Archaeological material of a similar kind, representing the Final Palaeolithic Swidry Culture Group and distant influences of the Ahrensburg Culture, has been obtained south of the East Baltic, in the basins of the Vistula, Pripet and Nemunas. Evidently, it was from these regions of Northern Europe that the ancient reindeer hunters arrived in Latvia. The finds are dated on the basis of typological similarity with Final Palaeolithic material from Lithuania and Poland to the Younger Dryas, the 9th mill. BC (Rimantiene 1994:33–44, Schild, 1989:91, 1996:288), and their age corresponds well with the period when reindeer were present in the East Baltic.

The distribution of the artefacts and likewise that of the

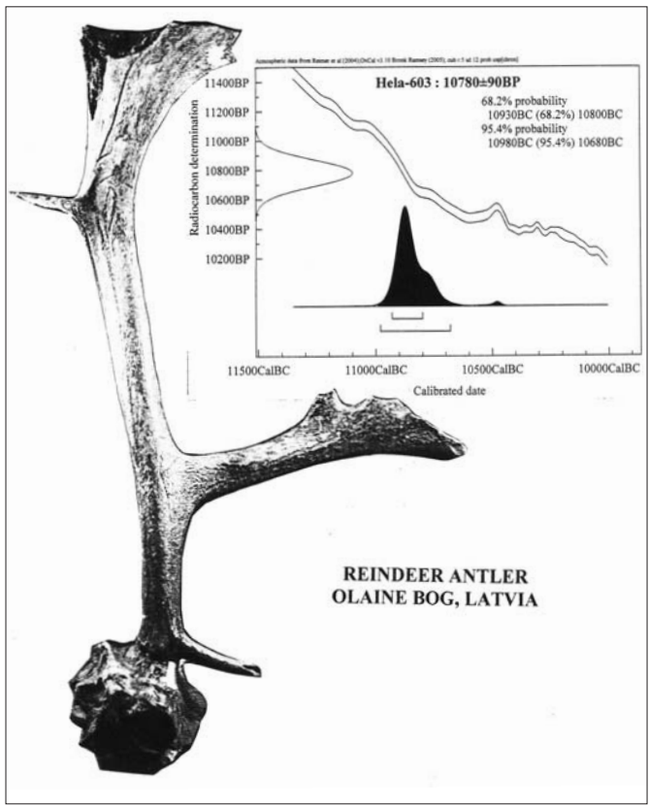

FIGURE 2. The reindeer antler from Olaine Bog, Latvia, and its calibrated date.

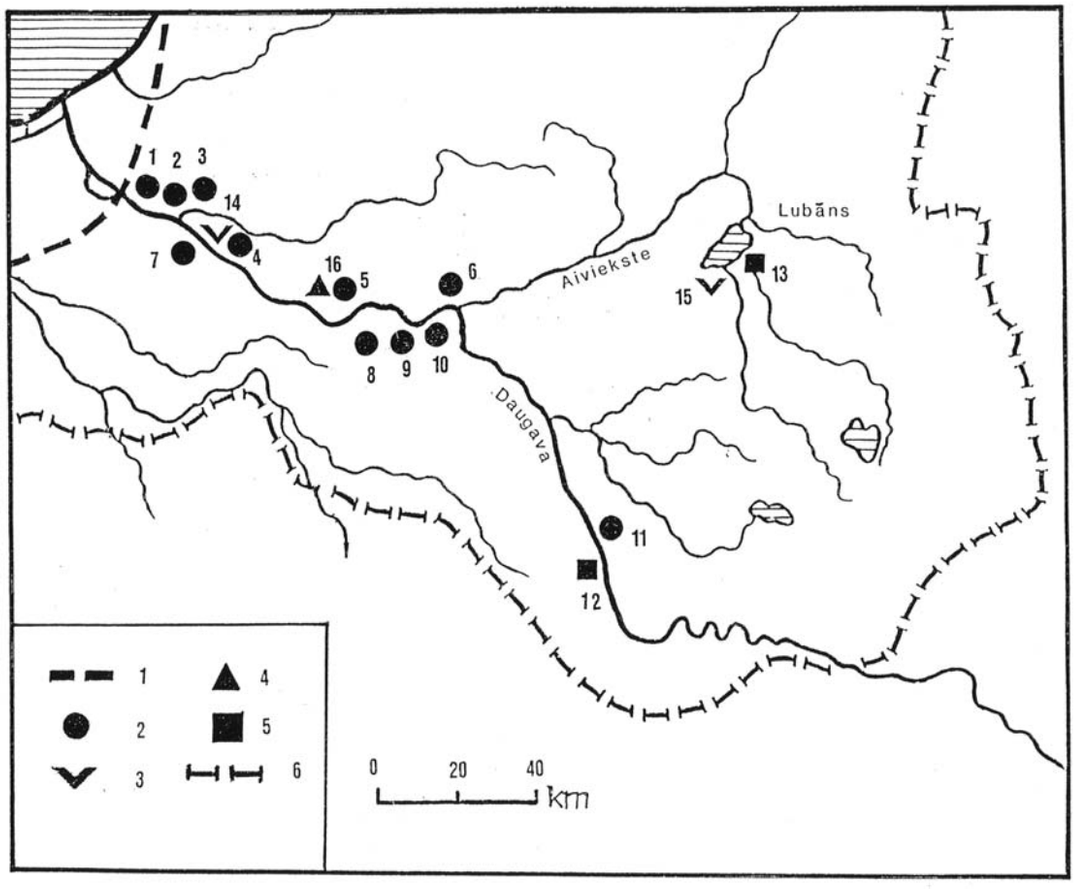

FIGURE 3. The River Daugava Valley, showing findspots of Final Palaeolithic material (I – former shoreline of the Baltic Ice Lake; II – Final Palaeolithic sites with a flint assemblage; III – finds of reindeer antler; IV – flint source in Vinkelmaņi Ravine; V – finds of bone and antler harpoons; VI – present-day border of Latvia.

FIGURE 4. Professor Lars Larsson at Zvejnieki. To his right is the slope on which the Zvejnieki II Mesolithic site is located. Photo: I. Zagorska.

sub-fossil reindeer remains clearly indicates the *route of arrival* of the first hunters in Latvia. Thus, reindeer bone finds concentrate in western Lithuania, close to the present-day coast, and spears and an arrowhead made from reindeer bone and antler have been found at Klaipėda (Rimantiene 1994:33). This may indicate one of the routes taken by the ancient hunters: following the coast of the Baltic Ice Lake. So far, there is little data from western Latvia, but it is possible that more intensive research in this region, which has begun in recent years, will yield new evidence.

However, most of the evidence of human presence in Latvia in the Lateglacial is connected with the river valleys of two of the country's major rivers: the Lielupe and Daugava (Zagorska 1996:263–272; 1998:5–20). Via the valley of the Dviete, a tributary of the Daugava, and its lake system, the groups of reindeer hunters, already inhabiting eastern Lithuania at an earlier date, could reach the Daugava Valley near the present city of Daugavpils. Proceeding along the banks of the river, the ancient hunters could travel to the former river mouth, at present-day Salaspils. By the Allerød and the Younger Dryas, the river channels and banks had in large measure already developed. Suitable locations for settlement could be found on the high terraces of the Daugava, the former islands in the river and the former ice-marginal basins, which had developed into lakes. So far, four ancient settlement sites are known along the left bank of the Daugava and seven along the right bank. Also, a reindeer skull has been found on a terrace by the mouth of the River Ogre, a tributary of the Daugava, and in one of the ravines not far from a settlement site a source of poor quality flint has been identified (Figure 3). Rapids and shallow stretches of the river are still present today near the sites occupied by the ancient reindeer hunters, and it seems that in the Lateglacial, too, these points could be used by the reindeer to ford the river. The situation along the Lielupe is similar. Although in the Lateglacial the extensive Zemgale Gulf extended far into the Lielupe Basin, nevertheless, the upper course of the Lielupe had already formed, downstream of the confluence of the Rivers Mūsa and Mēmele. A large number of reindeer bones have been recovered by the shore of the Baltic Ice Lake around the former mouth of the Lielupe, and also in the area of the shallow waters of the gulf. Also, at least four occupation sites along the River Lielupe have produced artefact forms as old as the material from the Daugava Valley. One of these – Ziedoņskola – is located on a former island, with a ford across the river at its southern end (Eberhards *et al.* 2002). The situation is similar along the banks of Lithuania's largest river, the Nemunas, and along the Neris, Ula and Šešupò, where Palaeolithic sites have been found near shallow stretches of the rivers (Daugnora *et al.* 2005:123–126, fig. 8). The association of stray finds and occupation sites with deep, north-south oriented river valleys is a phenomenon observed in the Final Palaeolithic throughout Northern Europe. Precisely such locations were occupied by the ancient hunters, in order to attack their quarry both in the water and on the

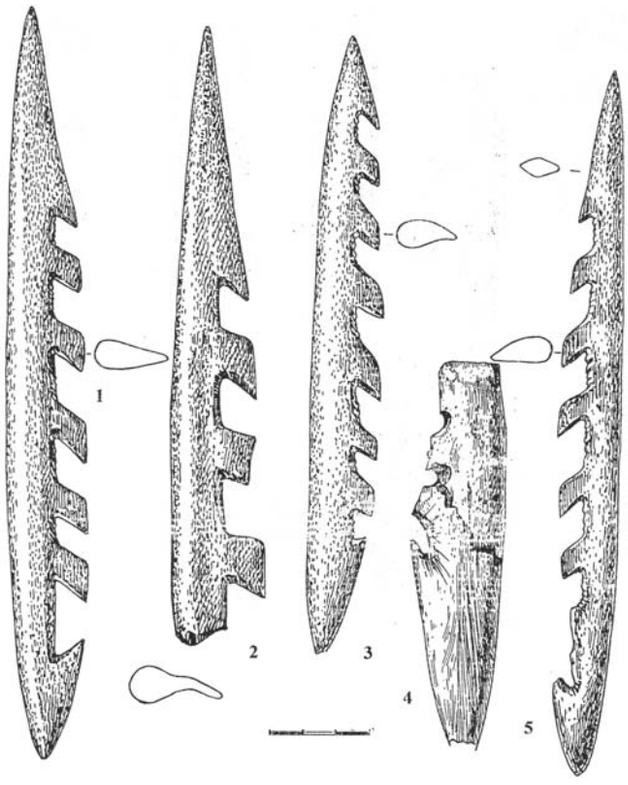

FIGURE 5. Bone and antler harpoons: 1–3, 5 – stray finds of bone harpoons from the shores of Lake Lubāns (CVVM) and fragmentary harpoon from Zvejnieki II settlement site lower layer (LU Institute of Latvia History). Drawing by M. Jankalninas.

shore. These occupation sites indicate the routes followed by the reindeer on their migration from summer to winter pastures and back again. Since the reindeer tended to follow predictable routes, the hunters awaited them at the accustomed places.

Considering the distributions of both sub-fossil reindeer remains and settlement sites in the East Baltic, it seems that the winter settlements were concentrated in the areas of former East Prussia and southern Lithuania and that in their summer migration the reindeer travelled north along the banks of the Lielupe and Daugava, and maybe also along the Baltic Ice Lake, reaching as far as northern Estonia (Figure 1). In the Lateglacial, the reindeer was apparently the main food source for the ancient hunters. Judging from the extent of the occupation sites discovered in the territory of Latvia and the small numbers of flint tools, these sites were evidently short-term camps, reflecting the mobile way of life of the ancient hunters. The only exception to this pattern may have been the lower course of the River Daugava near its former mouth, where intensive occupation is observed at the very end of the glacial, with extensive, repeatedly-visited sites, such as Salaspils Laukskola. Based on the fairly large number of finds of sub-fossil reindeer remains – around 50 – palaeozoologists have suggested that the East Baltic may even have been an area of stable residence for reindeer (Ukkonen *et al.* 2006).

The fate of the reindeer and their hunters is not very clear. Evidently, partial local extinction occurred among the animals at the beginning of the Holocene, due to the onset of abrupt climatic change and the rapid spread of forest cover. No evidence has been found that they moved northwards from the East Baltic to reach southern Finland, as was previously considered. In the first place, because of rapid ice melting, the territory of southern Finland had been reduced to a scattered archipelago. Secondly, the archaeological material does not confirm the presence of reindeer in southern Finland in the Middle Stone Age, the Mesolithic (Matiskainen 1989:67; Schulz 1996:25; Rankama *et al.* 2001:136–140).

In Latvia in the Middle and Late Stone Age, *lake basins* developed into centres of intensive settlement. While the reindeer, *Rangifer tarandus*, which was adapted to tundra conditions, died out, the hunters evidently survived by adapting to the new conditions and changing to a new subsistence strategy. Recently, interesting evidence has come to light at the Zvejnieki archaeological complex in the Lake Burtnieki Basin (Figure 4). On the north slope of the former island at Zvejnieki, in the lowermost stratum of the Mesolithic settlement site, a fragment of an archaic broad-toothed harpoon was found, made of grey, fine-structured bone. Certain harpoons of similar form and bone structure, earlier already typologically considered to be Preboreal, have also been found in the Lake Lubāns Basin (Zagorska 1983:75). The harpoon from the Zvejnieki II site has now been dated to 9170±70 BP (Ua-1979) (Figure 5). Within the frame of interdisciplinary studies aimed at broadening the scope of research on the Zvejnieki archaeological complex, it has been established that this artefact may have been made from the bone of the herbivore that subsisted mainly on lichens (Eriksson 2006). If this is confirmed by additional studies, then this would represent the most recent evidence of the presence of reindeer on the eastern shore of the Baltic Sea Basin, in the early part of the Holocene.

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THE NEOLITHIC PAST

LEENDERT P. LOUWE KOOIJMANS & LEO B. M. VERHART

Pebbles and paddles

On Rijckholt flint distribution and water transport in the Mesolithic and Neolithic of the Netherlands

Introduction

IN 1997 A LARGE block of Rijckholt-type flint, a precore, was found in the well-stratified Late Mesolithic levels of Hardinxveld-Polderweg, below a cover of 7 m. of later Holocene deposits (Figure 2). The same deposits contained some equally large pebbles of quartz and quartzite and an angular piece. The sealed-in association is so secure that the stones were beyond doubt brought to the site by the inhabitants (Louwe Kooijmans 2001a).

The precore must have been imported from a source some 150 km. away. The other stones most probably derived from the Ardennes Massif (Van Gijn, Beugnier and Lammers-Keijsers 2001). They face us with the problem of their transport. Small loads like pyrite, jet, amber or high-quality mined flint artefacts will easily have been transported on foot, either by expeditions or in a down-the-line exchange. It is however hard to imagine that these stones were subject of exchange or that prehistoric people made the trip with one or more of these heavy stones in their bags or rucksacks. Alternative ways of transport have to be considered, the most plausible of these being boats.

We will first have a look at the imported material, concentrating on Rijckholt flint, and subsequently discuss the evidence for means of water transport.[1]

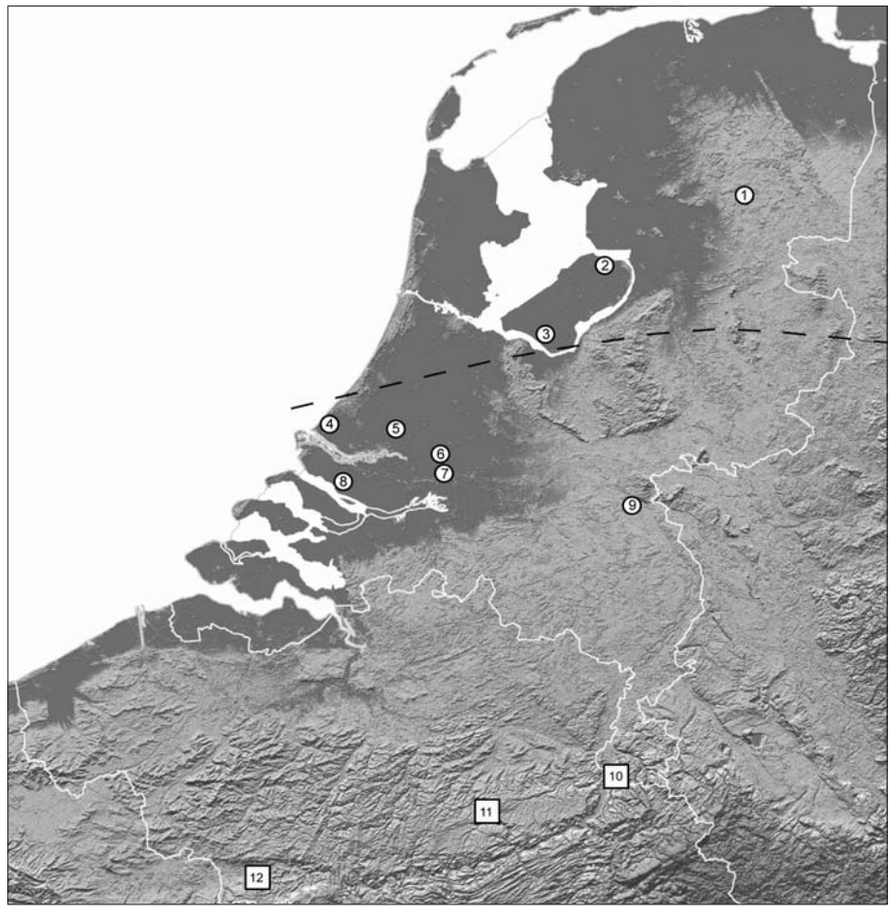

FIGURE 1. Lower Rhine Basin with the main sites mentioned in the text. Northern limit of Rijckholt flint artefacts (except outliers) indicated with a dashed line.
1. Pesse, 2. Swifterbant, 3. Hoge Vaart, 4. Schipluiden, 5. Bergschenhoek, 6. Hazendonk, 7. Hardinxveld-Giessendam, Polderweg, De Bruin, 8. Hekelingen, 9. Kraaienberg, 10. Rijckholt, 11. Jandrain-Jandrenouille, 12. Spiennnes.

Rijckholt flint

Flint of good quality was essential for the production of blade and flake artefacts and axes. In the hilly and southern part of the Netherlands and Belgium chalk deposits are found, containing fresh flint of high quality. One of the best-known sites is Rijckholt (De Grooth 1991, 2005). Rijckholt-type flint is quite easily recognizable macroscopically and can be distinguished from other flint sources in the southern Netherlands and adjacent regions. This provides

FIGURE 2. The Late Mesolithic precore from Hardinxveld-Polderweg, scale 1:4.

the opportunity for mapping the flint types and studying the procurement areas.

There are, however, some problems for the study of the distribution of Rijckholt-type flint on a larger scale. Identical flint can be found at Spiennes and Jandrain-Jandrenouille (Orp-le-Grand) in Belgium. This problem of identification especially plays a role in the distribution of more widespread, and often also more valuable, artefacts like axes.

Flint of Rijckholt type can be found at three kinds of localities. First, in river sediments and deposits rather small rolled nodules occur. These rolled flint nodules are widely available in the terrace deposits of the southern and central Netherlands and were used in all stages of Dutch prehistory, although the quality of this flint is not very good. The material was regularly used in the Palaeolithic and Mesolithic, but was mainly an additional source of raw material for the production of locally used and less formal tools in the Neolithic. The nodules are rather small.

The second type of locality consists of eroded slope deposits in the chalk district, the *eluvium*. In this loamy sediment large nodules (>50 cm.) can be found with a moderately worn cortex. They are of rather good quality and are suitable for the production of regular large blades and axes.

The third type of locality is the chalk itself with its embedded flint. Fresh flint could be collected at exposed valley slopes or quarried from the chalk itself. An extensive shaft-and-gallery mining complex is situated between the villages of Rijckholt and St. Geertruid. The depth of the mines varies from 5 to 16 metres and the total number of shafts was estimated at 2000 (De Grooth 2005:244).

Enormous quantities of flint were exploited and worked in the open air close to the mine. A large depression, called the Grand Atelier, measuring 55 by 40 metres, is fully filled with a 1.5 metre thick layer of flint debris. The flint working was concentrated on the production of rough-outs: blades and axes and picks for digging the mine.

The exploitation of eluvial flint probably started at Rijckholt in the Mesolithic. The LBK communities collected flint there as well, but deep mining did not start earlier than the Middle Neolithic. Radiocarbon dates from samples collected in the mine galleries themselves revealed dates between 5,090 and 5,000 BP. These dates are restricted to the utilization of a small part of the mining field and do not cover the full time range of exploitation. It is, however, generally accepted that the main exploitation of the Rijckholt flint mines took place in the Middle Neolithic A. De Grooth proposed an extension into Middle Neolithic B, but finds of mined flint of any importance are lacking up till now at settlements from that period. From the Late Neolithic no flint mining activities are known.

It is obvious that the discovery of the 4 kg. precore at Hardinxveld-Polderweg, firmly dated to 55–5,300 cal. BC, was a complete surprise. It forces us to reconsider our ideas about the way Rijckholt flint was exchanged and transported. The nodule must have been collected at secondary positions such as river terraces, eluvia and riverbeds.

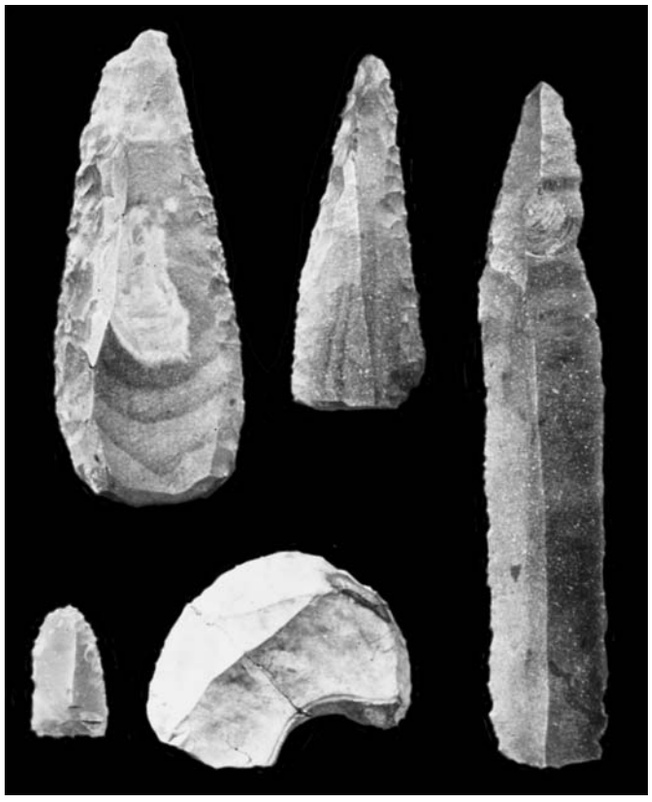

FIGURE 3. Some artefacts made from imported Rijckholt flint from the Hazendonk, dated to *c.* 3,600 cal. BC.

The distribution of Rijckholt flint in the Netherlands itself is not very well studied, but outside the Netherlands it seems to extend in a north-eastern direction over *c.* 300 km. and in a south-eastern direction up to 400 km. (Gabriel 1974; Willms 1982). The large distances relate to outlying finds in the distribution. In the Netherlands itself the distribution is more restricted.

This information has been based on individual site reports, a preliminary study of the retouched tools of Rijckholt flint in the collections of the National Museum of Antiquities (NMA) and the detailed survey of Stone Age sites in the Limburg Meuse valley (Verhart 2000).

The Rijckholt-type flint in the NMA originates from 92 sites, from stray finds to excavated settlements, spread all over the Netherlands. These data are regarded as reliable for an impression of the extent of its distribution and of its artefact classes on Dutch territory. Rijckholt flint appears to have a maximum extension of 175 km. from its source and to be nearly absent in the north of the Netherlands. Complete and finished tools had the widest distribution, unretouched blades and flakes were found up to 150 kilometres from the source and cores not farther away than 50 kilometres.

Site excavations are the most detailed source of information. At Groot-Linden-Kraaienberg, approximately 100 km.

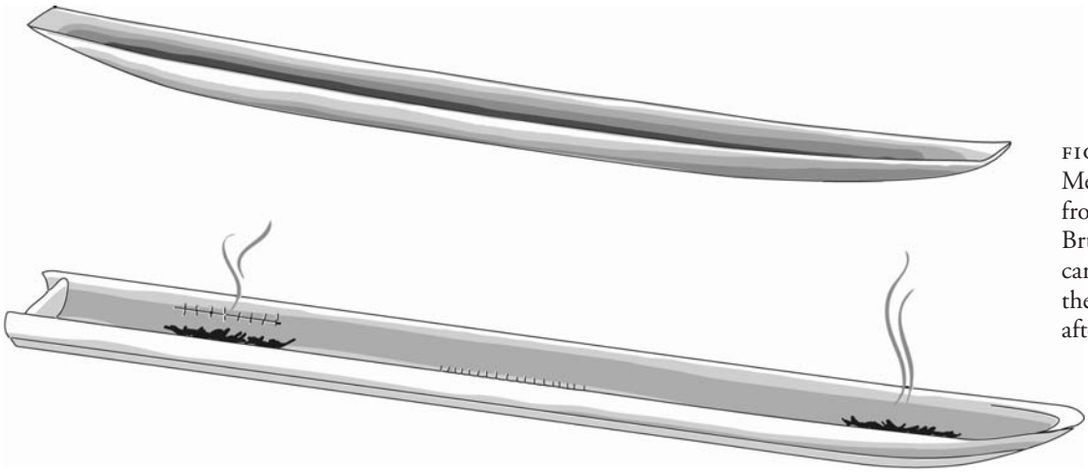

FIGURE 4. The Late Mesolithic dugout canoe from Hardinxveld-De Bruin, compared to the canoe Lystrup I below at the same scale (Lystrup after Andersen 1993).

to the north of Rijckholt, unused flakes and blades were found, together with finished tools (Louwe Kooijmans and Verhart 1990). Three blades could be refitted, revealing that they could not have been made at the site itself, since the blades were struck from at least two striking platforms. Production waste is not present at the site so the large flakes were imported as well.

At the well-known wetland sites in the western part of the Netherlands (Hazendonk, Brandwijk, Hardinxveld-De Bruin, Hardinxveld-Polderweg and Schipluiden) mainly retouched and used tools were found, while unretouched flakes and blades of mined flint are scarce (Figure 3). Exceptions are two long blades from Hardinxveld-De Bruin, which were not transformed into formal tools, but of which one was intensively used (Van Gijn, Lammers-Keijsers and Houkes 2001). Most tools at these sites have small dimensions, implying that the flint originated from secondary sources like rivers and the coastal beaches.

De Grooth (1991) described the exploitation system. She regards the mines as exploited by part-time miners and farmers. The production was concentrated on rough-outs, which were exchanged in a system of both social and economic significance, embedded in a down-the-line exchange system between persons and groups.

We can conclude that artefacts of Rijckholt flint are a rare and striking exotic component on all Middle Neolithic sites, especially on sites more than 100 kilometres from Rijckholt. The assemblages are characterized by a combination of this imported high-quality flint with locally knapped flint of lower quality. This combination seems to have its origins in the Late Mesolithic.

The low numbers of blades and flakes and their modest weight do not give problems for reconstructing transport from hand to hand or by expeditions on foot, but the large blocks of flint and stone from the Late Mesolithic levels of Hardinxveld-Polderweg complicate the picture. We should not make the case too dramatic, however. On the one hand not more than 20 % of the Polderweg site has been excavated, which means that the total number of "big stones" originally present at the site may be about thirty, for a time span of 200 years. The total quantity of flint and stone present on both Hardinxveld sites can be calculated at about 500 kg. for about 1,000 years; at Schipluiden 100 kg. of stone and flint was recovered for 200 years of occupation. It is difficult to assess how much stone has "disappeared", but the total transport effort must have been rather modest after all. Still, those heavy stones were brought at certain moments to the sites from considerable distances. How?

Transport

The societies living in the wetlands of the Rhine/Meuse delta, who imported their stone and flint artefacts from the "far east" – the neighbourhood of Nijmegen – or from the "deep south" – the Belgian/South Limburg hills – have also left us material evidence for their means of travel in those marshy regions. There even are two finds of a Neolithic stone and flint axe from the seabed of the southern North Sea, indicating transport over sea.[2] Thanks to wetland conditions remains of canoes and paddles have been preserved in the marshland deposits in front of the sites. This equipment was essential for their mobility and subsistence in the lakes and marshes, for fishing, fowling and trapping, but was it suited and used for long-distance travel as well?

Dugout canoes

Four sites in the Lower Rhine Basin have produced dugout canoes or their remains, all discovered in the last fifty years – not an impressive data set for the period of five millennia.

Most famous is the Pesse dugout, still the oldest vessel in the world, accidentally found in 1955 and dated to 8,760±145 BP (Lanting and van der Plicht 1997/1998:154). The boat is made from a pine tree, fully in accordance with its age, and measures only 3 m. Its rough workmanship gave rise to discussion as to whether the object is a boat at all or possibly a trough, but there are good arguments in support of the boat option: a replica floats and easily carries an adult man, the shape is distinctly boat-like, with a prow and a stern,

the rough workmanship can be explained by the tree species used and the available equipment. One even might consider the boat as not completely finished.

All other canoes and fragments were found during settlement excavations in the Rhine/Meuse delta. Next in age are the complete boat and several fragments from the lowest levels (phase 1) of the site Hardinxveld-De Bruin, dated to 5,500–5,300 cal. BC, or the very end of the Mesolithic (Louwe Kooijmans *et al.* 2001b:455ff). The complete canoe was made from a lime tree and measures 5.55 m. in length to *c.* 50 cm. in width. The transition between the convex bottom and both boards seems to have been angular, with the flanging boards both broken at this transition and fallen into the interior (Figure 4). The canoe is very carefully shaped, with two rectangular, elegant bows and a very regular wall thickness of only 2 cm. No distinction could be made between the bow and stern end. Some traces of burning on the inside are explained as resulting from its production, in view of their location out of the central axis. The discarded worked wood from the same level comprised two remains of other canoes, both made of lime as well.

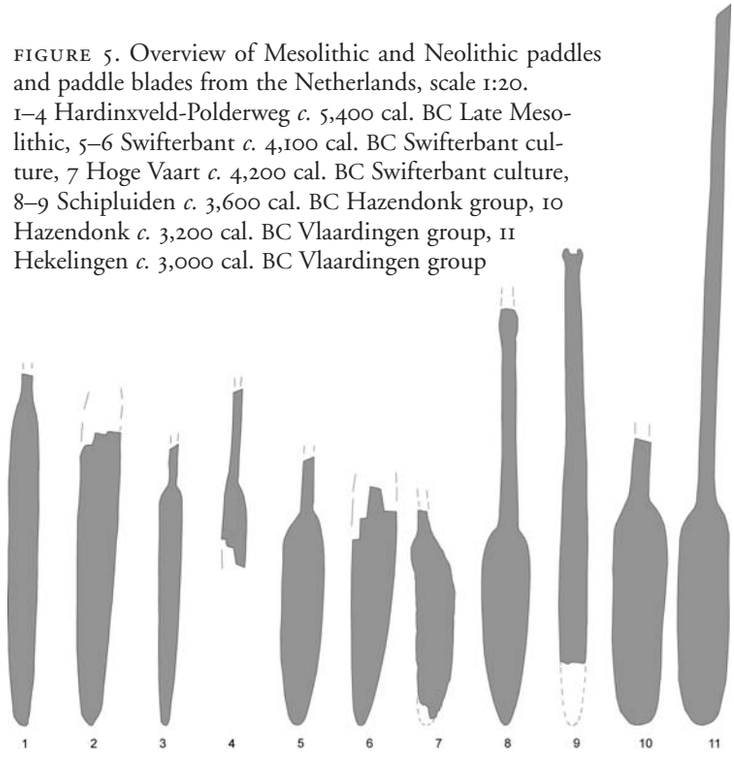

FIGURE 5. Overview of Mesolithic and Neolithic paddles and paddle blades from the Netherlands, scale 1:20. 1–4 Hardinxveld-Polderweg *c.* 5,400 cal. BC Late Mesolithic, 5–6 Swifterbant *c.* 4,100 cal. BC Swifterbant culture, 7 Hoge Vaart *c.* 4,200 cal. BC Swifterbant culture, 8–9 Schipluiden *c.* 3,600 cal. BC Hazendonk group, 10 Hazendonk *c.* 3,200 cal. BC Vlaardingen group, 11 Hekelingen *c.* 3,000 cal. BC Vlaardingen group

The winter fishing and fowling site of Bergschenhoek confronts us with the secondary use of a canoe made from an alder tree that apparently was considered unfit for use and broken apart into boards (Louwe Kooijmans 1987). Nine larger boards and some smaller ones were used together with bundles of reed, the remains of a fish trap and some small tree trunks to stabilize the campsite, which was situated on soft peaty subsoil. The boards were up to 1.5 m. long, up to 20 cm. wide and 2–4 cm. thick. Some were clearly curved in cross-section and one had some repair holes along one edge. The site is dated to the middle phase of the Swifterbant culture, around 4,200 cal. BC, or more than a thousand years later than Hardinxveld.

The last site is the Hazendonk, where a 2.5 m. long middle part of a canoe was found in the former wetland next to the Late Glacial dune, which supported Neolithic occupation in a number of phases between 4,000 and 2,500 cal. BC. The canoe fragment lay in the Early Vlaardingen level, dated to *c.* 3,200 cal. BC, again more than a millennium later than the previous site. The canoe was of oak, carefully made, with a wall thickness of 4 cm. A ridge had been saved in the middle of the preserved fragment, as known from many other canoes, like the Neolithic one from the Federsee. The Hazendonk canoe probably originally had a similar length of 8 m. or more. The find situation suggests that the missing parts were broken off for secondary use and that only the central bottom part was left. A 4.65 m. long fragment of a similar canoe, but with a clear bilge, was found at Hüde I (Dümmer) in Lower Saxony and dated *c.* 3,600 cal. BC (Schirnig 1979).

These modest data hardly allow any conclusions. The choices of wood in the subsequent cases fit the wood selection known, for instance, from Denmark, with the softwood types (lime, alder, poplar) in the earlier phases and the replacement by oak in an evolved stage of the Neolithic. The modest dimension of the Hardinxveld canoe is in agreement with that of the contemporaneous canoe Lystrup I (Andersen 1993). The main differences are the overall shape with two bows in Hardinxveld, as opposed to a stern with a transom inserted into a transverse slot in the canoe's end, and the use of fire in the construction. The Hardinxveld canoe shares its aspects with slightly younger (Neolithic) canoes from the Seine (Paris-Bercy) and Lac de Neuchâtel (Auvernier, Hauterive), and is considered to represent a western tradition, as opposed to that in southern Scandinavia (Arnold 1995–1996; Louwe Kooijmans 2001b:474ff). These southern cultural affinities are reflected in the sources of some raw materials, the contrast with Denmark being distinctly reflected in the bone and antler implements.

One may wonder whether the short and light Hardinxveld canoe was suited for long-distance travel and transport of stone from remote regions. It cannot be excluded either, but the sturdier Hazendonk boat seems to have been more reliable for such a purpose.

Paddles

Since 1976 fourteen Mesolithic and Neolithic paddles and paddle fragments have been uncovered from the wet margins of seven sites, dated to four moments in time, and all in the Dutch lowlands. They cover the same period as the canoes, with the exception of the Boreal. All are made from ash wood *(Fraxinus),* as they should be, but there ends the

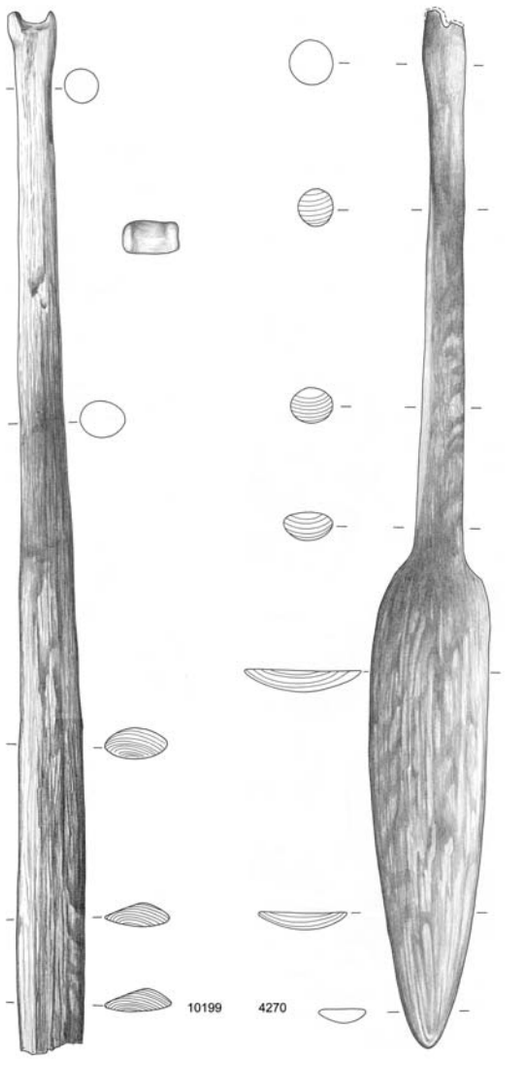

FIGURE 6. The Middle Neolithic paddles from Schipluiden, both preserved over 94.4 cm.

uniformity. They show us a remarkable diversity in shapes, bound to sites and phases (Figure 5).

The lowest level of the Hardinxveld-Polderweg site, dated to the same period as the De Bruin canoe, produced four paddle blades of various dimensions, but all of a long, slender and pointed shape. They were tangentially split from an ash tree and have an asymmetrical cross-section, with a flat and a convex side. The blades are very thin (1.5–2 cm.) and their width varies between 6 and 10 cm. The fragmentary largest blade originally may have been over 80 cm. long.

Swifterbant paddles are restricted to two sites in the central IJsselmeer region. Two blades were found in a gully fill next to site Swifterbant S3, another in a gully fill at Hoge Vaart. They are all dated to the middle phase of the Swifterbant Culture, *c.* 4,100 cal. BC. The blades are slightly shorter and broader than those from Hardinxveld-Polderweg, 10 cm. wide and 42, 48 and >55 cm. long, but they similarly end in a point.

The most recent finds are two rather different and sophisticated paddles from the site Schipluiden, dated to *c.* 3,600 cal. BC and culturally belonging to the Hazendonk Group (Figure 6). They are in many respects different from all the paddles mentioned above, but stand out by their fine workmanship and careful finish. One has very narrow flat-convex blade and a short handle with a sculptured grip that fits very well into the paddler's hand. The tip of the blade is broken off, but the paddle can be reliably reconstructed to a length of *c.* 1.04 m. The other paddle has a perfectly symmetrical pointed-oval shape, flat-convex in cross-section and measuring 44 x 10.5 x 1.9 cm. The handle is broken off above a slight thickening of the handle, and so perhaps shortly below the original end. The narrow blade would make the paddle especially suited for the technique of "sculling" at the stern of a boat, but its short length and the handle are convincing arguments against this option and for "normal" paddling in a seated posture.

Two paddles date to the Vlaardingen Group, *c.* 3,100 cal. BC. One blade was found at the Hazendonk in the same level as the canoe fragment, at a distance of only 3 m., which however does not imply that they necessarily belonged together. The other paddle, found at Hekelingen, has a long handle preserved and measures overall 1.64 m. It is not certain that this is the original length, since the end is not finished, but broken off obliquely in ancient times. Both blades are very similar in shape and dimensions: oval with a broad and rounded end and measuring 50 x 12 cm., but the Hekelingen paddle has a flat-convex section, while that from the Hazendonk is flat at both sides.

Blade form can best be considered as either purely functional or a cultural preference. The slender, narrow blades are the best suited for water full of water plants, besides which they are more silent than the shorter and wider blades, which more easily result in splashing.[3] The short triangular Ertebølle blades should in this perspective be seen as primarily a cultural choice, *i.e.* the best design to show the geometric identity mark.

How does this all relate to the question of long-distance travel? The small and light canoe of the Late Mesolithic, being paddled by one or at the most two seated paddlers using "silent" narrow blades, adapted to a heavily overgrown water, seem first and for all a device for local, intraterritorial transport, for fishing and hunting, and less for long-distance traffic. The sturdier VL-TRB phase canoes, made of oak, being propelled upright with long broad-bladed paddles, must be considered a better facility. One can however only guess with what types of boats people crossed the sea at that time, for instance to obtain the highly diagnostic Helgoland flint found on the continent.

The archaeological view seems to be restricted to local means of water transport, uncovered in settlement contexts. Off-site discoveries are rare. To what extent is the uncovered sample of paddles and canoes representative for the past? Do other boat types escape us, being too fragile or not

deposited on-site? Remains of other boat types, such as bark canoes or hide boats, are however quasi absent. An exception are the two hazel sticks with rectangular holes in one or both ends from Tybrind Vig, for which Søren Andersen (1987:273) opted for the possibility of a function as "boat thwarts" in hide or bark canoes of up to 1.08 m. wide. The last type is well known for its transport capacity. There are moreover other options that will leave no traces in the archaeological record. One is downstream rafting, the other midwinter man-draught overland sledging. Men may even have made a dugout canoe in the flint source area just to paddle their load downstream. We realize that these are all rather personal considerations and that a more thorough ethnographic study is needed.

Conclusion/Synthesis

In Mesolithic and Neolithic times exotic materials were transported over long distances. In the Lower Rhine Basin stone and flint were brought from the Belgian and South Limburg hills to the Rhine delta and even beyond, over distances up to 200 km. A special case is Rijckholt flint, which had a wide distribution from Late Mesolithic times onward. Transport on foot in bags or rucksacks is generally assumed, but the discovery of heavy blocks of Rijckholt-type flint, of quartz and quartzite in the Late Mesolithic levels of Hardinxveld-Polderweg raises the question of other means of transport. The only means of which we are informed for that phase are dugouts and paddles, and these do not seem very suited for this task. So other means, which leave no archaeological traces, need a serious consideration, such as bark canoes, rafts and sledges.

Notes

1 One illustrated in Louwe Kooijmans 1985:14, the other an unpublished recent find.

2 We owe this explanation to comments by people acquainted with the Northwest Coast Indian lifestyle, at the wetland archaeology conference in Olympia, Washington, USA, April 2003.

3 For a recent overview of the prehistory of the Netherlands with many references to the topics discussed in this paper see Louwe Kooijmans *et al.* 2005.

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MICHAEL JOCHIM

One more bog

Introduction

BY OFFERING UNIQUE preservation conditions, bog sites have made important contributions to our understanding of prehistoric hunter-gatherers, as demonstrated, for example, by Lars Larsson's (1978; 1983) research at Ageröd. Southern Germany also contains a number of important bog sites, mostly around the prehistoric Federsee, which have enhanced our knowledge of the Palaeolithic and Mesolithic settlement in the region. New research is described here at another German bog, the Pfrunger Ried, which was a large lake measuring roughly 10 by 3 kilometres during the early Holocene.

It has long been recognized that the lakes of Oberschwaben were attractive locations for prehistoric occupation. Over a century of research and discovery has documented clearly the rich archaeological records of the Bodensee and the Federsee. Much less attention, however, has been given to the Pfrunger Ried. And yet it is becoming increasingly clear that this lake, too, has had a rich past. Dedicated work by a few scholars and collectors has assembled a wealth of archaeological material that has largely gone unpublished.

The Federsee has a long history of research. Work carried out by Reinerth (1929) uncovered remarkable sites from the Mesolithic, Neolithic, and Bronze Ages. All of these contained exceptional finds of wood, bone, and antler implements alongside the more durable stone and ceramics, thanks largely to the peat that offered excellent conditions of preservation. More recently, research carried out by Schlichtherle (1990) on the Neolithic, Keefer (1984) on the Bronze Age, and Kind (1992; 1995) on the Late Palaeolithic and Mesolithic has expanded our knowledge of these periods considerably through work on both old sites and newly discovered ones. Between 1980 and 1991 I carried out surveys and excavations of Late Palaeolithic and Mesolithic sites in this area as well (Jochim *et al.* 1998).

Beginning in 1992, I shifted focus away from the Federsee to examine the larger region between the Swabian Alb and Bodensee. Through surface surveys in ploughed fields, colleagues and I have been attempting to create a more complete picture of land use, hoping to understand the economic role that the Federsee played within the region of Oberschwaben. Within this larger context, the Pfrunger Ried was both a challenge and a puzzle. As another large lake in the rolling countryside, it surely offered rich food resources to prehistoric people, just as the Federsee did, but its archaeological record was poorly known.

As we began to carry out background research, we found two valuable sources of information. First, the Landesdenkmalamt in Stuttgart holds records of a number of finds, largely reported by collectors who walked the ploughed fields around the former lakeshore. These artefacts remain in private collections, but the documentation allows us to locate the findspots and often to determine their general age. The second source of information is the Pfahlbaumuseum Unteruhldingen. Among its holdings are numerous artefacts from the Pfrunger Ried, collected by a number of individuals, together with the notes and maps that allow many of the sites to be located. The Museum graciously allowed me access to these materials and allowed me to examine them in detail.

In order to supplement these archived data, we carried out surveys and test excavations around the Pfrunger Ried. These included visits to previously known sites, discovery of new ones, and test pits in peat deposits adjacent to several of the richest of the surface sites. What follows is a brief description of what this work has uncovered about the Stone Age occupation of the Pfrunger Ried and the smaller wetlands nearby (Figure 1). Many of these surface sites appear to be mixtures of occupations from different periods.

Survey

Beginning in 1999, with financial support from the Wenner-Gren Foundation for Anthropological Research, University Research Expeditions Program, and the University of California, Santa Barbara, teams of students and volunteers carried out surface surveys by field-walking with the aim of developing a database to compare the role of this former lake to that of the better investigated Federsee. Surveys were carried out in ploughed fields by individuals walking 10 m. apart. All artefacts found were flagged, mapped, and collected. A total of 103 fields were surveyed in this area. Of these, 23 contained stone artefacts. Characteristic Late Palaeolithic artefacts were found in three fields, Mesolithic microliths were found in six fields, and bifacial projectile points of the Neolithic were found in two fields. The remaining twelve fields contained no diagnostic artefacts, and thus can be attributed only to the Stone Age. Most of the fields with finds were on or very near the former lakeshore.

Occupation sequence

Palaeolithic

By around 13,000–12,000 BC sites of the Magdalenian culture are widespread in southern Germany. The limestone hills of the Swabian Alb, with numerous caves, became one of the centres of Magdalenian occupation. A few sites, including Petersfels and Kesslerloch, are exceptional for their wealth of stone and bone artefacts, art objects, and jewellery. These sites have been interpreted as fall gathering spots for large groups, where they carried out communal hunting of migrating reindeer herds, making large kills for the winter (Weniger 1982). One site in Oberschwaben appears to have played a similar role in the economy: the open-air site of Schussenquelle just south of the Federsee. First discovered in 1866 and reanalysed recently, this camp, located by a small Toteis lake, was occupied repeatedly, primarily during late summer/early fall but also in spring (Schuler 1994).

Schussenquelle is the only known major Magdalenian site in Oberschwaben, but a few isolated artefacts of this culture have been found around the former shores of the Federsee. A few finds suggest that these people visited the Pfrunger Ried as well. At one site on the old shores of the Königsegg See a double burin was found, a tool common in the Magdalenian and rare in later times. Another comes from a site in the northern arm of the old Pfrunger See. A site on a peninsula in the former Pfrunger See also produced several burins that appear to be Magdalenian in age. One of these is over 7 cm. long and has been carefully retouched along both edges as well. Thus, it seems that people may have visited the Pfrunger Ried as early as 13,000–12,000 BC, perhaps only for occasional, short-term camps connected with larger settlements like Schussenquelle.

During the succeeding Late Palaeolithic, the archaeological evidence for occupation increases. The Late Palaeolithic is a generally poorly known period dating to approximately 12,000–10,000 BC. The continuing warming of the climate led to the creation of extensive pine and birch forests and the economy and settlement pattern changed substantially. Sites of this period are common in southern Germany, but they are uniformly small and thin, and few contain preserved bone. Some caves and rock shelters in the Alb are occupied, but open-air camps are now more abundant. Concentrations of such sites are known from the Federsee and at higher elevations to the south. The scarce preserved bones suggest a very diverse economy including red deer, roe deer, aurochs, elk, horse, ibex, boar, beaver, hare, bear, wolf, fox, ermine, waterfowl, grouse, and fish (von Königswald 1972; Hahn and Scheer 1983; Jochim 1995). Apparently, people were extremely mobile, moving frequently in small groups to hunt and fish.

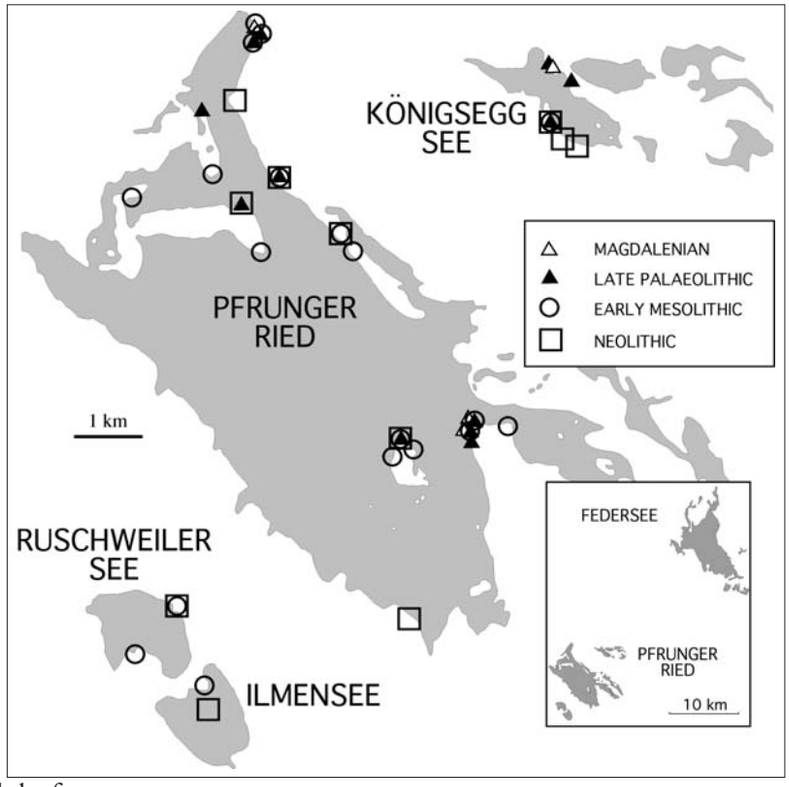

FIGURE 1. The Pfrunger Ried and Stone Age sites.

Characteristic tools of the Late Palaeolithic in the area are backed points, short scrapers, and burins made on one retouched end. At least 12 sites of this period have been found around the former shores of the Pfrunger See, on peninsulas, islands, and the narrow northern arm of the lake. Another two are located on the shores of the smaller Königsegg See. These locations must have offered good access to a variety of foods, including fish in the shallows, waterfowl, and various large and small game. The presence of island sites indicates that these people had boats, probably dugout canoes, although none have yet been discovered.

Mesolithic

The Early Mesolithic, from approximately 10,000 to 7,000 BC, is abundantly represented at the Pfrunger Ried. This was a period of continued warming and increasing diversification of forests, when many deciduous trees of the mixed-oak forest, together with abundant hazel, began to dominate the vegetation. Sites of this period are widespread throughout southern Germany, found in a number of different topographic locations, including hilltops, valley floors, and lakeshores. Many of these sites are small, suggesting highly mobile small groups. A number of sites, both caves and open-air camps, have preserved bones, indicating the hunting of red deer, roe deer, boar, and aurochs, supplemented by beaver and other fur-bearers, fish, and waterfowl, as well as by gathering eggs, hazel nuts, and possibly other plant foods.

The abundant sites of this period at the Pfrunger Ried document the attractiveness of this lake for these hunter-gatherers. At least 25 Early Mesolithic sites have been found here, concentrated on peninsulas, islands, and narrow sections of the lake. Smaller lakes also have occupation. A characteristic feature of this time period is evidence for the heating of chert, probably to make it easier to work. Many of the sites around Pfrunger Ried, including some that lack the diagnostic microliths, have abundant evidence of heat-treatment in the form of a pink or red colour and a shiny surface. Among the larger assemblages, the percentage of artefacts showing such traces ranges from 18 % to 54 %, suggesting a significant Early Mesolithic component.

A variety of different stone raw materials were used by the Early Mesolithic groups on the Pfrunger Ried. An examination of just those sites that are definitely Early Mesolithic with no evidence of earlier or later occupation indicates that 81 % of the stone is Jurassic chert from the Alb or Danube gravels to the north. Another 11 % is represented by a brown chert that derives from closer sources in Oberschwaben. The remaining 8 % is radiolarite, ultimately from sources in the Alps, but available in the local moraine gravels. These patterns of raw material use suggest that the normal nomadic movements of the occupants of Pfrunger Ried often took them to the north, to areas where the Jurassic chert would have been readily available. Because 92 % of the cores at these same sites are Jurassic chert, it appears that the material was brought in largely as nodules or partially worked cores, rather than as blades or finished tools. By contrast, in sites that have a mixture of Late Palaeolithic and Early Mesolithic materials, fewer of the cores are Jurassic chert, and higher percentages are of the more local materials, suggesting that the Late Palaeolithic hunters spent more of their time in Oberschwaben over the course of the year. This pattern is reflected at the Federsee, where a concentration of sites in the southeastern part of the lake basin has assemblages dominated by the local brown chert; these sites all have a high proportion of Late Palaeolithic tools mixed with those of the Early Mesolithic. Some spatial differences in raw material use are also apparent within the Pfrunger basin. Sites around Ilmensee in the southwest, for example, contain higher proportions of the local brown materials than do sites on the Pfrunger Ried itself. This may indicate different patterns of movement over the course of the year by groups converging on the area.

Studies elsewhere in Europe have indicated that details of shape and retouch on microliths can show spatial patterning that might reflect patterns of social interaction. The microliths from Pfrunger Ried are generally similar to those from nearby areas such as the Bodensee, Federsee, and Alb, leading to their designation as part of a "Beuronien" culture. A closer examination of the microliths, however, indicates subtle differences among regions. In a comparison of samples of Early Mesolithic triangles and points from the Pfrunger Ried (54), the Federsee (75) and the upper Danube (60), certain traits such as the length of the longer retouched side, show a decreasing similarity with increasing distance among areas. This pattern suggests that distinct social boundaries among groups were absent; rather, interaction and sharing of styles simply decreased with distance. On the other hand, the location of retouch, on the right or left, varies more abruptly, and the Pfrunger Ried and Federsee samples differ considerably. A total of 72 % of the Pfrunger Ried sample is right-handed, whereas only 43 % of those from the Federsee are, a difference that is statistically highly significant. Based on this one trait alone, one might speculate that the two lakes were the focus of two largely separate social groups, each with its own tradition, but sharing much with neighbouring groups because of high mobility, frequent interaction, and a common historical background.

The Late Mesolithic, roughly 7,000–5,600 BC, is a puzzling period in the prehistory of southwestern Germany. All of the areas formerly rich in sites for the Early Mesolithic show dramatic decreases in the number of Late Mesolithic sites. The Danube Valley in the western Alb and the Federsee both show continued occupation during this period, but also record a decrease in site numbers. Several explanations for this pattern have been proposed (Jochim 1990). One is that the population declined, due perhaps to the increasing forest density, the resulting decrease in graze and underbrush for animals, and the increased difficulty hunting the scarcer prey in the dense forests. Another suggestion is that we are not finding or recognizing many sites of this period, either because the diagnostic tools types are scarce or because natural factors have buried or destroyed these sites to a greater degree than in other periods. A third explanation is that the prehistoric hunters of this period altered their pattern of settlement, creating fewer residential camps in selected locations, from which they covered greater distances to hunt and gather. If the third explanation is correct, then the persistence of occupation at the Federsee and the upper Danube Valley suggests that the areas selected were those that offered the greatest variety of food resources – large lakeshores and areas of considerable topographic variety.

The Pfrunger Ried shows a pattern similar to much of southwestern Germany: no sites of the Late Mesolithic have been discovered. Characteristics of this period include larger, better-made stone blades with parallel sides and trapezoidal microliths made from these blades. Although a few regular blades have been found at the Pfrunger Ried, no Late Mesolithic trapezes exist in the collections examined. At this stage it seems that even a lake as big as the Pfrunger See was largely abandoned.

Neolithic

During the Neolithic there is evidence of renewed occupation of the Pfrunger Ried. Neolithic sites first appear in Oberschwaben around 4300 BC, although Neolithic farmers were present in the lower Danube, Neckar, and Rhine

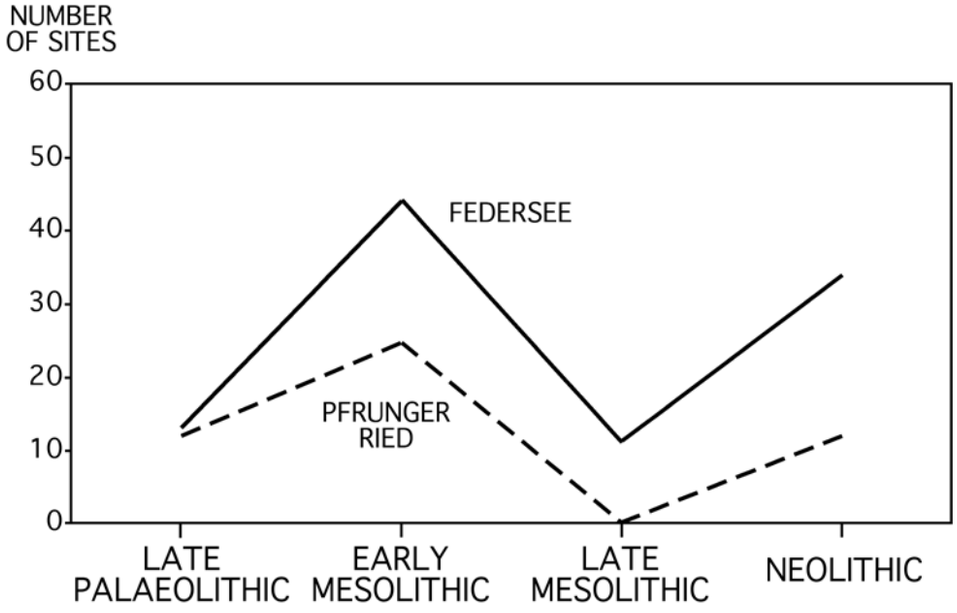

FIGURE 2. Occupation history of the Pfrunger Ried and Federsee.

Valleys as early as 5600 BC. Apparently, the soils and climate of Oberschwaben were not as attractive as the warmer and drier regions with rich loess soils. Once farming communities began to appear in the area, however, the Pfrunger Ried was reoccupied.

A total of 12 sites contain evidence of Neolithic occupation. Eight are surface sites with characteristic ceramics, polished stone axes, or projectile points and other stone tools with surface retouch. Four other sites, discovered during construction activities in the peat, contained finds of bone, antler, and wood as well. In two sites, the ceramics have been identified as belonging to the Horgen culture, dated to around 3300 BC. The archived information for two of the sites makes note of wooden "structures," but whether these were, indeed, house remains, is unknown. It is likely, however, that small villages dotted the lakeshore throughout much of the Neolithic period.

A comparison of the occupation history of the Pfrunger Ried shows a remarkable similarity to that of the Federsee (Figure 2). These lakes were only occasionally and peripherally used during the Magdalenian, but in the Late Palaeolithic and especially the Early Mesolithic they assumed great importance in the patterns of land use. The lakes were apparently a focus of occupation, perhaps serving as central places in the landscape, while areas away from the lakeshores show relatively sparse use. In both lakes, evidence of Late Mesolithic occupation decreases dramatically from earlier times, to rebound again only in the later Neolithic.

Test excavations

Five meadows at the edge of the former lake were investigated with test units. Each was located adjacent to a surface site, but downslope into the area of lake deposits. Test trenches were dug on or near the shoreline to search for evidence of buried archaeological materials. Three of the meadows each yielded only a few Early Mesolithic artefacts in the test trenches, but the other two were more productive. Unfortunately, substantial organic remains, which were one of the targets of these tests, have eluded us so far.

Site WD-25

This meadow produced the most finds. It lies on the former shoreline at the tip of a peninsula, adjacent to a rich surface site with both Late Palaeolithic and Mesolithic artefacts. A total of 310 stone artefacts and 42 bones were found in the test trenches, deriving from several different depositional levels. Although the stratigraphic sequence varies along the shoreline, the basic sequence is as follows. Overlying the basal clay of the lake basin is a layer of light sand that is continuous with a sand or sandy clay on the solid shore. Above this is a dark peat mud, followed by the topsoil. In areas where the light sand shows a steep slope, a dark, peaty sand layer lies within the peat, abutting the light sand slope. In other areas there was a second sand layer within the peat, farther from the shoreline.

The majority of artefacts (241 lithics) were found in the light sand or the topsoil and appear to represent a continuation of the surface site lying just upslope from the edge of the peat mud. These include geometric microliths characteristic of the Early Mesolithic and an end scraper. The peat mud contained 36 stone artefacts, including a borer and a backed blade possibly attributable to the Late Palaeolithic. The dark peaty sand produced 33 lithics, scattered among various trenches; none of these lithics was retouched. In addition, 42 bone fragments were found in this dark peaty sand. The bones, which were all found together on the steep portion of the shoreline, could be identified as horse, primarily limb bones. A radiocarbon date of 3500 ± 70 bp

(Beta-133638) was obtained on charcoal from this layer, suggesting a Bronze Age placement of the finds. One other find from the peat mud, stratigraphically above the dark peaty sand, was a sharpened wooden post lying horizontal approximately a meter from the steep shoreline and not associated with any other finds. A sample of this post produced a date of 2450 ± 70 (Beta-133639), indicating an Iron Age affiliation.

Lindenhof

This site is situated on the northern tip of an island in the former lake. The large surface site contained characteristic materials from the Late Palaeolithic, Early Mesolithic, and Neolithic. Tests were carried out in two different seasons on the gentle slope leading toward the lake. In this region, the sandy clay of the solid ground is overlain by a grey sandy beach deposit, surmounted farther lakeward by a dark peat. A total of 189 stone artefacts were recovered, 87 % of which were found in the beach sand and the overlying topsoil, and contained Early Mesolithic diagnostic artefacts. The remainder were scattered among the other layers.

Patterns of surface materials

A comparison of the surface collections from the largest sites reveals considerable variation among the sites in terms of specific types of raw materials or proportions of stone tool categories. White Jurassic chert, for example, ranges between 5 % and 25 % of the collections, and brown local chert between 0 % and 34 %. The proportion of retouched tools in the collections varies from 8 % to 20 %, while cores and shatter range from 7 % to 25 %. Such variation suggests that the sites may have differed considerably in activities and functional role in the economy.

Because virtually all of the archaeological materials currently come from surface collections, it is important to know how representative they are likely to be of the entire site contents. A comparison of these assemblages with excavated materials from the same sites indicates that they are biased in particular ways. The surface collections contain relatively larger artefacts, more white chert, more heated pieces, more tools, cores, and shatter, and fewer flakes and blades. These differences appear to depend in part on the visibility of artefacts on the ground surface. From these comparisons it is clear that surface collections, while extremely informative, provide us with a biased picture of the archaeological sites.

Conclusion

The Pfrunger Ried was clearly an important area of prehistoric occupation. Museum collections provide critical evidence of the Stone Age activities around this prehistoric lake. Continuing analysis of these materials, together with additional surveys and excavations around the old lakeshores, should further our understanding of this region's prehistory and its relationship to the surrounding countryside. In general, however, it is clear that this lake showed a strikingly similar occupation history to that of the Federsee. The lack of sites attributable to the Late Mesolithic underscores the dramatic decrease in the number of sites during this period throughout the region and the need for more research focused on this last period of hunter-gatherers in the area.

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MATS LARSSON

I was walking through the wood the other day

Man and landscape during the late Mesolithic and early Neolithic in Scania, Southern Sweden

Introduction

IN THE 1970's and early 1980's, the emphasis in Neolithic research was mainly on system theory and ecological models. During the 1980's, the discourse changed though. The new discourse was associated more with the Neolithic as an ideological phenomenon (cf. Tilley 1996; Bradley 1998; Thomas 1991; 1999).

In this article, I will focus on how humans perceived the landscape at the time of the introduction of farming. Did people's relationship with the landscape change that much and if so why? The starting point will be the Ertebølle culture in Denmark and Scania. In the second part, I will discuss the earliest Neolithic and the adoption of agriculture as well as other phenomena like the construction of monuments.

Individuals or groups of people who had a certain level of knowledge about their social and natural environment must have formulated individual and collective motivations – reasons and justifications for doing things – into strategies. Action, undertaken individually and collectively, is sometimes carried out to modify structure. In other words, this is human agency at work. Agency can be seen as the way changes progress and theories of agency recognize that men and women make well-supported choices, and take action to realize these choices (Dobres 2000:133).

Most agency theorists agree that agency implies a socially significant quality of action rather than being synonymous with action itself (Dobres & Robb 2000:8). Both Dobres and Barrett are also careful not to see the *individuals* just as agents, but stress that agents can be a *collective* (Dobres 2000:133; Barrett 2000:61). It is also important to stress, as John Barrett (2000:61f) has stated, that action, time, space and agency work together and carry the past into the future. By using agency theory we can investigate how cultural meanings and social structures are constructed and transformed through people's interactions with others, loosely termed social practice (Jordan 2004:112).

For the last decade or so there has been a discussion in archaeology regarding man and the landscape. To a certain degree, this discussion has taken its starting point in phenomenology and issues regarding Man and peoples "*being in the world*" (Tilley 1994; Thomas 1996). Phenomenology is not concerned with whether phenomena are real or not, but how people experience and understand the world and

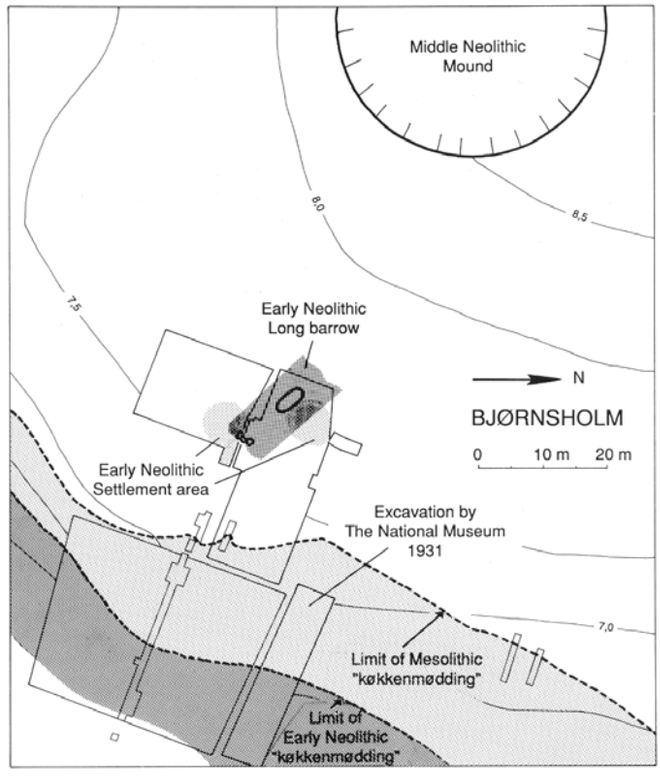

FIGURE 1. Bjørnsholm, Jutland (Andersen & Johansen 1990).

things in the world (Cummings & Whittle 2004:11). The building of a house, or a monument, involves an important change, which significantly alters people's roles in the landscape and their view of it. In this way, structures are both the medium and the outcome of social practices (Parker Pearson and Richards 1994:3). A place could be seen as unique and socially constructed. It can be constantly evolving, without real conceptual boundaries (Cummings & Whittle 2004:9). Myths and stories are then told about it and the place thus becomes historical with a new meaning for people (Thomas 1996:89). Buildings and their location could be seen as a kind of naming process (Whittle 2003: 195). This naming of places confirms the significance of particular locations (Bradley 2000:158). If we accept this notion it is obvious that monuments as well as other constructions fitted into a landscape already filled with potent and symbolic sites (Cummings 2002:107).

This has been part of the intentional transformation of the landscape that begins with the Neolithic, or does it …?

The Late Mesolithic

One main issue that has been discussed over the last decade is to what degree Neolithic Man's concept of landscape and the myths and stories about it changed. As John Barrett (1994:93) has suggested this might have a long history, perhaps going back to the Mesolithic, in that places might have been part of a much wider seasonal cycle of movement than previously accepted.

In the following, I am going to discuss some sites that are of importance in the context of this article. I will begin with the Bjørnsholm kitchen midden in the central Limfjord area in northern Jutland (Andersen 1993:59). Close to it, an Early Neolithic grave with a timber construction was excavated (Andersen & Johansen 1992). The dating of the kitchen midden is between 5,050–4,050 cal. BC (*ibid.*: 61). This implies more or less continuous habitation for about 1,000 years. As well as excavations in the kitchen midden itself, an area behind this was excavated where only very sporadic traces of habitation were revealed (*ibid.*: 66). The only more substantial features found in the midden are hearths which occur in all levels of the midden. There are no traces of huts, pits or postholes. Scattered human bone might indicate destroyed graves (*ibid.*: 77).

The grave structure mentioned above was excavated in 1988 and is situated *c.* 20 m. to the rear of the midden (Andersen & Johansen 1992:38ff). The stone-lined pit was found together with two large pits, a ditch and three intact pots and belongs to a group of well known Danish long-barrows (*ibid.*:52f).

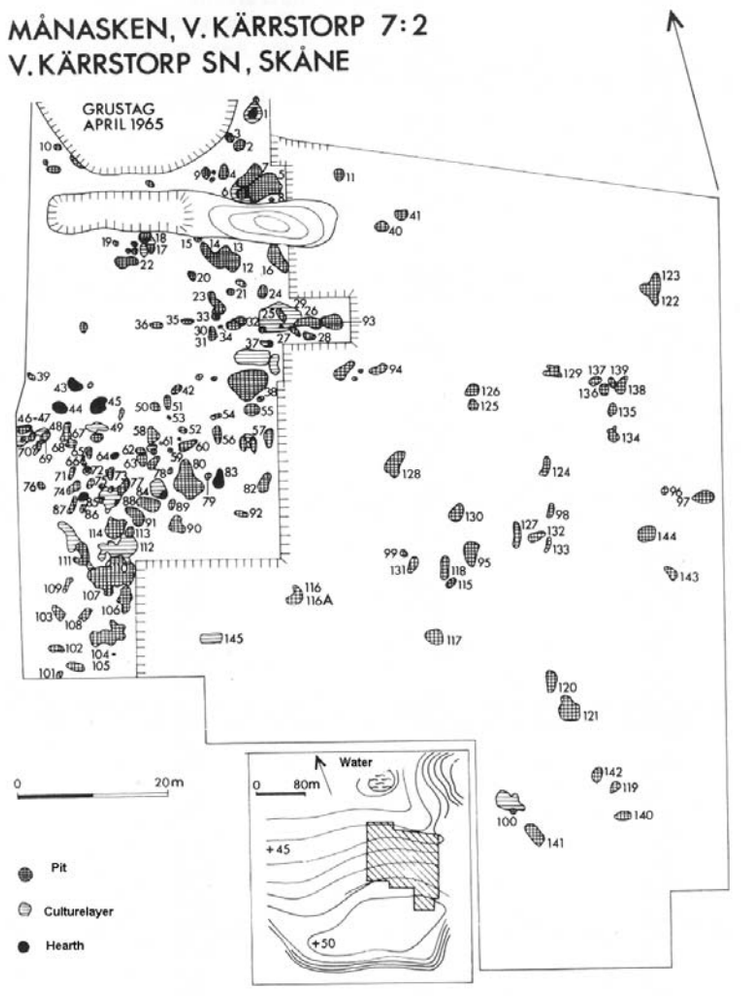

FIGURE 2. The site Månasken in Scania, Sweden (Larsson 1984).

As mentioned above no actual traces of huts or houses were found at Bjørnsholm. This absence of huts has been one of the most discussed issues in Mesolithic research over the years; why do we not find any more substantial traces of occupation (for a review see Biwall *et al.* 1997; Cronberg 2001)? One of the most intriguing new investigations into the late Mesolithic has therefore been the excavation of several houses and huts at the site Tågerup in western Scania (Cronberg 2001:83ff). One of them, House I, was a circular construction rebuilt in two stages. The other one, House II, was an 85 m^2 rectangular longhouse with a single row of roof supporting posts. House III has been described as a shelter, 15 x 4, 5 m. in dimension and with an opening towards the south.

The chronology of the houses is complicated, as discussed by Cronberg (2001:147). The radiocarbon dates are, except for two, all way too young and are mostly Neolithic or Bronze Age. The dating of the houses therefore had to be based on a study of the transverse arrowheads (Vang-Petersen 1984) which dates the houses to the early and middle phases of the Ertebølle culture. Interestingly enough a couple of pottery sherds are mentioned from House III. They are accordingly dated to the Ertebølle culture (Cronberg 2001:143) and since pottery was not adopted in Denmark and Scania until *c.* 4,600 cal. BC if the interpretation of House III is correct it is not older than that (cf. Hallgren 2004:136).

We have evidence not only for coastal occupation during the late Mesolithic but also for inland settlements in many parts of southern Scandinavia (cf. Salomonsson 1971:40f; Larsson L. 1982, 1983; Fischer 2002:369). The evidence taken together clearly shows that during the late Mesolithic people inhabited a diversity of topographical areas ranging from the fjords of eastern Jutland to the inland of Scania.

Places and landscapes were used and re-used for centuries and eventually people settled down and felt at home. They gave specific places like rocks and streams names and in creating paths in the forest they also created links between both places and people. Such places could be termed "persistent places" and such places would have engendered a sense of time and belonging (Cummings 2002:79).

The Early Neolithic

Since the 1980's a mass of new Early Neolithic material has been uncovered. One of the most important discoveries has been the long houses. After 1986, when the first one was excavated at Mossby in southernmost Scania several simi-

lar houses have been identified (cf. Larsson M. 1992; Nielsen 1997; Svensson 2003). Today houses of the so-called "Mossby type" are known from Denmark as well as from southern and middle Sweden. It is today possible to talk about a specific Early Neolithic house type in other words. Our knowledge regarding the Early Neolithic in Scania is today much more advanced than just some 20 years ago (cf. Andersson 2003).

Many of the earliest Funnel Beaker sites in southern Sweden like Oxie, Svenstorp, Värby and Månasken are made up of different types of pits and almost nothing else (Larsson M. 1984, 1985). We have some houses from this period such as the one from Mossby but not many more securely dated ones (Larsson M. 1992, Andersson 2003:76ff). We could of course blame this on inadequate excavation technique but I do not believe this to be the only explanation.

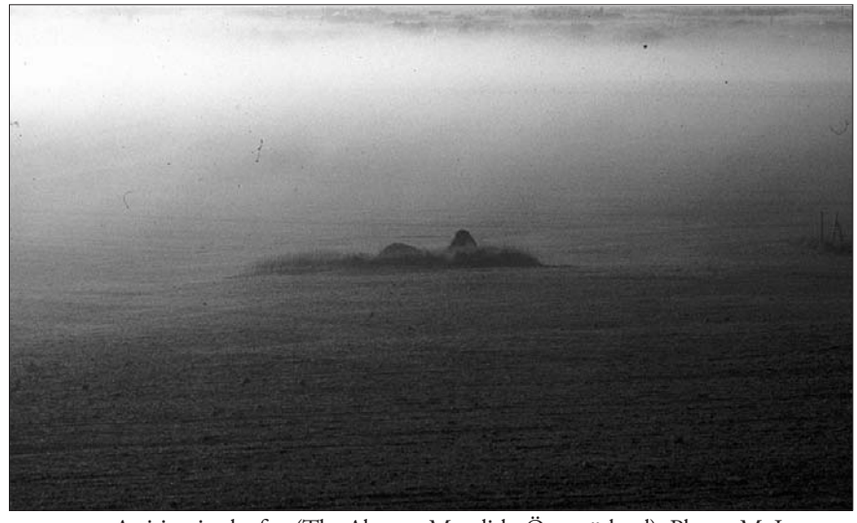

FIGURE 3. A vision in the fog (The Alvastra Megalith, Östergötland). Photo: M. Larsson.

The pits such as those on the large sites Svenstorp and Månasken in SW Scania are often layered, meaning that they were actually recut and reused. Large amounts of flint debris are found in the pits, but also obviously unused implements like flake axes, flake scrapers and in some cases even complete axes and vessels (Larsson M. 1984).

The interpretation of these pits has usually been very functional; they were waste pits. Some of the pits with complete axes or vessels have been re-interpreted though as ritual pits (Karsten 1994; Andersson 2003:169; Rogius *et al.* 2003). It has lately been suggested as well that the more decorated pottery from the Svenstorp group is associated with ritual (Lagergren-Olsson 2003:200f).

So why discard complete vessels and implements? We can, as mentioned above, not just see the pits as waste pits but as evidence for something much more profound. Richard Bradley (2000:131) has said, referring to Britain, that these artefacts were being returned to the elements from which they were formed. By bringing together different elements, the sites eventually became a microcosm of the landscape as a whole.

These pits and their content might be interpreted as an example of what is called structured deposits. The term describes the ways in which material culture is organised at the time it is deposited in the ground (Bradley 2000:118). To perform rituals was an important part of the structuration of society and they helped people to not only connect and re-connect with the ancestors, but also with the future. This topic has been widely discussed during the last decade or so (Thomas 1991; Bradley 2000, 2005).

Visions in the forest

It is obvious that the settlement pattern changed between the Late Mesolithic and the Early Neolithic, when the large coastal sites were more or less abandoned as permanent settlements. They were however still used seasonally. New areas inland were occupied, preferably of sandy soils close to water. The sites have usually been seen as small although this notion is under discussion today (Larsson M. 1984; Andersson 2003:175).

What actually motivated this shift in settlement and why did people move? Was the shift actually that radical? As discussed above the inland area was by no means an unknown entity. The change in settlement area might be seen as a functional response to economic changes, *i.e.* changes in subsistence altered the structural conditions under which the new subsistence could operate. Mesolithic man had of course knowledge of different ecological niches and the move might not have been that upsetting. Motivations for doing this must have been formulated into strategies by people who had a certain level of knowledge about their social and natural environment. People were active agents in the way in which the settlement sites, the farming plots and so on, were chosen. They created meaningful landscapes, which helped them to develop a sense of group identity as well as a personal identity.

At the beginning of the Neolithic man obviously changed his view of the world in many ways and the building of large monuments and houses is evidence for these profound changes.

The location of the settlement sites in the landscape and their relation with other sites and monuments are thus very important. As noted by Magnus Andersson (2003:161) in his work in western Scania there are few if any traces of Mesolithic habitation on the Early Neolithic inland settlements. In southwestern Scania, though, we have evidence for Mesolithic occupation (Maglemose) on the site Svenstorp (Salomonsson 1968). Based on his work in Wales, Tilley (1994) suggested that the Neolithic monuments were related to Mesolithic occupation. According to Cummings and Whittle (2005:38), there is a connection, but not in all cases.

Several of the earliest Neolithic settlements had a prominent location in the landscape. They were situated on ridges

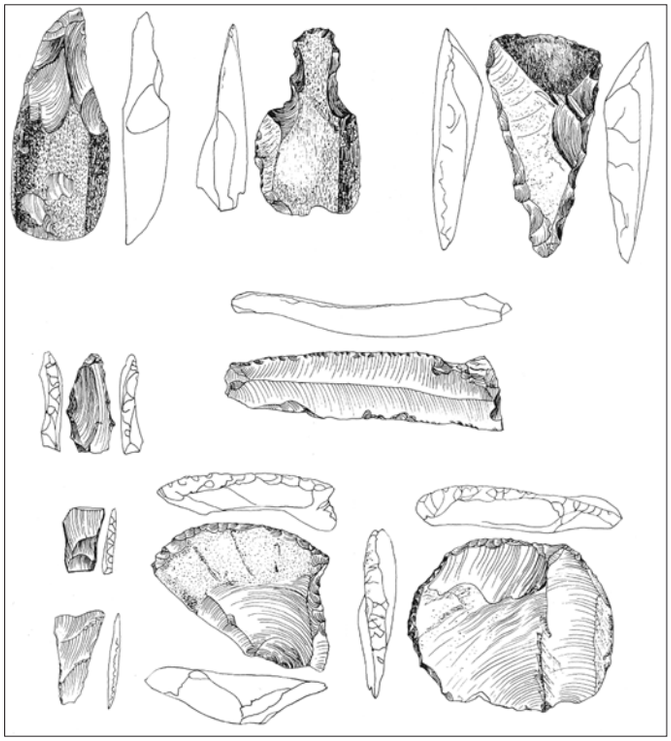

FIGURE 4. Early Neolithic TRB flint implements from the site Månasken in Scania. Drawing by M. Centerwall/Larsson 1984.

or small hills in the undulating landscape. This is especially true for the sites with large numbers of pits like Svenstorp and Månasken. If we accept these places as not only ordinary settlement sites but also as places of special significance for the people of the day we can see these places as evidence for an early "monumentalisation" of the landscape. As Peter Jordan has demonstrated, the hunter-gatherers of the Siberian Khanty kept their history alive through routine and ritual practice at key locations. Artefacts deposited at holy sites store up a residue of communication (Jordan 2003, 2004:118).

Tim Ingold (2000:193) in a discussion of temporality and landscape has written, "*In short, the landscape is the world as it is known to those who dwell therein, who inhabit its places and journey along the paths connecting them*". This he calls a "taskscape". The landscape is thus both agency and time embodied (Ingold 2000). As mentioned above Mesolithic man had of course both previously moved and lived in the landscape but it was now much more important to secure an identity and to make a lasting impact on the landscape.

This is also, why sites like Bjørnsholm and Tågerup are important in this context. As mentioned above a long barrow was built very close to the Ertebølle midden and to the subsequent Early Neolithic settlement. This could also be seen as a way for humans to connect with both the past and the present. The construction of this long barrow and its use would also add to other memories associated with this place. The long houses at Tågerup are important in the same way. The shift from long house to long barrow is a much-debated issue (cf. Hodder 1984, 1990). Ian Hodder (1984:64f) views them as focal points in the territory of a social group and as markers of individual social status. Peter Bockugi (1988:190) has written that it was the settlements of the ancestors that legitimated the use of the surrounding territory. The building of monuments involves an important change, which significantly alters people's roles in the landscape and their view of it.

The long houses at Tågerup make it possible to interpret this in quite another way. Instead of the regularly made comparison to, for example, the long houses of the late Lengyel culture in Kujawia (Poland), we can maybe see a much closer connection between the barrows and these houses of the late Ertebølle culture. There is of course also a profound similarity between the Kitchen middens and the long barrows both in their sheer size and in the way human bones were deposited. In the Bjørnsholm midden scattered human bones were found (Andersen 1993:78). This connects the midden, as a place of both life and death, to the later Early Neolithic monument. Through narratives going back centuries in which these houses and middens figured, meaning and remembrance took on a new dimension and they were transformed into something much more potent in the Early Neolithic.

There is one more point to be made regarding the way in which material culture or symbols helped to constitute a new world. I would here draw attention to the obvious similarity between the flint inventory of the Ertebølle culture and the earliest Funnel Beaker culture (Oxie group). The existence of transverse arrowheads, flake axes and singular core axes in the latter has been noted and discussed as evidence for a close connection between these. This close connection actually only exists in the earliest Neolithic (Oxie/Svenstorp) and is absent in the later stages (Bellevuegården/Virum) (cf. Larsson M. 1984:162).

The material world helps to form people's identities and the groups' identity was maintained through special activities, like for example the construction of long barrows, the digging of pits and in the use of structured deposits for ritual purposes. The digging of pits and the deposition of pots and axes in rivers and lakes were important ways of doing this. Per Karsten (1994) has noted continuity from the Mesolithic in the use of several votive sites. Rituals were thus an important part of the structuration of society and they helped people to connect and reconnect not only with the ancestors but also with the future. In turning to the past and linking up with the ancestors, ritual was a way for the people to adjust to a new situation. The dispersed settlements, the sites with the large amount of pits and the long barrows provided the basis for a common identity amongst the people who lived in, and used these sites. It has been suggested, based on evidence from Orkney, that the communal investment, which mobilised these groups, is likely to have been derived from cosmological beliefs and the manipulation of kinship relations (Jones and Richards 2005:199).

This is how agency was used by individuals as well as groups of people to secure a community's identity. Impor-

tant to remember is that people as selfaware social actors, through deliberate change and manipulation of symbols and through contact and innovation, provided the *agency* for injecting innovation into the existing traditions (Zvelebil 2003:4).

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RÜDIGER KELM

The Neolithic cultural landscape

The relationship between human beings and their environment

FIGURE 1. The "cup-marked stone" of Bunsoh near Albersdorf – one of the well-preserved megalithic chambers in the region, here with stone carvings probably from early Bronze Age. Photo: R. Kelm.

Introduction

IN THE REGION around Albersdorf, in the county of Dithmarschen on the west coast of Schleswig-Holstein, parts of the many archaeological monuments are very well preserved, particularly those from the Neolithic and Bronze Age (Figure 1). The area is frequently referred to as the "archaeological square mile of West Holstein" (Arnold and Kelm 2004). In order to make this unusual assemblage of monuments more accessible to a broad public and to combine it with a new landscape protection concept, the project "Archaeological-Ecological Centre Albersdorf" (AÖZA) was initiated in 1997. The project is scientifically based, and plans for the Centre were drawn up according to the requirements of "gentle" tourism.

The project area is interesting both archaeologically and ecologically. By applying selected characteristics from a more than 5,000 years old cultural landscape, the area is transformed in such a way that visitors are guided back into the past (Kelm 2000). One part of this project involves the development of open-air archaeological areas showing excavated and reconstructed buildings from the Middle Neolithic (Figure 2). Another is the creation of the new "Museum for Archaeology and Ecology Dithmarschen" at Albersdorf. The museum was opened in the summer of 2005.

An important basis for the work and aims of the AÖZA is knowledge concerning the regional landscape and settlement history; this must be as exact as possible. Research into the history of the landscape carried out at the Ecology Center and the Institute for Pre- and Protohistory of the University of Kiel has documented this intensively since 2001 (Dörfler 2005; Reiß and Bork 2005; Reiß 2005).

Methods

A multitude of publications (*e.g.* Bork *et al.* 1998; Schatz 2000; Schmidtchen *et al.* 2003) shows that not only archaeological and palaeoecological (vegetation history) investigations, but especially sedimentological and pedological investigations are very appropriate when reconstructing past landscapes and environmental conditions. Important in-

FIGURE 2. Model of a Neolithic house of the Flögeln type at the Archaeological-Ecological Centre Albersdorf. Photo: R. Kelm.

sight can be gained concerning past climate, land use, soils and relief. Furthermore, not only the individual natural and environmental conditions are reconstructed, but the process dynamics which led to the development of the landscape are described (Küster 2001), as it has been done in the synthesis of the work of the Ystad Project (Larsson 2005). To achieve this, geoarchives were examined, *i.e.* deposits caught in the sediment traps of small drainage basins. In these traps, the velocity of surface runoff caused by episodes of heavy rain decreases so that the transported soil particles are deposited as colluvium. Accordingly, the properties of the soils are conserved in these geoarchives, permitting conclusions to be drawn concerning the pedogenic conditions prior to the erosion event. Since these events often occur repeatedly, colluvia and soil horizons from several different environmental generations are conserved within one geoarchive.

Since the Neolithic, clearance of forests for agricultural use in combination with heavy precipitation events caused increased surface water runoff and soil erosion from the unvegetated and unprotected soil surface. In addition, in several phases beginning in the Neolithic, grazing of forest pasture turned some sections of landscape into heaths. This led to acidification of the soils (Behre 2001; Schmidtchen *et al.* 2003; Dörfler 2005).

This contribution presents the results of studies into the genesis of the landscape during the 4th and 3rd millennia BC. In three drainage basins studied (Figure 4), human interference which changed the landscape could be demonstrated for this period.

Investigation area

The Geest contains the oldest land forms in Dithmarschen. It is characterized by hilly relief, scattered forests and hedgerows separating fields and meadows. As such, it is significantly different from the substantially younger marsh to the west. On the west side of the Geest, bay-like indentations extend in far to the east. They are connected to several valleys on the east side of the Geest (from north to south: the valleys of the Eider, the Gieselau, the Holstenau and Lake Kudensee), causing the latter to appear as if it consists of isolated islands.

One of these "islands" at the east side of the Geest is the Albersdorfer Geest. Due to its very pronounced relief, the area south of Albersdorf is called "Dithmarscher Switzerland". The project area for the AÖZA is situated here, with a total of nine archaeological monuments (Arnold and Kelm 2004). In the northern part of the project area, there is a large burial mound from the Late Neolithic and Early Bronze (Figure 3, LA 58). About 400 m. to the south-southeast, there is a long barrow approximately 45 m. long, 8 m. wide, and up to 2 m. high (Figure 3, LA 56). A large round barrow is located only about 20 m. away from the latter (Figure 3, LA 55). A funnel-shaped depression at its centre indicates the site of an old pillaging excavation. A smaller, flat barrow lies directly southwest of the long barrow (Figure 3, LA 54). Several partially destroyed long barrows are located further to the southeast. The megalithic grave in the round barrow is substantially smaller than the long barrows (Figure 3, LA 57). It has a flat mound with gently tapering edges,

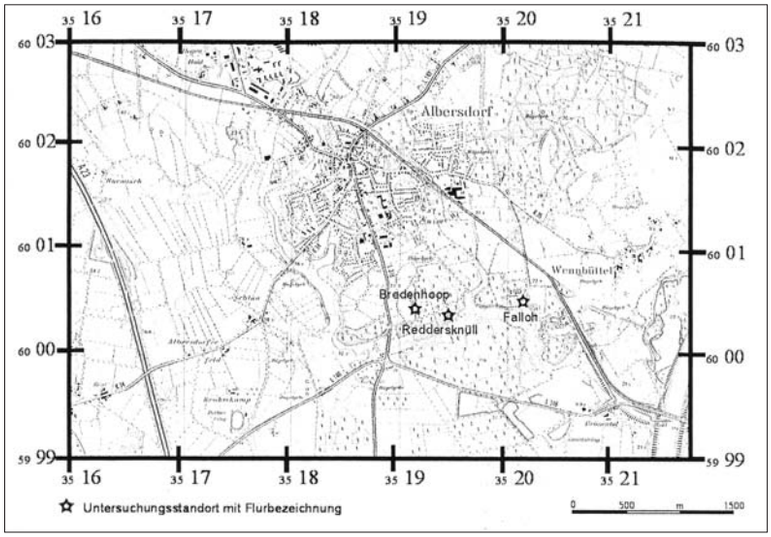

FIGURE 4. Map showing the location of the investigation areas of the geoarchives. Graphics: S. Reiß.

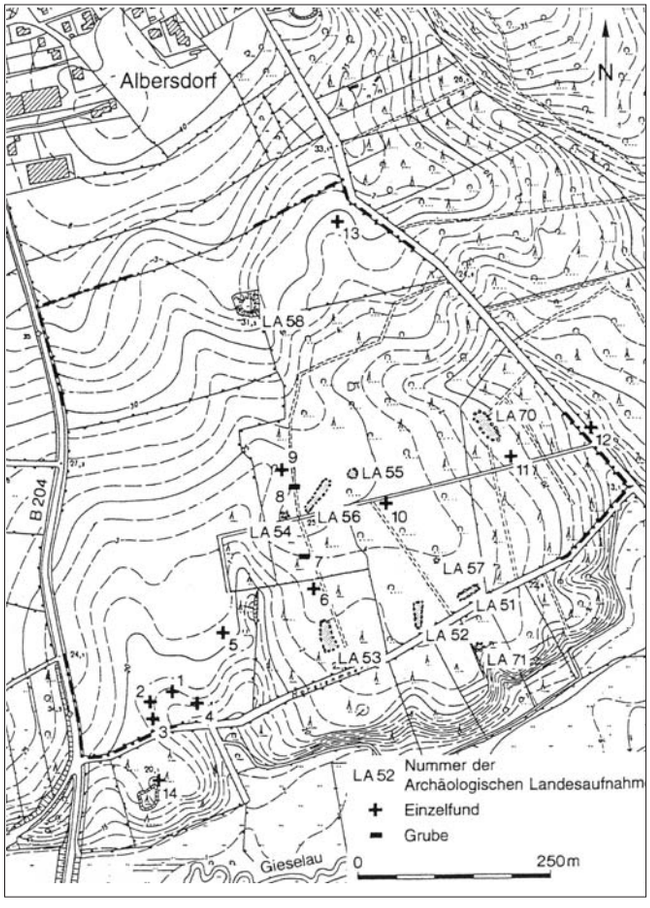

FIGURE 3. Map showing the archaeological monuments, features and findings in the project-area of the Archaeological-Ecological Centre Albersdorf. Graphics: R. Kelm.

and is scarred by old diggings. In the winter of 1997/98, a fifth long barrow (Figure 3, LA 70) was found and another megalithic grave was discovered in a round barrow (Figure 3, LA 71); both were included in the monument list. About 500 m. southeast of the project area for the AÖZA, several stray finds from the north slope of the valley of the Gieselau indicate the presence of a Late Neolithic settlement site (Kelm 2000).

All the depressions which were investigated (in German: *Delle*, *i.e.* trough-shaped periglacial valleys) open to the south. They are located where the Dithmarschen Geest merges into the valley of the Gieselau; geographical position 9°18' E; 54°06' N (Figure 4). Our research is based on the method of the "Four-dimensional Landscape Analysis". It encompasses the recording of geoarchives (see above) in their three spatial dimensions, with their temporal development as the fourth dimension. The method was developed within the "European Society of Soil Conservation" via the initiative "Long term effects of land use on soil erosion in a historical perspective" directed by H.-R. Bork. Bork *et al.* (2001) and Schmidtchen and Bork (2003) provide summaries of the individual working techniques.

A three-dimensional record of sediment layers and soil horizons is derived from excavated test trenches and auger samples, which makes possible the reconstruction of phases of profiles. These investigations can identify and quantify in detail landscape changes arising from prehistoric soil erosion events. Individual phases in the development of the relief and of the soils can be visualized.

In the four investigation areas, 19 exposures were excavated and approximately 200 auger cores sampled (Reiß 2005). Their evaluation resulted in exact knowledge of the areal distribution and extent of all the layers and horizons. Thirty five charcoal samples from colluvia, gully fill and fire pits in the four investigation areas were dated by the Leibniz Laboratory for Radiometric Dating and Isotope Research at the Christian-Albrechts University, Kiel, using the AMS ^{14}C-method.

Discussion

A geomorphodynamically stable surface and a first Holocene soil could be demonstrated in every investigated drainage basin for most of the Mesolithic. The sediments on the slopes of the valley of the Gieselau, south of Albersdorf, were primarily lime-free (Pleistocene meltwater and aeolian sands). On most parts of this area, a regosol developed as the first soil (Bork *et al.* 1998; Bork 2001). Indicators of anthropogenic soil-relocating processes could not be found anywhere for this period. Only later did agricultural activities change the composition of the landscape permanently. The clearance of small areas enabled the first erosion events to occur. Initiated by humans, a phase of changing landscape and relief began. In one of the investigation areas (the area "Falloh"), unusually early human activity could be confirmed by several radiocarbon dates (Figure 5). At present, our results permit the following possible interpretations (Reiß 2005; Kelm 2006):

The dated charcoal could originate from a mature stand of trees (approximately 500 years old). The central parts of the trunks could give a date for the time of the clearance, to which the age of the oldest wood, *i.e.* the age of the tree, has been added. With this time interval included, the date would correspond to generally accepted date for the Mesolithic-Neolithic transition. The dated charcoal samples were from fire pits, where whole trunks were usually not burned. They were split before burning, thus moving the corewood outward. Accordingly, the existence of an old stand of trees can hardly explain the early date for the first erosion event.

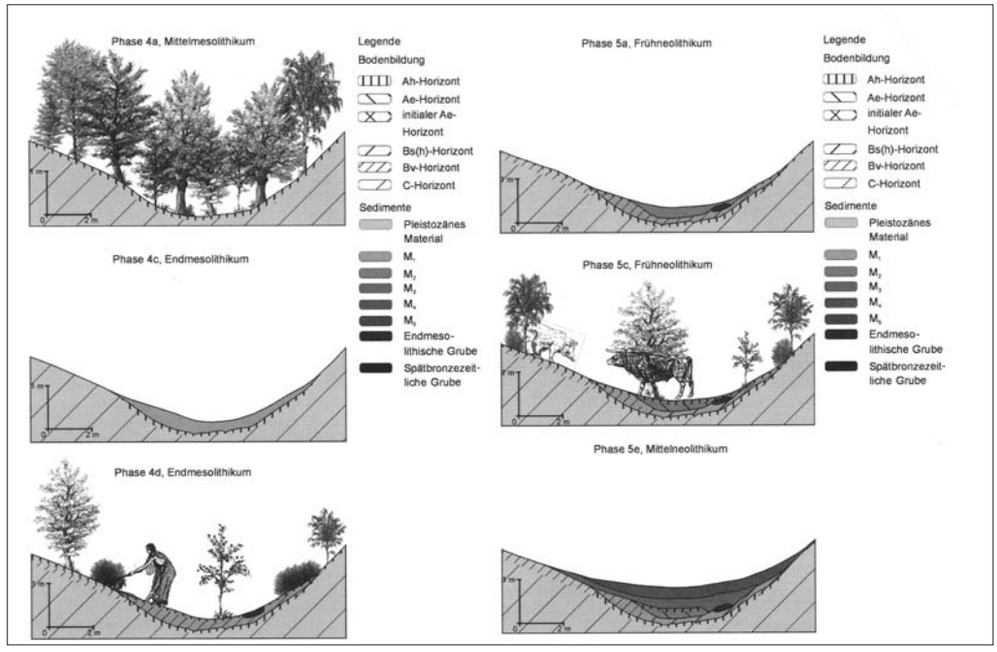

FIGURE 5. Phase drawings of the Mesolithic and Neolithic stratigraphy of the investigation area Falloh. Graphics: S. Reiß.

On the other hand, the method of the Four-dimensional Landscape Analysis could have succeeded in demonstrating that the first traces of the earliest human interference with the landscape were earlier than previously assumed. To date, it has not been possible to prove the existence of agricultural activity in the region during this period (Dörfler 2001; Dörfler 2005; Lüning *et al.* 1997). There is also a relative scarcity of finds in the Albersdorfer Geest at the transition from the Mesolithic to the Neolithic (Kelm 2006). The local climate in the investigated *dell* is very well suited to agricultural use. The surrounding relief protects the *dell* from northern and western winds. And due to its orientation, the drainage basin, with its low vegetation, is exposed to extended direct sunlight. Further to this, the river Gieselau was close by. All in all, when compared to the surrounding landscape, the *dell* offered exceptionally good conditions for settlement and land use. Furthermore, the first occurrence of cereal pollen has been established palynologically at 5,426–5,256 BC in Tostedt (Harburg County, 35 km. south of Hamburg). This result can only be understood as being the influence of southern cultures in a still Mesolithic cultural environment (Lüning 2000:36). At the end of the Mesolithic, the first influences from southern Central Europe – from the areas with early farming cultures – can be traced archaeologically in Dithmarschen (Kelm 2006). For example: an axe type called "Breitkeil" was found in Albersdorf and belongs to the Rössen Culture, from where it was imported (Arnold 2000:27).

The erosion event, which was made possible by human activity, and the changes in land use caused by the event are indisputable. They demonstrate very well the interactions between humans and environment. The transition to the Neolithic is a dynamic process: The introduction of agriculture took place step by step. Land use at any specific location lasted some decades at least – at most some centuries. Afterwards, the settlements were abandoned and new places were chosen. On the other hand, relict areas of Mesolithic culture persisted during the Neolithic (Ennen and Jannsen 1979:37). The results of the pedological-sedimentological investigations indicate a clear change in land use during the Late Mesolithic Period. This cannot, however, be clearly linked to agricultural use. This would require evidence from pollen-analytical and archaeobotanical investigations. Accordingly, the question of why the forest was opened up at this time must remain open, because wind throw or a natural forest fire can be clearly excluded on the basis of the find situation.

Interactions between humans and the environment are obvious in all the investigation areas since the Neolithic: In the areas of Falloh and Reddersknüll this is evident from the demonstrated erosion events, and in Bredenhoop from the marked degradation of the Neolithic soil. The well developed podzol formed under heath vegetation – which has been demonstrated by pollen analysis (Dörfler 2001) – and which is due to the influence of forest pasture. The fact that podzols developed repeatedly at different times during the period under discussion here, could permit the conclusion to be drawn that, with progressive soil development, podzols develop as the climax stadium (assuming sufficiently long development times). The very marked degradation of the prehistoric and early historic soils disproves this conclusion for the three investigation areas. The weak recent podzol, *i.e.* an initial podzol, in the investigation area of Reddersknüll had a development time of at least 1200 years. The very pronounced prehistoric and early historic podzols (nearly white E-horizons) in the four investigation areas had a maximum development time of only 500 years. Such high development intensity (strong degradation) cannot be explained by climatic fluctuations. Instead, the effects of

human interference on the soil and landscape development becomes very obvious.

The introduction of agriculture and cattle husbandry into Northern Germany more than 6,000 years ago initiated, also in the Albersdorf area, the transformation from a natural to a cultural landscape, which is so graphically illustrated by the research results presented here. Because of their productive economy, their property- and space-oriented way of life and their new way of thinking – *i.e.* being more "emancipated" from the environment – humans changed to become active users and shapers of the landscape. But at first, the farmer's way of life had only local effects. Humans lived on cleared islands in the forest, where the few houses of the small settlements and the cultivated areas lay. Only in the Middle Neolithic, from about 5,300 years ago onwards, is it apparent from palynological and archaeological investigations that larger scale landscape transformation took place in the Gieselau valley (Dörfler 2005; Kelm 2006). The differentiation between brief interference (which could nevertheless have had an intensive influence on the landscape) and interferences of longer duration ("permanent" factors in landscape change, for example by the continuous management of an area) is necessary.

The settlement distribution during the Middle and Late Neolithic – as reflected in the distribution of archaeological sites – shows how the humans chose their settlement sites at that time. Maps of the area of Frestedt, southwest of Albersdorf (Hingst 1990:71f) showing graves, settlements and flint workshops from this time, indicate that the topography was the main factor in human decision making. During the Late Neolithic – in Dithmarschen as well as in the entire area of the prehistoric economy in Central Europe – the sites were typically situated on good lookout points, *i.e.* on hill spurs and on ecological (ecotope) boundaries.

The planned continuation of these investigations in the area of Albersdorf, and their intensive evaluation in the coming years, should result in further knowledge concerning the history of early land use and settlements.

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KATINA LILLIOS

Minds on the move

Mobility and identity in Iberian prehistory

> But we love the Old Travelers. We love to hear them prate, and drivel and lie. We can tell them the moment we see them. They always throw out a few feelers; they never cast themselves adrift till they have sounded every individual and know that he has not traveled. Then they open their throttle valves, and how they do brag, and sneer, and swell, and soar, and blaspheme the sacred name of Truth! Their central idea, their grand aim, is to subjugate you, keep you down, make you feel insignificant and humble in the blaze of their cosmopolitan glory! (Mark Twain [Samuel Clemens], 2003 [1869]. *The Innocents Abroad*, Dover Publications, Mineola, NY. p. 111)

Introduction

The sedentary farmers of Late Neolithic Iberia are typically contrasted with the mobile farmer/pastoralists of the Early Neolithic. Despite the archaeological evidence for sedentism during the Late Neolithic, however, mobility continued to be a significant structuring feature of social and economic life. Abundant exotic goods, such as amphibolite tools, flint blades, marine shells, and slate plaques, indicate that some individuals travelled regularly in a system of logistical mobility (Binford 1980; Kelly 1995). Furthermore, burials were spatially segregated from settlements, and thus, people would have had to travel to transport their dead to a final resting place. The stones used to build megalithic tombs themselves were often brought some distance away, sometimes kilometres. Indeed, Late Neolithic peoples continued to practise many of the same subsistence activities of the Early Neolithic requiring mobility, such as pastoralism, gathering, hunting, and fishing. While the social, economic, and political implications of mobility among hunter-gatherers and pastoralists have been widely discussed by archaeologists and ethnographers (Ingold 1980; Kelly 1983, 1995, Ebers 1984; Casimir and Rao 1992), less attention has been directed to studying the implications of mobility within sedentary agricultural communities (Kent 1989; Cameron and Tomka 1993; Varien 1999; Morrison and Junker 2002). In this paper, I discuss the archaeological evidence for mobility during the Late Neolithic of Southwest Iberia and explore the social and cognitive distinctions that might have emerged when some people travelled and others stayed behind. The work of Mary Helms (1988) on the relationship between geographic distance, knowledge, and power is found to be particularly relevant for this discussion.

The sedentism/mobility divide

Archaeologists regularly employ oppositional categories to analyse and compare their objects, such as economic/symbolic, local/non-local, egalitarian/stratified, and the individual/collective. These oppositional constructs may reflect deep cognitive (Western?) structures, or they may have developed over time as a shorthand way of teaching world prehistory to undergraduates, but whatever their genesis, they generally pass through the literature as self-evident and mutually exclusive categories. Many of these oppositions are, however, currently facing a critical gaze and are being re-evaluated. One set of oppositional constructs currently under scrutiny and which I wish to focus on in this article is mobility and sedentism, generally equated with Mesolithic and Neolithic lifeways, respectively. Anthropologists increasingly recognize, however, that hunters and foragers practise a range of mobility strategies, which can include residential stability (Kelly 1995). For example, sedentism is documented for the Late Mesolithic peoples of southern Scandinavia, specifically at the sites of Skateholm (Larsson 1993) and Vedbæk (Price 1996). On the other side of the Pleistocene/Holocene "divide", greater levels of subsistence-related mobility have been suggested for Neolithic peoples (Thomas 1991; Whittle 1996, 2003; Bailey *et al.* 2005). It seems particularly ironic that such oppositional distinctions have only relatively recently come under serious scrutiny by archaeologists, given that archaeologists themselves enjoy a high degree of mobility – regularly doing fieldwork and research, travelling to conferences, and taking sabbaticals far from their home institutions – yet most would probably identify themselves as living a sedentary life!

In addition to pastoralism, however, there are many other factors that promoted mobility in the Neolithic of Europe, such as the acquisition and trade of stone tools, the construction of burial monuments, and the burial of the dead. These behaviours have long been recognized and their implications considered primarily in terms of their contribution to sociopolitical inequalities. However, I wish to pose a different question. That is, how might travel itself have structured the distribution of knowledge and experience in human communities? Might some of the social distinctions we note in materialized form in the archaeological record be the product of new identities created and reified by people experiencing different degrees of mobility and forms of knowledge? In this paper, I examine the archaeological evi-

FIGURE 1. Locations mentioned in text. 1 Lugar do Canto, 2 Vila Nova de São Pedro, 3 Zambujal, 4 Leceia, 5 Parede, 6 Rabuje, 7 Vale de Rodrigo, 8 Escoural, 9 Comporta.

dence for mobility during the Late Neolithic of Southwest Iberia and consider the implications of differential mobility in terms of status, gender, inheritance patterns, knowledge, and identity.

Sedentism and mobility in Late Neolithic Iberia

The Late Neolithic of Southwest Iberia lasted from 4,500–2,200 BC. It is associated with the construction of the first megalithic tombs and the establishment of hilltop settlements, such as those at Leceia, Zambujal, and Vila Nova de São Pedro, in Portugal (Cardoso 2002:177–324). I will use the term "Late Neolithic" to include what is sometimes referred to as the Copper Age, since there is, in fact, a great deal of continuity between these two millennia in the occupations of settlements and the use of burials. Southwest Iberia includes the regions of the Estremadura, Alentejo, and the Algarve (Figure 1). During the Late Neolithic, the vegetation that dominated Iberia was deciduous woodland in more humid zones and climax evergreen woodland in more arid zones. Pollen studies suggest, however, that both climate change (increasing aridity) and anthropogenic degradation occurred during the third millennium BC, and both factors caused a decline in arboreal species (Leewaarden and Janssen 1985).

The Late Neolithic of Southwest Iberia is generally understood to be a period during which agricultural peoples became increasingly sedentary and is contrasted with the Early Neolithic. It was during the Late Neolithic that, "in a permanent and irreversible way, human communities, increasingly sedentarized, would come to depend on the success of their harvest" (Cardoso 2002:182). The evidence for sedentism includes monumental settlement constructions, with house structures, specialized craft areas, and multiple phases of rebuilding. However, there are also signs that mobility at different scales and at least among certain individuals was rather high. I briefly review some of the available evidence.

• Pastoralism

Harrison (1985) argued that during the Late Neolithic, Iberia underwent a Secondary Products Revolution, as did other regions of prehistoric Europe (Sherratt 1981). Animal domesticates began to be used for their secondary products, such as dairy products, wool, traction, and transportation, and viticulture and woodland management were carried out. The analyses of the faunal remains at Zambujal tend to support this model (von de Driesch and Boessneck 1976; Uerpmann 1994).

• Fishing

Fishing and the gathering of shellfish were important components of the lives and diets of at least some Late Neolithic peoples. The seasonally occupied shell middens on the coastal site of Comporta (Grândola) (Cardoso 2002:219), the presence of fish and shellfish remains at settlements, such as Zambujal (von de Driesch and Boessneck 1976; in Uerpmann 1994:50) and Parede (Serrão 1983), and the bracelets and beads made of *Dentalium* sp., *Glycymeris glycymeris* (dog cockle), *Ruditapes decussata* (clam), and pectin in inland burials, such as Lugar do Canto (Cardoso 2002: 219) and Escoural (Gonçalves 1999:89), attest to the use of marine resources whose acquisition would have involved some degree of mobility.

• Hunting

Remains of wild animals, such as boar and deer, are regularly found on Late Neolithic settlements (for Zambujal, see von den Driesch and Boessneck 1976).

• The Acquisition and Exchange of Raw Materials and Finished Goods

Flint. During the Late Neolithic of Southwest Iberia, there was an active trade in flint used to make blades and halberds (Uerpmann 1994; Forenbaher 1999; Nocete *et al.* 2005). To summarize, it is clear that flint of various types, characteristics, and colours was traded and acquired regularly during the Late Neolithic. For the peoples living at Zambujal, for example, flint from Turonian limestone about 30 kilo-

metres away was used to make the majority of the flint objects found at the site (Uerpmann 1994:47). Blades made from oolitic limestone originating in the Betic Mountains of southern Spain were traded widely, some reaching settlements and burials in Southwest Iberia (Nocete *et al.* 2005).
Amphibolite. Amphibolite is a dark metamorphic stone that was regularly used by Late Neolithic peoples to make axes, adzes, chisels, and hammerstones. Amphibolite is found at various locations in western Iberia, particularly in the Alentejo region (Lillios 1997). At the major Late Neolithic settlements in the Lisbon Peninsula, most polished stone tools were made from amphibolite, despite the fact that basalts were locally available. Unworked blanks were found at some of these sites, most notably at Zambujal, suggesting a trade in blanks. The precise mechanism of this trade – whether it involved down-the-line exchange or direct access – is unclear. Nonetheless, the presence of amphibolite tools on Late Neolithic settlements provides unambiguous evidence that some people crossed the Tagus River and transported these bulky goods on a fairly regular basis (Lillios 1997, though see Cardoso 2004).
Basalt. Like amphibolite, though less frequently, basalt was also used to make groundstone tools in the Late Neolithic (Lillios 1997). The basalts found at Zambujal, for example, were likely transported a distance that would have taken about 30 minutes on foot (Uerpmann 1994:47).
Sandstone. Sandstone was regularly used as the raw material for grinding stones. At Zambujal, sandstone was transported at least 3 km. from the mountains north of the Sizandro River (Uerpmann 1994:47).
Slate. Slate, like amphibolite, is found in the Alentejo region. It was most often used in the Late Neolithic to make engraved plaques, but sometimes it was made into beads for necklaces. The majority of the plaques known were found in burials of the Alentejo, though approximately 20 % ended up in burials in the Setúbal and Lisbon peninsulas, approximately 100 km. away from the closest source areas (Lillios 2004, in prep.).
Variscite. Beads and small polished axes made from this greenstone have been found in Late Neolithic burial contexts (Lisboa 1994). Variscite sources are known in the Alentejo (Tornos *et al.* 2004) and in Zamora, Spain at Palazuelas de las Cuevas (Edo *et al.* 1998:85). More distantly, variscite was mined at Can Tintorer en Gavà, Barcelona (Edo *et al.* 1998; Villalba *et al.* 1998).
Ostrich eggshell and ivory. Objects made from North African ostrich eggshell and ivory have been found at some Late Neolithic sites, and Iberian Bell-beaker ceramics and copper goods were traded to communities in North Africa (Harrison and Gilman 1977). Clearly, such an exchange required a significant level of mobility and navigational skill.
Copper. Copper ores are known throughout southwest Iberia (Oliveira and Matos 2002, Tornos *et al.* 2004). For example, an outcrop of malachite was found at a location two hours away by foot from Zambujal (Uerpmann 1994:48). At the site of Vila Nova de São Pedro, a total of about 13.5 kg. of malachite was found, which was most likely imported from the Alentejo (Cardoso 2002:274).

• Megalithic construction
As documented throughout western Europe, the stones used to construct the megalithic monuments of Iberia travelled before reaching their final destination. Kalb (1996) analysed the stones used to construct the megalithic monuments of Vale de Rodrigo and noted that the stones, which included granites and granodiorites, came from a number of different locations, some up to 7 km. away. Boaventura noted that for the site of Rabuje, the majority of stones used were local, although the capstone likely derived from a source 8 km. away (Boaventura 2000).

• Burial rituals
One of the more striking facts of the Late Neolithic of Southwest Iberia is the spatial segregation of the living and the dead. This has posed theoretical and methodological problems, as settlement studies tend to be disarticulated from burial studies, and the lives of ancient Iberians treated separately from their burial rites. Nonetheless, this spatial segregation does provide another indication that peoples of the Late Neolithic needed to travel to bury at least some of their dead.

• Settlement location
Kunst has noted that the location of fortified Late Neolithic settlements can be correlated to their proximity to waterways and has proposed that these sites were central places that controlled the flow of goods moving between the Alentejo and Estremadura (Kunst 1995).

• Warfare
Direct evidence for warfare is currently lacking for Southwest Iberia (unlike for Spain; see Kunst 2000). However, the massive fortifications at some sites in association with high concentrations of arrowheads, such as at Vila Nova de São Pedro, are strongly suggestive of social tensions that could have developed into open acts of violent aggression. It seems reasonable to presume that some of these violent engagements involved mobile individuals.

Implications of mobility in a tethered landscape

One inescapable conclusion emerges from this, albeit cursory, review. That is, there is much more incontrovertible evidence for mobility than there is for sedentism in the Late Neolithic of Southwest Iberia. Nonetheless, some degree of residential stability is indicated in the archaeological record, as I have already discussed. In this section, I wish to consider and explore some of the implications of a social landscape in which some groups travelled while others (likely) remained behind.

• Who travelled and who stayed behind?
Most ethnographic studies of mobility in agricultural communities illustrate that gender, age, as well as personal qualities and skills influence the mobility patterns of individuals (Brettell 1986). While most long-distance travel known ethnographically is generally undertaken by males and archaeologists generally presume that such travel was carried out by males in the ancient past, Helms has noted that the ethnographic record suggests that in travel which might have involved "treachery, dispute, or other danger, women, small boys, or socially irrelevant persons were sent as messengers" (Helms 1988:86). My point is not to suggest who might have travelled on long-distance journeys in ancient Iberia, but to highlight the fact that gender (Boaventura in prep.) and social status structured who would have been able to go on different kinds of journeys.

• What were the implications of mobility to inheritance patterns?
Individuals would have needed to be away from their homestead anywhere from a few hours to a few days, and possibly a few weeks. It is well-known from the ethnographic record, however, that in cases of males needing to be away from their homes for long periods of time and with uncertainties as to their return (as in war, employment overseas, or when travel involves high levels of risk to life), that inheritance rules – and indeed descent patterns – evolve to maintain continuities in landholdings through the female line. This pattern has, in fact, been documented in Portugal in recent times for communities in the north (Brettell 1986).

• How did they travel and what skills were needed?
We can safely assume that people travelled during the Late Neolithic both by foot and by boat. It is interesting, however, that no depictions of prehistoric boats have been identified in Portugal, despite a rich rock art tradition (Felipe Castro, ArchPort/personal communication 2006) and the depiction of boats in other ancient peoples of Europe (such as Scandinavia). While the skills needed to pilot safely down riverways and along coastlines may not have been as complex as ocean voyaging or did not involve specialists, such as the navigators of the Pacific (Lewis and Oulton 1994; Ammarell 1999), some knowledge of currents, winds, and manoeuvring a raft or boat without capsizing was required. Even if travelling by land, some knowledge of landmarks and local resources would have been essential. Undertaking journeys, even those that took just a few hours, would have involved some degree of preparation or at least knowledge of where to acquire necessary food and water. Goods that were being acquired or traded needed to be carried or transported. String bags, straw baskets, wooden boxes, or textiles would need to be available to carry such items.

• By what paths did they travel?
Archaeologists and anthropologists, sometimes employing a phenomenological approach, have addressed the perceptions, movement, and pathways through space of ancient peoples as they went about their daily life (Ingold 1986, 2000; Wilson 1988; Tilley 1994). Distinctions are regularly made between hunters/foragers/pastoralists and their focus on places and pathways, and farmers, with their greater concern for two-dimensional areas. The focus on hunter-forager/pastoralists as a social category may, however, be too limited, as any person travelling regularly to access a resource at some distance away from a central base will also likely conceive of and experience their landscape differently than someone who stays closer to home. Actual pathways are, not surprisingly, unknown for the Late Neolithic of Iberia, though certainly the riverways, including the Tagus, Guadiana, Sado and their tributaries, formed major axes for travel, communication (both friendly and not), and trade.

• Through what kinds of social territories did people have to travel to get to their destination?
Travel takes the traveller into new places and provides opportunities to gain knowledge and information about new landscapes and peoples. However, travel is also risky and, indeed, one never knows whom – or what – one might run into on a journey. Individuals and groups that travelled for any length of time were, by virtue of their being in small units, more vulnerable to personal harm. Some precautions as to timing, routes, and weaponry would have likely been necessary. It seems reasonable to suppose that some of these journeys, whether taken by foot or boat, involved the activation of guest/host relationships. It is unclear what the social landscape was at the time of the Late Neolithic, but given the defensive features of many settlements and the abundance of potential weaponry in the form of polished stone axes and arrowheads, it seems overly optimistic to imagine that all Neolithic travellers slept soundly at night.

Conclusions

This paper outlines some of the evidence for both sedentism *and* mobility – particularly logistical mobility – during the Late Neolithic of Southwest Iberia. The relative importance or degree of each cannot be ascertained at this time, and no doubt these strategies shifted over time as a result of changing demographics, social tensions, and economic practices. To conclude, I wish to consider how these different levels of mobility might have structured the social world of ancient Iberians.

The different sets of experiences, knowledge, and access to goods and foods that travellers and traders would have enjoyed would have given them a special status. Sometimes such travellers are considered liminal or dangerous peoples, sometimes they are held in awe. But they are generally always considered to be different (Helms 1988). Being able or allowed to travel would have been the product of their special social standing or particular skills, but their experi-

ences as travellers would have further enhanced their alterity. This polarization of social identity (although I do not mean to suggest that only two categories of being were created in this process) seems to be reflected in the material record of Southwest Iberia at this time, with its proliferation of new goods in ceramic, stone, copper, and bone. Indeed, it is interesting to note that the creation of the engraved slate plaques – which I have suggested using formal and spatial analyses were markers of social identity (Lillios 2004) – began in the same region where not only slate is found, but a range of other materials that were highly valued at the time, such as copper, variscite, and amphibolite. The open plains of the Alentejo would have been a focal landscape through which travellers and traders from diverse reaches of the Peninsula encountered each other, perhaps speaking different (mutually unintelligible?) dialects. Tensions and competition over access to the valued resources of the Alentejo would have emerged, stimulating the creation and materialization of social identities, and giving rise to the production of enduring emblems of these identities, such as the engraved slate plaques. In a similar way, Robb (2001) proposed that the construction of the Maltese temples, unique in the Mediterranean, was the outcome of an active process of cultural differentiation that emerged through regular contact by island travellers to other regions of the central Mediterranean.

In this necessarily brief – and speculative – discussion of the evidence for and implications of mobility during the Late Neolithic of the Iberian Southwest, there is another irony. That is, despite a generalized rejection of the colonialist model for the development of social formations and a quest for local origins for the social evolution of the region (Chapman 2003), we find ourselves forced to consider, once again, the prehistoric Other of these ancient peoples. This Other, however, was not a colonist from the eastern Mediterranean, as Childe or Siret might have argued. Rather, for the travellers and traders of the Iberian Peninsula of the Late Neolithic, those Others could have been the people living on the other side of the Tagus River, coastal fisherfolk, or even their neighbours living in the next valley. Indeed, to those who stayed behind, the Others may have been the travellers themselves.

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PHILINE KALB & MARTIN HÖCK

Anta da Malhada da Bidueira, Concelho de Évora

A hitherto unknown megalithic grave in the region of Vale de Rodrigo, Portugal

When in 1991 Lars Larsson started to work at Vale de Rodrigo 2, this was thought to be the first of two, maximal three excavation seasons. But in the course of time, owing to exciting results, the designated last campaign several times turned to be the penultimate. We both, Philine and Martin, were cautious enough to avoid any prediction about the end of our own work. Nevertheless, when we decided to terminate surveying in 2005, during a visit to one of the monuments, two new "antas" were discovered and require now further work. One of them we would like to dedicate to Lars.

Introduction

ON 7 JUNE 2005, two members of our staff, Armando Guerreiro and Augusto Machado, were working at the Monte da Igreja 1 megalith, when the tenant there, Mr. João Bento, informed them about an "anta" and "Roman walls" on his own property, the Herdade da Bidueira. Two days later, Armando Guerreiro and Diana Albuquerque, our Portuguese geologist, visited the sites and confirmed that there really is a megalithic grave. A glance at our maps and records relating to the region showed that it really was hitherto unknown to archaeologists. On 10 June, which was the last day of our campaign, I was able to visit the monument and convince myself that it was relatively well preserved, showing remains of the chamber, the passage and the cairn. We agreed to include it in our current work and to call it "Anta da Malhada da Bidueira" (Figures 1 and 2).

Situation

The estate of "Herdade da Bidueira" is located in the southeast corner of an area we call "zone of megaliths of Vale de Rodrigo" (Kalb and Höck 1995). The farmstead which gave the name to the property is located at about 2 km. to the south of the hills of Alto do Barroco. From there, over a distance of at least 10 km., the big menhir was probably brought to Vale de Rodrigo 1 (Kalb 1996, 2003).

The Anta da Bidueira was erected on the edge of a plain at about 230 m. altitude, situated roughly 1.5 km. southwest of the Malhada de Porcos (which means a covered pigsty with a small room for the herdsman); the Malhada is situated beside a small stream about 210 m. above sea level. The shortest way to the nearby northeast–southwest running river Xarrama, which is water-bearing all the year round, takes about 2 km., and the difference in altitude is about 50 m. The environs of the monument consist of "Montado", a loose plantation of chestnut oaks and cork trees, and was used until the 1950s or 1960s predominantly for breeding pigs, or later on horses. Nowadays black cattle graze there, young bulls and their mothers. On the southern bank of the Xarrama, about 500 m. from the river, we localized another new megalith, the Anta da Falcoeira (Figure 3).

State

Of the Anta da Malhada da Bidueira there remains at first glance a mound about 7 m. in diameter, with stones on it, showing some uprights as remainders of a chamber and a passage. In the centre of the supposed chamber, as at other monuments in the Alentejo region, a tree is growing, here a cork oak. The place was probably used as a clearance cairn and therefore part of the boulders on the mound do not belong to the original monument. There is no capstone, and surface finds were neither found nor reported.

Geology

At the very first visit to the monument in June 2005, Diana Albuquerque started the geological studies, which were continued on 2–5 October of the same year. At that time, the first measurements were also taken.

On the Geological Map of Portugal, sheet 40-A, Évora, which was published in 1969, the Anta da Malhada da Bidueira, in contrast to other "antas", is not marked. This fact could signify that the authors of that sheet and the accompanying explanatory notes (Nota Explicativa) (Carvalhosa *et al*. 1969) did not visit this area personally; a monument like the Anta da Malhada da Bidueira would never have escaped them, for they obviously had archaeological experience and interests. This would also explain why there are some geological inaccuracies on the map which are not relevant on a map at a scale of 1:50,000, but become important for our own detailed observations in relation to archaeological monuments and their environs (Dehn, Kalb and Vortisch 1992; Vortisch 1999).

The surroundings of the grave, as marked on the map, consist of gneiss and migmatites. Nevertheless, the survey of Diana Albuquerque showed that the substratum there is not of gneiss, but of biotite-tonalites and other granite-like

FIGURE 1. Anta da Malhada da Bidueira, Concelho de Évora, from the east.

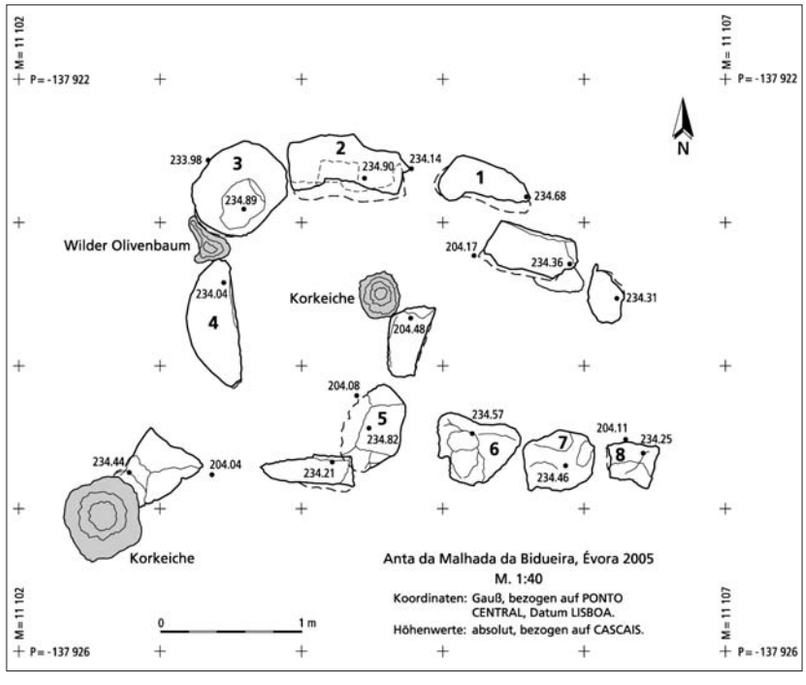

FIGURE 2. Anta da Malhada da Bidueira, Concelho de Évora, ground plan.

rocks. A biotite-tonalite outcrop is situated about 60 m. west of the monument and has an extent of about 35 x 40 m. Gneisses are found only at a short distance. The other granitic rocks are divided into two types: The first is a very fine granular one, consisting of quartz, feldspar and some crystals of hornblende and tourmaline, with only a few particles of muscovite. The other one shows medium to coarse grains and also consists of quartz and feldspar but with a lot of muscovite and also some biotite.

Slabs of these two rock types, which crop out in the immediate surroundings, were used for the construction of the monument, but no slabs of the above-mentioned biotite-tonalite could be detected there. Slabs 2, 3, 5, 6, 7–9, 10 and 11 belong to the former, fine-grained type of granite with few or no muscovite particles, while slabs 1 and 4 (the latter probably the backstone) belong to the second type.

It should be noted that there was no long-distance transport of slabs, and also remarkable is the fact that the nearby biotite-tonalite was not used or at least could not be observed at the monument. That is astonishing, for the latter rock type would have had some technical advantages: because of its natural joins it is suitable for slab extraction and it would have been more resistant than the other kind.

Further on we can observe that the monument was erected exactly in a zone of the lithological transition between two different formations: in the east the granitic rock of quartz, feldspar, muscovite and biotite, and in the west the other type of quartz, feldspar, tourmaline, and/or hornblende and with only a little muscovite.

Topographic survey

A topographic survey took place on 2–8 October 2005. Details of the site were recorded including the uprights of the burial chamber and its passage as well as the contours of the mound and its environs.

We used a WILD T1010 theodolite and distomat to perform an open traverse. The trigonometric points (TP) of PINA, ALCALAINHA and NOGUEIRA served as reference points to

FIGURE 3. Anta da Falcoeira, Concelho de Évora, from the south.

link the final site map to the Portuguese national topographic grid. (The T1010 theodolite has a standard deviation/tolerance of 1 mgon). From the second traverse point two further points (P3 and P4) were measured and permanently marked in the underlying bedrock. They were marked in the rock as a precautionary measure since reference points in the immediate vicinity of archaeological sites tend to become lost through time. By using those fixed points it is possible to define other points closer to the monument.

The uprights were recorded by a method that had previously been tried and successfully tested on features during the excavation. A theodolite and a reflector were used to record the basic points. The coordinates were plotted directly on a sheet of graph paper and provided the framework on which details of the uprights were recorded and drawn. Those drawings were scanned, converted into vector graphics and integrated into the digital terrain model.

Conventional techniques were used to create a ground plan of the mound and its vicinity. Where it was possible to identify fracture lines in the stones they were also recorded and included in the final plot. The density of measured points in the grid is highest on the top of the mound, and the number of points decreases further towards the margins of the site.

The monument

As far as it is possible to decide without clearing the surface or excavating, the grave originally had a polygonal chamber of seven uprights, of which only four (slabs 1, 2, 3, 4) seem to be still in situ, meanwhile other three (slabs 5, 11 and 12) probably are dislocated. The chamber was accessible by a passage, which is a little bit narrower and lower than the chamber and had three yokes of which only the southern slabs (6, 7 and 8) are still preserved. At a deviation of approximately 30 degrees to the north of the axis of chamber and passage, at a horizontal distance of about 75 m., at the slope down to the Malhada, there rises a spring which, according to the owner, was very rich in former times. It is bordered by big boulders and nowadays, after two summers of drought, in October 2005 and January 2006 we found it dry.

It is difficult to get any clues as to the chronology of the monument without excavations and further investigation. Judging by its shape and size and considering its embedding into the Alentejo group of megalithic monuments the Anta da Malhada da Bidueira seems to belong to the Chalcolithic period.

If the surrounding mound is really a cairn, the monument, according to the current state of knowledge, could be dated to late Chalcolithic times.

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MALCOLM LILLIE

The North Sea: Liminal space or zone of interaction?

Some musings on prehistoric seafaring

> "the sea is not formless or featureless: even in deep water, a ship's position and direction can be gauged from the sun", … and other parameters
>
> (Parker 2001:32)

Introduction

TRADE AND EXCHANGE networks are an essential aspect of prehistoric populations, being integral to intercultural contacts and acting both as a stimulant for such contacts, and an indicator of them (cf. Renfrew 1969:151). Fundamental to trade and exchange in an island setting such as Britain after postglacial sea level rise (Ward *et al.* 2006), is the mechanism for movement across the North Sea and/or English Channel. It has been shown that sea route links can often be closer than by land, as they consume less energy and may be quicker than land routes (Parker 2001:29; Phillips 2003:380). That seafaring is undertaken by human groups is perhaps not surprising given the evidence to support long-distance seafaring from early prehistory. An example of this is the colonisation of Australia, which is placed *c.* 60,000–40,000 years ago (Erlandson 2001, 2002:69), an endeavour that would have entailed voyages of considerable distance in open seas. The North Sea, by comparison, would presumably be a relatively straightforward sea voyage for Bronze Age peoples.

There is significant evidence for trade and exchange in the earlier Bronze Age in the form of pottery and other prestige goods being imported from the continent (cf. Clark 2005, also reference to Needham and Dean 1987), hence a seagoing capability is implied, but the scale of the endeavours remains speculative. It has been argued elsewhere that the potential seagoing capabilities of the Bronze Age sewn plank boats from the Humber Estuary and other regions in Britain could indicate their importance in developing exchange networks (Lillie 2005, in press a, b; Van de Noort 2004a, b; Wright *et al.* 2001).

It is now over four decades since Renfrew (1969) highlighted the fact that trade and exchange networks were poorly understood in European prehistory, but the context of prehistoric seafaring and how this linked with trade and exchange networks is still poorly developed (cf. Van de Noort 2004a:404). However, Van de Noort's work focuses on the ritualised aspects of seafaring and the role of this activity in rites of passage, with the sea being viewed as a liminal space (2004a:404). Liminality (cf. Van Gennep 1960) imbues the act of seafaring with a level of significance that may be too "loaded" in relation to general trade and exchange networks, especially as the act of seafaring itself has a considerable antiquity – even by the earlier Bronze Age. As "people in coastal areas interact with the sea on a day-to-day basis" (Phillips 2003) we should perhaps try to avoid a "land-centric" discourse when attempting to understand the significance of prehistoric seafaring.

It is argued here that the emphasis on ritual and "seascapes" and their perception in the past, whilst of considerable academic interest, is somewhat limiting when considered in relation to trade and exchange networks, due to the reliance on levels of inference beyond those required to understand the role of the Ferriby craft in their socio-economic context. Van de Noort's observations regarding the "everyday" context of the Ferriby-type of craft is more useful in this context, and resonates when considered within the developing networks of exchange revolving around prestige goods in the later Neolithic and Bronze Age (Lillie 2005). The debate that has been developing since 2001 is of considerable importance, as it has stimulated debate into seafaring and its role in the trade and exchange networks of late Neolithic and early Bronze Age societies in northwest Europe.

The research undertaken on the Ferriby finds represents in excess of sixty-four years of investigation of the part of Ted Wright and, more recently, other researchers (Wright and Wright 1939; Wright 1990; Wright *et al.* 200; Coates 2004; Gifford and Gifford 2004 a, b; Lillie 2005, and others). However, it is only recently, particularly with the development of AMS dating (Wright *et al.* 2001), that the early periodisation of these craft has been fully appreciated, and has stimulated a consideration of the socio-economic context of these vessels in relation to the earlier Bronze Age.

The dating of these vessels (Table 1), as mentioned above, has been somewhat protracted, and has been refined considerably by the application of AMS dating (cf. Wright and Wright 1939; Wright 1990; Wright *et al.* 2001).

Lillie (2005) notes that comparison with the (then) available dates for other boat finds, including the Brigg "raft", indicated that Ferriby 1 and 2 were considerably earlier at *c.* 1,385–1,310 cal. BC (Wright 1990:174–5). At the time of writing, Ted Wright suggested that further refinements of the radiocarbon evidence might "narrow down" the degree

Laboratory number	Sample	Radiocarbon age (2s)
Q-1217	Yew stitches from boat 1	3312±100
Q-1197	Oak from main planking of boat 1	3380±100
Q-3043*	Ferriby 1 – yew withy	2980±55
Q-3124*	Ferriby 1 – yew withy	3020±40

TABLE 1. Radiocarbon dates for Ferriby 1 (after Wright 1990:173–4).* Duplicate determinations from separate parts of the same sample.

of uncertainty. This proved to be the case, when further investigation of the available timbers was undertaken (Wright *et al.* 2001). The new dates for Ferriby 1 calibrated to 1880–1680 cal. BC, Ferriby 2 calibrated to 1940–1720 cal. BC and Ferriby 3 calibrated to 2030–1780 cal. BC. The Ferriby boats are, now, clearly the earliest examples of sewn plank boats from England and Wales, yet discovered. With this latter point in mind, it is worth reflecting on the fact that we have a number of seagoing vessels from Ferriby that appear to be fully developed technologically, what we now need to determine is: where are the prototypes for the vessels?

The Ferriby "boatyard" and seafaring capabilities

There has been a considerable amount of research aimed at understanding how the Ferriby boats would have functioned in their prehistoric context (*e.g.* Coates 2004, 2005a; Gifford and Gifford 2004a, b). The reconstruction and reinterpretation of the Ferriby ships has relied heavily on the archives generated by Ted Wright (1990). In the case of the Ferriby examples, Ferriby 1 was the more complete, being about 16 metres long, 2 metres wide and constructed using massive oak planks. It has been suggested that their size alone justifies designating them as ships in their chronological context (Coates pers. comm. and 2004:21).

In terms of the function within later Neolithic and earlier Bronze Age exchange networks, it is important to note that reconstructed, these craft could have weighed approximately 4 tonnes unladen, and they would be able to carry about 7 tonnes in a seaworthy manner. Alternatively, it has been suggested that they would have been able carry about 30 passengers while being propelled by up to 18 people working paddles or a smaller number working oars, or by sail (though there is as yet no uncontroversial archaeological evidence of sail in NW Europe before *c.* 500 BC) (Coates pers. comm. 2001). Of equal importance are the social implications of such craft, a theme which will be expanded upon below.

The discussion of the seafaring capabilities of these craft has been undertaken elsewhere (Lillie 2005, in press a, b). Some of the more salient aspects of the recent research are reiterated here in order to provide a context for the discussion of the role of these craft in prehistoric trade and exchange networks.

Coates (2005a) notes that one of the more limiting aspects of research into the reconstruction of the Ferriby craft and theories relating to their seagoing capabilities has been the insistence of other specialists that the original flat bottomed interpretation of the Ferriby craft (cf. Wright 1990:18, 90), continues to be used (*e.g.* McGrail 1987, 2001). The general consensus now appears to be moving towards an acceptance of the curving or "rockered" keel, but as with any reconstruction project, considerable debate continues in terms of the finer details of the construction of these craft (*e.g.* Roberts 2006:75).

Wright (1990:18, 90) was careful to point out the fact that he was incorrect in his original interpretation of the Ferriby craft as having a flat hull, an observation that was made in ignorance of the significance of this factor in relation to seagoing capabilities. Recently, Gifford and Gifford (2004b:501) have noted that in addition to Ted Wright's depth soundings, the photographic and drawn archive for Ferriby 2 confirms that this vessel was rockered. This additional observation lends considerable weight to the suggestion of a seagoing capability for these craft (2005a).

Reconstructing Bronze Age vessels (after Lillie 2005, in press a, b)

Wright (1990) suggested that the findspot of the Ferriby craft represents a boat-yard, or equivalent, where these vessels were both constructed and repaired. In this context, it is important when considering the origin of the oaks used in the construction of the Ferriby boats; two sources can be inferred. Palaeoenvironmental investigations in the Vale of York, to the northwest of Ferriby (Lillie and Gearey 1999) have shown that the Vale would have been heavily wooded during the Bronze Age. Similarly, in the Trent valley, a river that flows into the Humber, sizeable oak trees of Bronze Age date were recovered during gravel extraction (Lillie and Grattan 1995a, b).

The following is a summary of the outline presented in Lillie (2005). This is based on the work of Edwin and Joyce Gifford and John Coates, all of whom have provided the current author with helpful advice and access to their research on the Ferriby craft (Coates 2004, 2005a; Gifford and Gifford 2004a, b). Caveats relating to the reconstruction project are presented in Lillie (in press a, and are debated by Roberts 2006).

In light of Wright's (1990) observations relating to the probability that Ferriby 1 had a rockered keel, and those of Gifford and Gifford (2004a, b) in respect of Ferriby 2, it is now generally assumed that these craft were seagoing, or that they had the potential to be. However, other examples of sewn plank craft differ in design features. For instance, the Dover and Brigg vessels are both flat bottomed, initial-

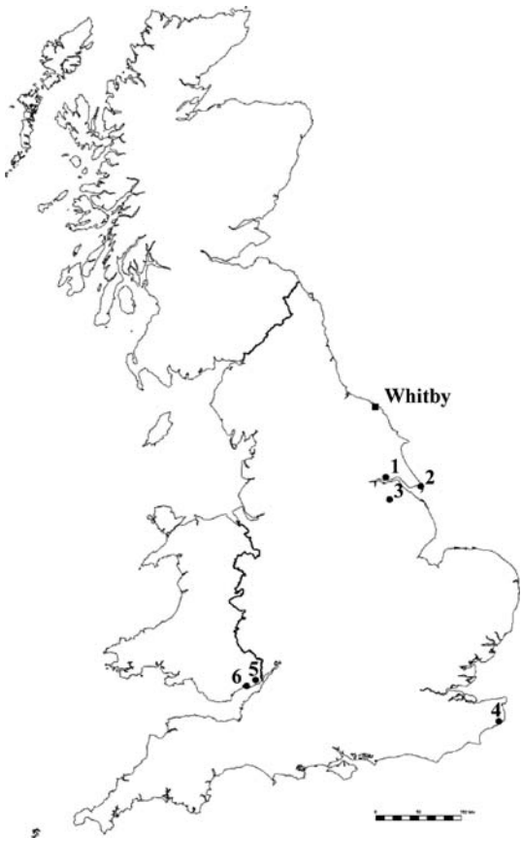

FIGURE 1. Location of main findspots for Ferriby-type craft and elements from these, along with location of source of jet at Whitby. 1. North Ferriby, 2. Kilnsea, 3. Brigg, 4. Dover, 5. Goldcliff, 6. Caldicot.

ly suggesting that it was unlikely that they would have had any significant seagoing capacity. Recent re-examination of the Dover boat (Marsden 2004:18f), has suggested that a combined riverine, and limited coastal usage, would be a reasonable interpretation for this crafts function (although cf. Clark 2005:87, 93), and in this context the "significance" is clearly open to debate. It should be noted that a considerable amount of importance has been placed on the recovery of a sediment sample [context 4933] from a marine context, but that this evidence does not a priori support any significant "seagoing" capacity for the Dover vessel, beyond a coastal and possibly inshore context (cf. Roberts 2006).

The finds at Kilnsea (Van de Noort *et al.* 1999), Goldcliff (Bell *et al.* 2000; McGrail 2000) and Caldicot (Parry and McGrail 1991a, b, 1994; McGrail 1997), are all fragments of sewn plank boats. However, these are in no way comparable to the examples from Ferriby (Wright 1990), Brigg (McGrail 1994) and Dover (Clark 2004) in terms of scale, and the information that they provide in relation to construction techniques. Despite this, it should be noted that a number of the finds discussed are located in close proximity to the major estuaries of the Humber and Severn (Figure 1), perhaps providing some indication of their use in these environments. In essence though, it would appear that the finds from Ferriby are the only examples (found to date) that might be considered as having any significant seagoing capabilities in the earlier part of the Bronze Age period.

As such, it is clear that Ferriby 1 is of considerable importance for a number of reasons. Firstly this vessel appears to be technically the most advanced form of sewn plank boat yet recovered. Secondly, its dating (along with Ferriby 2 and 3) moves it towards the earlier part of the Bronze Age – it is probably unlikely that such a level of technical competence occurred overnight (Coates pers. comm. 2002). The process of development must suggest that the genesis of these vessels lies towards the Neolithic-Early Bronze Age boundary as a minimum estimate. Roberts (2006:77) suggests that the techniques demonstrated by the Ferriby craft could conceivably have their genesis some 2,000 years earlier in terms of the skills necessary for both boat construction and seafaring know-how. Thirdly, the significant sociopolitical changes that characterise this period revolve, in part, around the control of "prestige" items and the rise of the individual (discussed below). Therefore, the determination of the seagoing capabilities of these craft is central to the debate relating to their significance in relation to late Neolithic and early Bronze Age socio-economic and probably political developments across this transition.

The following discussion represents a summary of some of the key points of the 2002 papers by Gifford and Gifford (2004a), and Coates (2004), both of which were given at the Dover Boat conference.

When attempting the reconstruction, Gifford and Coates realised that in order to replicate the rocker (or curve) in the keel, it would be necessary to bend the two parts of the keel (Gifford and Gifford 2004a; Lillie 2005). The lack of evidence for the use of fire in this process led to the hypothesis that heated water may have been used in this stage of the original construction process. Consequently, for ease of reproduction, the keel plank parts were enclosed in a PVC sleeve which had steam fed in to it. Weights were placed on the planks to ensure curvature, and after four hours of steaming at 70°C, the 60 mm. planks were bent to shape.

In the original craft, it appeared that the system of longitudinal carved cleats and transverse timbers used in construction served to align the bottom planks during assembly and stitching. In the reconstruction, the transverse timbers were placed at twice the original spacing in order to ensure that the shear strength of the stitching would be to scale. A recent observation by Roberts (2006:75) suggests that "at five positions close to, or included in, the groups of cleats carved out of the centre plank are slots cut into the cleat ridges. It is proposed that these are steps for pillars beneath five beams, not slots [for] locating frame/floor structures". Thus the actual technique employed to stiffen the chine and restrict flexing forces may be argued to have alternative interpretations in the reconstruction process.

An explanation for the absence of stitches at the boxed

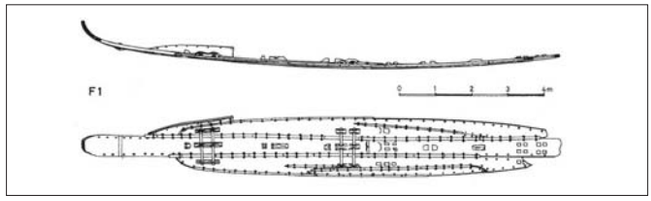

FIGURE 2. Close up of the boxed butt joint in the keel plank (after Wright 1990).

butt joint in the keel plank amidships (Figure 2) was provided by John Coates who observed that the long end overhangs and fine lines both fore and aft, would have caused the ends of this ship to droop. This effect, known as hogging, would serve to put the bottom planks in compression and the top strakes in tension. In addition, this characteristic would result in the force on the stitching occurring in only one direction, thus lessening the wear on them.

The remaining details of the reconstruction project are outlined in Gifford and Gifford (2004a, b), and Lillie (2005), and the reader is directed to Roberts (2006), Crumlin-Pedersen (2006) and Crumlin-Pedersen and McGrail (2006) for detailed considerations of the viability of interpretations of prehistoric craft through reconstruction. However, irrespective of the finer details of debates relating to reconstruction techniques, the above discussion of the technical knowledge necessary for the production/construction of these vessels reinforces the observation that sewn plank ships would have represented a significant advance in northwest European boat building in the later Neolithic and earlier Bronze Age.

The "seagoing" capabilities of the reconstructed Ferriby ships were tested during trials in 2002 and more recently in January of 2005 (Figure 3). In general the craft handled well, and the use of nine people in the reconstructed craft during the initial sea trials confirmed an estimate of seventy-two for the full-scale vessel. A speed equivalent to 6 knots with 16 rowers was established, and under sail a speed equivalent to Coates' origin calculations of 6–7 knots was achieved (Gifford and Gifford 2004b:503).

Trade and exchange in prehistoric Europe

The significance of the above discussion relating to seafaring capabilities revolves around the role that the Ferriby-type of craft may have had in trade and exchange networks at the Neolithic-Bronze Age boundary. It has been suggested above that sea voyaging may not have represented a "significant" perceptual undertaking in the Bronze Age, and that "going to sea may have been an occasional, temporary activity, depending on other priorities or economic opportunities" (Parker 2001:25). This is not to underestimate the fact that movement on either land or sea would have necessitated the knowledge of "mental maps to locate distant points, in which travelling time, direction and landmarks

FIGURE 3. Launching of the Ferriby half-scale reconstruction in January of 2005. Photo: Malcolm Lillie 2005.

were embedded as required" Phillips (2003:382, quoting Broodbank 2000:23). What is of significance is that these vessels may have been integral to burgeoning trade networks and the continued rise of individual power and prestige across the Neolithic-Bronze Age transition.

In the Yorkshire region, to the north of the Humber, a range of factors come together to suggest that this region is significant in the later Neolithic and earlier Bronze Age periods. The Humber Estuary acts as a major conduit to riverine transport throughout both the prehistoric and historic periods, and the tributaries of the Humber drain roughly one-fifth of the surface area of England, providing key arteries into the interior of the country. It is perhaps not surprising that even into the Iron Age the Yorkshire region stands out as having close European contacts in the guise of the Arras culture, where the distinct square barrows and chariot burials, such as those from Wetwang Slack and Garton Slack (Dent 1982, 1983) stand out in the archaeological record.

Considerable evidence exists in the Yorkshire and Derbyshire regions for changing socio-political articulations at the end of the Neolithic and into the Bronze Age. These shifts, whilst visible elsewhere in Britain, are particularly marked north of the Humber and occur in the form of the large round barrows of Neolithic date that exist in these

regions *e.g.* at Duggleby Howe, eastern Yorkshire (Kinnes 1979; Kinnes *et al.* 1983), where successive inhumation burials occur in a deep grave pit. Also, at Whitegrounds, Yorkshire, where an adult male was placed in the centre of a previously existing burial cairn, some status may be inferred from the inclusion of a jet slider and flint axe (Clarke *et al.* 1985:66). The bone material from this burial has been dated to 2,570±90bc (Har-5587) which gives an age of *c.* 3,500–2,900 cal. BC at 2δ. These examples reinforce the suggestion that the importance of the individual, and concomitantly perhaps the control of goods and people, was rising in this region during the Neolithic period.

Recent research has indicated that one of the "prestige" items found in burials between 2,700–1,700 BC, the Beaker, may have been produced specifically for inclusion in this context (Parker-Pearson 1999:81). As a consequence their interpretation as a "prestige" item is no longer held to be correct, although their association within the burial tradition is well established. One important element of the prestige goods in circulation, and which are found in burial contexts, are the artefacts made from Whitby jet. These have been found at a range of sites in Scotland, such as Mount Stuart, Bute, Pitkennedy in Angus, Harehope in Peebleshire and Migdale in Sutherland. They have been found at other important sites such as Garton Slack in Yorkshire and Irthlingborough, Northamptonshire (Parker Pearson 1993).

At Garton Slack, ochre, which is used as a polishing agent for jet, has been found. At Irthlingborough one of the mounds produced significant evidence for structured grave deposits and individual importance, with an adult male interment in a wooden burial chamber covered by the remains of roughly 184 young male cattle. Whilst objects from eastern England occurred in the grave goods, *e.g.* jet buttons, an "exotic" grave good in the form of an amber ring from the Baltic Sea region was also in association. Obviously, we cannot necessarily determine the mechanisms by which this latter item arrived into Britain, but the fact that the Ferriby-type craft were capable of crossing the North Sea at this time, may well provide some insights into one aspect of these exchange networks and extended spheres of social contact.

The long-distance exchange of Whitby jet and the trade of prestige items must have placed the individuals who controlled the Ferriby-type of vessels in an extremely strong socio-political and economic position. As such, the idea that the construction and everyday functioning of these craft was "not embedded with any special meaning" (Van de Noort 2004a:413), severely underestimates the likely significance of these craft. It is perhaps important to reiterate that the Yorkshire region has evidence for these changes in the later Neolithic, at a time when trade and exchange with the continent may have been facilitated by seagoing craft such as the sewn plank boats of Ferriby (Lillie 2005:107).

To conclude, it would seem prudent to assume that the implications of a seagoing potential for the Ferriby craft are of considerable importance when assessed in the context of later Neolithic and earlier Bronze Age socio-economic and political developments in the centuries around 2,700–2,000 BC. Seafaring in an island context must have been integral to everyday life, especially for those living in coastal and/or estuarine locations. The comments of Parker (2001:38) have resonance in that "whilst … concepts of maritime awareness are stimulating and important, for the most part one has to recognise that it is not so much 'maritime consciousness', as the demand of economic or social factors, which induce a seafaring response". This observation is of considerable significance in the context of late Neolithic to early Bronze Age seafaring, especially in relation to the Ferriby craft from the Humber Estuary. Discourse relating to ritual aspects and concepts of navigation in such seascapes is interesting, but it fails to assess the socio-economic context of the craft in an adequate way.

The Ferriby boats of the early Bronze Age functioned within an environment whereby the North Sea basin was a significant zone of interaction. Considerable socio-economic changes occur during this period and European contacts are important to society as a whole. The idea of the sea as a liminal space is perhaps important only to those individuals who had not experienced seafaring, or to those experiencing it for the first time, especially when we consider that sea travel, by the Bronze Age, already had a long history. The fact that we have no way of quantifying the frequency with which these craft may have operated at sea is somewhat limiting, but as noted by Parker (2001:25) "going to sea may have been an occasional, temporary activity, depend[ent] on other priorities or economic opportunities". However this endeavour was integrated into past social life, the facts are that trade and exchange was more expedient by sea, that "exotic" items reached Britain on a regular basis, and that we have an increasing corpus of evidence to support the hypothesis that sewn-plank boats were capable of sea voyaging in the earlier Bronze Age. A search for the evidence for the genesis of these craft would seem warranted, as would a more detailed synthesis of the North Sea zone of interaction in terms of trade and exchanges networks in the earlier Bronze Age of Britain and northwest Europe.

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THE BRONZE AGE PAST

JENNY NORD

Movements and pauses

Aspects of a Bronze Age landscape

Introduction

FOR SEVERAL YEARS I have been studying the Bronze Age in the Bjäre peninsula in the northwest of Skåne, southern Sweden.[1] These studies will result in a Ph.D. thesis and Lars Larsson has been my very supportive supervisor throughout my work. For this Festschrift to Lars Larsson I would like to explore two concepts that have become valuable for my work on the Bjäre landscape: *movement* and *pause*. Pauses are viewed as punctuations of movement; one way in which movement is connected to the landscape.

One important question in my work has been how to understand the abundance of Bronze Age sites in Bjäre. As has been noted before, Bjäre is rich in burial mounds compared with surrounding areas (Hyenstrand 1984; T. B. Larsson 1993) but the reasons for this have never been fully understood, even though it most probably mirrors different strategies in landscape politics (Andersson 1999; Nord Paulsson 2002a). My work has focused on trying to understand the locations in the landscape of different kinds of prehistoric sites. The locations of sites were chosen by people not only for practical reasons.

In my previous work the burial mounds were treated as territorial markers with inspiration from the work of Ulf Säfvestad (1993). Through different analyses of locations of burial mounds in the landscape a number of local territories were distinguished (Figure 1). An interesting result in this work was that the large sites with rock carvings were mainly located along the border zones between the local ter-

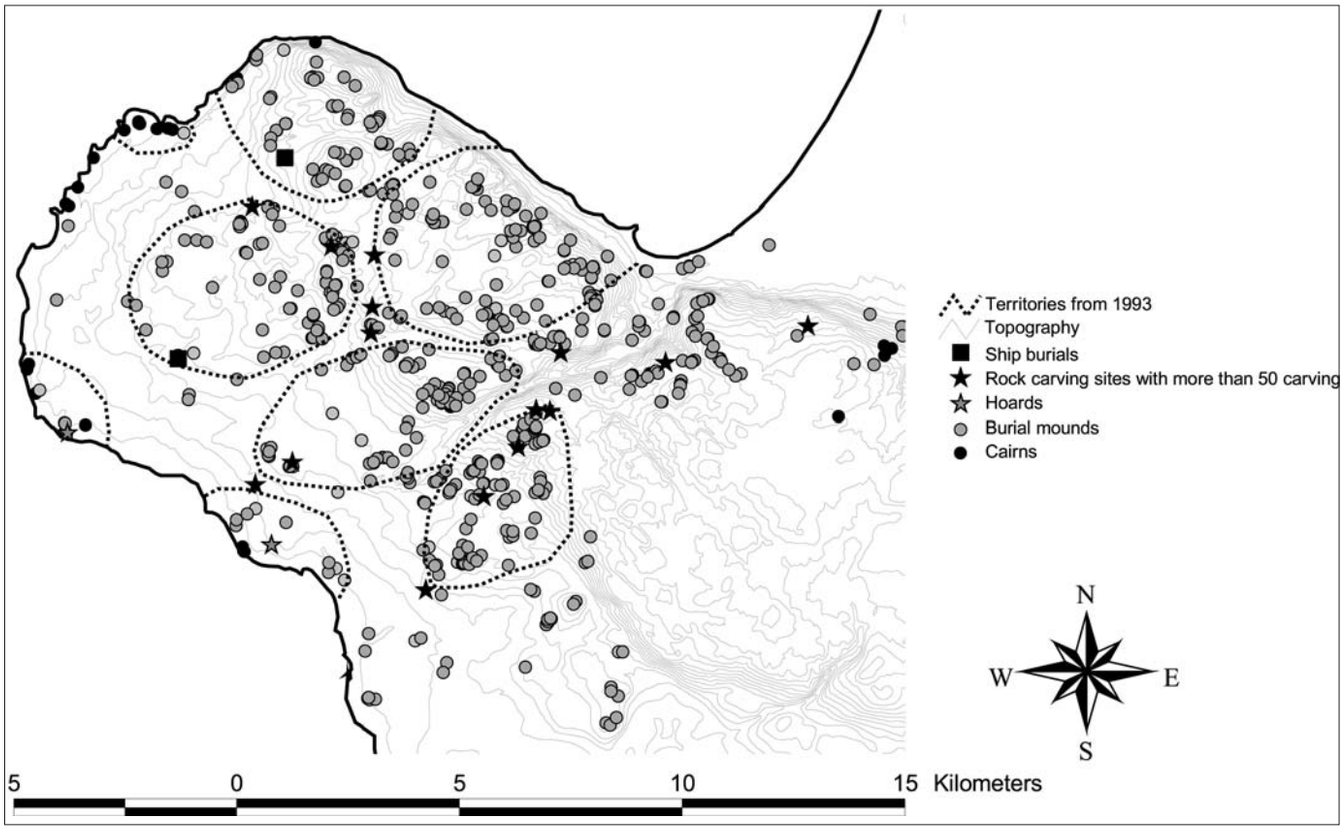

FIGURE 1. The territories from the candidate essay on a topographic background. The study area in the candidate essay (Nord & Paulsson 1993) was slightly smaller than it is here, which is why the eastern part lacks territories and most probably also why the most eastern territories seem to need some revision. One aim in my dissertation is to revise the local territories from the candidate essay and to set them into a wider regional and supra-regional context. In this map the tendencies of higher density of burial mounds along the borders of the territories can also be noted.

ritories, and we interpreted these as places for social gatherings over the borders (Nord and Paulsson 1993). What can be noticed further from this work is that the burial mounds seem to frame the local territories, leaving the central areas rather "empty". This could suggest that the burial mounds were deliberately located to face outwards towards the neighbours, who in return did the same. I believe burial mounds are prehistoric sites with multiple purposes and their opposing locations in border zones could have further reasons than just showing off to close neighbours. Focusaing on the border areas I realised that the borders in themselves were interesting areas of activities, not only for gatherings as the large rock-carving sites located in these zones show, but also for movements – for travelling. It has been noted that roads are traditionally often located along borders and also that they can be related to burial mounds (*e.g.* Helms 1993:224f; Rudebeck 2002:183).

For the purpose of analysing prehistoric landscape politics in Bjäre I have recently used the idea that burial mounds and roads have a close connection (Nord 2006a). This connection was noted already in 1904 by the Danish archaeologist Sophus Müller, but it is only lately that Scandinavian archaeologists have taken this connection more seriously even though the issue was being brought up again by P. E. Sköld in the 1960s (Müller 1904; Sköld 1963; Thörn 2000; Gansum 2001; Rudebeck 2002; Johansen *et al.* 2004).[2] In her article from 2002 Rudebeck argues that roads should be seen as a part of the Bronze Age burial-mound landscape. This means that we should be able to distinguish roads, or communications routes, in areas with a well-preserved pattern of burial mounds. Rudebeck also argues for a networking approach in landscape archaeological analyses, which would be more fruitful than the more traditional approach that sees clusters of archaeological remains more like isolated islands in the landscape (Rudebeck 2002).

Looking at Figure 1, we see the Bjäre peninsula with the burial mounds and rock-carving sites with more than 50 single engravings marked. It should be mentioned that the rock carvings in Bjäre mainly consists of cup marks and sometimes at larger sites also of footprints, elongated figures and concentric circles. These rock-carvings were made at specially-chosen places in the landscape. Often they are situated on prominent located outcrops made of amphibolites, but boulders were also used for the purpose, almost always on prominent locations with a good view. Most probably these places were important both before and maybe even after the engravings were made on them (Bradley 2000:79f). I would also argue that they need to be seen in a long-term perspective, which unfortunately is not possible within the scope of this paper, but has partly been done elsewhere (Nord 2006a).

In order to understand the choice of these places and the landscape organisation they represent, they must also be seen in the context of other sites as well as their landscape setting. According to the previous analyses in Bjäre, the rock carvings occur mainly in border zones between local groups and might be the scenes for rituals, meetings, feastings, trading, agreeing and marking boundaries, settling arguments. But these places might in fact not have been the scenes only for local meetings. Since they were connected with the border zones where the roads seem to have been situated too, they might also have been places where meetings with strangers and traders arriving in the area took place, or where returning or parting travellers from the area were met and celebrated.

The Bronze Age is a period in Scandinavian prehistory where communication and long-distance travel have been highlighted as important means for social interaction and competition. Contacts across Europe for different kinds of exchange can be seen, for example, in imported items and a similarity in the symbolic world (see for example T. B. Larsson 1997; 2002; Kristiansen 1998; Kristiansen and T. B. Larsson 2005). Communication and long-distance travel did actually happen and should not only be seen as abstract concepts in large-scale analyses. People did travel, meetings took place, traces of roads have been found, and connections between roads and burial mounds have been noticed. Through these sets of information we might, at least in a well preserved local Bronze Age landscape as exists in the Bjäre peninsula, distinguish communication routes for movements and maybe even some places for pause, or for networking.

Networking

Networking means, according to Merriam-Webster Online Dictionary, "the exchange of information or services among individuals, groups, or institutions" (http://www.m-w.com). The exchange of information or services used to be something that traditionally could only be done by meeting other people. Rudebeck has argued in favour of a networking approach in landscape archaeology as a complement to the more rigid settlement patterns and distribution of graves. She also argues for the use of the concept of communicative landscapes for this purpose (Rudebeck 2002, 2006). Networking, communication and movements are aspects that go closely together and bind together central themes in the Bronze Age society; long-distance communication, exchange and a common cosmology (see also Goldhahn 2005a, b; Kristiansen and T. B. Larsson 2005). In landscape archaeology it is mainly the phenomenological approaches that have tried to look at people's movements in the landscape and especially in connection with monuments (*e.g.* Tilley 1993, 1994; Bradley 2000). Many of these investigations have focused on processions and ritual aspects. Exactly how networking was performed and maintained during the Bronze Age is not really known. For example, did people actually travel long distances with items and ideas, or did the items and ideas move long distances on their own, being passed hand-to-hand by shorter journeys to whose

purposes they might have been ancillary? Recent work seems to suggest that long-distance travel in itself was an important part of elite behaviour in Bronze Age chiefdom society (Berntsson 2005:199; Kristiansen and T. B. Larsson 2005:48f).

The connection between burial mounds and roads, as well as the concept of networking brings out a *movement* aspect in our analyses of communicative landscapes and prehistoric sites. With this approach we also move closer to prehistoric people and they may become slightly more vivid to us. Networking requires some sort of travel, which means that individuals, ideas as well as material items were moving between places. The movements on land in the Bronze Age took place on roads or on paths that were associated with Bronze Age burial mounds; that is to say, with the ancestors. The networking itself requires movement but most probably took place at *pauses,* and the next question is therefore, where are the places for pause? How were they marked? *Places appear through travelling* Patrik Nordström writes in his essay "Stories about abandonment" from 2002 (my translation). Nordström argues that movements in geographical space are central for understanding the landscape. To travel is both to abandon and to return, and through these activities places emerge along the road (Nordström 2002).

Movements and pauses

During the Bronze Age in Bjäre, roads were situated along lines and clusters of burial mounds, along the ancestral lines; it was here that the main part of the movement took place, at least the movements outside the settlement areas. Along these lines of movements places emerged: places for pause. Or maybe these places already existed and the lines of movements emerged in respect to these. At this point I don't think it matters what came first; there is a connection on which we can focus. The relation between the concepts of space and place has been explained very well by Christopher Tilley with respect to the same movement/pause aspect that I am grasping for: "If space allows movement, place is pause" (Tilley 1994:14). In the Bjäre landscape I believe that some important places for pause can be found in connection with rock-carving sites. To explain some of the social landscape and landscape organisation in Bjäre specifically I would like to change Christopher Tilley's words to "If burial mounds structure movement, rock carvings create pause".

Every single burial mound is of course at one level a place: a place for the burial of a person or persons, a place for grief, and a place where rituals and symbols are played out for the community that is part of the internal social interaction, as well as bringing memories of the ancestors to life (Jennbert 1993; Olausson 1993). But the burial mounds are also located in space, in the wider landscape, where they would be seen by passing people who were involved in the social interaction, both locals and foreigners. This is why it was important to locate the burials close to the border zones where they could be seen from the roads. Each one of the burial mounds would make up a detail in the narrative of the local and regional ancestral history that was on display. Further into the Bronze Age and especially towards its end this narrative must have been both quite mythological and also rather comprehensive. For a stranger they might not tell the full narrative, but nevertheless they would explain that this area had a long unbroken ancestral background. The actual travelling in the shadows of the ancestors might even have made travellers in the area feel more secure, at least they were in civilised areas where the symbolic language of the landscape could be understood and, in effect, shared. The power of recognising should not be understated (Nord 2006a).

The burial mounds were most probably in themselves not places for pause more than in private or at a local level; they were rather signs and symbols standing in the landscape that, among other things, helped the landscape to make sense and to facilitate the understanding of its organisation. I do not believe that the roads were always located physically very close to the burial mounds but they were well within sight, and the hilly landscape of Bjäre was used to facilitate good sightings. The large rock-carving sites with more than 50 single engravings are contemporary with the burial mounds but seem to reflect different landscape strategies than the burial mounds, often being located within the border zones. In this way the large rock-carving sites are more directly linked with the roads than the burial mounds are. They are also generally situated on easily spotted locations and in a way they seem to build up some sort of "landscape web" which is communicated by burial mounds (Figure 2). My argument is that these rock-carving places were used for networking; these were the places where you paused along the roads and where you had opportunity for meetings; pauses for meetings, for trade, for religious activities, or just to catch your breath and have a snack. Some meetings might have been organised and well prepared following the religious rituals, while others might have been more casual and unplanned, for example, when local traders or foreigners arrived or returned to the area.

There are also some coastal areas that were of importance during the Bronze Age period. Interestingly enough, these seem to fall quite well into the web of roads and places for pause in the landscape as well. On the peninsula there are above all three coastal areas that might be of interest in this respect: Dagshög, Vasalt-Öllöv and Gröthögarna.

The Dagshög area (A in Figure 2) is the most famous one, and Dagshög itself is the largest burial mound in Skåne, 44 metres in diameter and more than 4 metres high. Legend calls it the burial place of a mythical king named Dag and his men who died in a battle on the spot. In recent history the area has been used as a stone quarry which most probably has destroyed some of the prehistoric monuments in

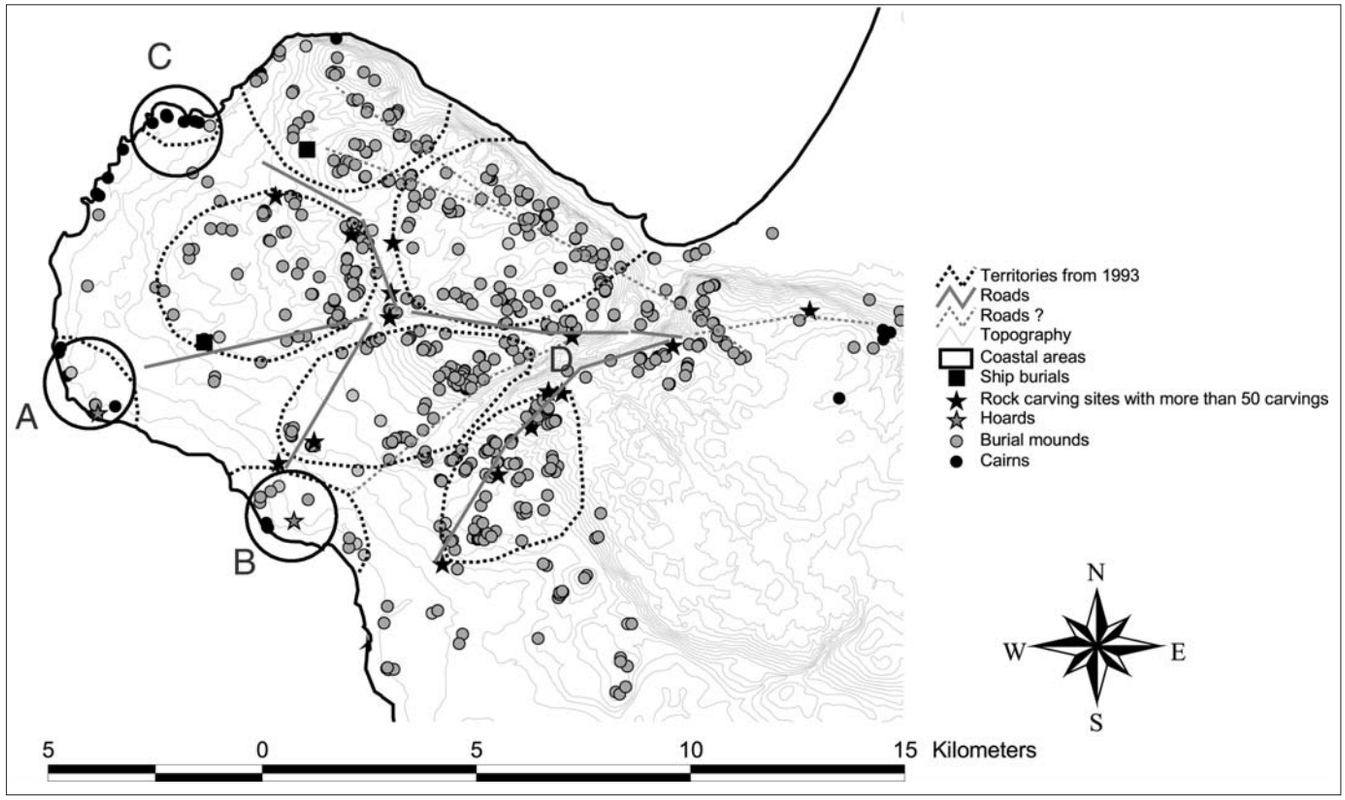

FIGURE 2. The same map as in Figure 1 but with the imaginative roads connecting the large rock carving sites marked out with red lines. Dotted red lines correspond to possible roads that are not clearly connected with rock carving sites. A = The area of Dagshög, B = The area of Vasalt-Öllöv, C = The area of Gröthögarna, D = The valley of Sinarpsdalen.

the area. We know at least one very large Bronze Age cairn that has disappeared in this area: Linkullahöjen, of a similar size to Dagshög (Nord and Paulsson 1993). Dagshög and Linkullahöjen framed an area which was rich in smaller burials and was also the location of a bronze hoard consisting of 5 spearheads from period IV–V (Rydbeck 1926:291ff; Baudou 1960:323; Nord and Paulsson 1993). Interesting to note is that Dagshög, even though it is a very large burial mound, cannot be seen from a great distance on land. It is from the sea it is monumental.

Further east along the southern coastline, the area called Vasalt-Öllöv (B in Figure 2) has produced a bronze hoard consisting of a set of jewellery from late Bronze Age period V–VI (Montelius 1917:58; Baudou 1960:323, no. 1,345). In this area there are some coastal cairns and burial mounds close to the sea, but above all the area is connected to one of the largest rock-carving sites in Bjäre: Flatakull, where some of the largest cup marks in Sweden can be found with diameters up to 28 cm. This rock-carving area extends to the north east and seems to stretch towards the area southwest of Sinarpsdalen (D in Figure 2), along which many Bronze Age mounds are situated.

The third area is Gröthögarna on the north-western peak of the peninsula (C in Figure 2); here a long line of cairns can be found close to the shore where they can be seen coming from both the south and the north. Gröthögarna consist of an alignment of eight large cairns and some smaller stone-settings. The area around the cairns is partly wetland and hard to reach and does not in itself seem to have been an easy point to come ashore. But to the north as well as south of the area there are more accessible places, which makes me believe that this place was supposed to be seen from the sea and give a message to travellers that mooring places were nearby. Perhaps the alignment of the cairns tells of this situation. There must of course have been a sign language along the coasts telling travellers how to behave and where to reach land, about which we can only speculate today. There are further places along the coastline that might have been important during the Bronze Age, but not with such clarity as those mentioned above, so for the purpose of this paper I will settle with these examples.

Going back to Figure 2 and the Bjäre landscape, it is also important to acknowledge that the lines of movements respect the overall topography as they follow the edges of valleys. There seems to be a general direction leading from the coast in the south and west towards the large rock-carving sites in the centre of the peninsula and onwards towards the east along the lines of movements shown by the burial mounds. These lead northeast along the Sinarp valley (D in Figure 2), crossing the ridge of Hallandsås and into the county of Halland, or south of the ridge towards the southeast where the city of Ängelholm is situated today. The Bjäre

peninsula may in fact be one of many areas where traded goods landed and were handed on to inland areas. I believe that the people of Bjäre were active agents in this, representing at least one nodal point in a much wider networking system. I am not convinced that the idea of long-distance travel by an elite in order to gain power and prestige was a practice that was at work in Bjäre (Kristiansen and T. B. Larsson 2005). Instead, the special situation with a high density of generally small burial mounds that were erected over a long period of time as well as a high amount of collective meeting places suggests that this area was less stratified (Andersson 1999; Nord Paulsson 2002b; L. Larsson 2005) and might have allowed more people to get involved in these activities.

Considering movements in a landscape, you also have to think about means of travelling. I cannot help myself thinking of the footprints as metaphors for movement by foot (Figure 3) – even though the feet in these places (for pause) are standing still, but it might be more probable that longer distance travel, especially when carrying items, would require some sort of vehicle, animals or other aids. Of course the most common aid for bringing things on land might have been a backpack as we know of from *Ötzi*, the iceman, and then the feet would be quite enough. For travelling on water ships are known from the Bronze Age, and they play an important part in the cosmology of the period, both connecting life and death and supposedly also being the divine vehicle for the sun on its daily journey (Kaul 1998). But ships are also critical in communication: travel, trade and networking as well as in more everyday activities like fishing. Since many of these activities are thought to have a great symbolic and prestigious meaning besides being practical, the ship might have gained some of its symbolic importance through these (Berntsson 2005; Kristiansen and T. B. Larsson 2005). We find ships depicted on rock carvings and on bronzes, but we also find them in the landscape as stone settings – as burials. In Bjäre two burials exist with the shape of ships and both are thought to have been covered with burial mounds, even though some uncertainties about this seem to exist (RAÄ V. Karup 118 and RAÄ Hov 109). Neither of them (Figures 1 and 2) is situated close to the coast but instead a few kilometres away. The ship burial in Västra Karup, called Slättarödsskeppet, was excavated in 1960 by Märta Strömberg. Under the stones a cremation grave was found with bones from a human, a dog, a horse and goat/sheep together with a handful of heart-shaped flint arrows (Strömberg 1962). The connection with a ship and a horse in a burial indicates movement and might tell us

FIGURE 3. Taking a pause coming from the sea? These footprints framed with cupmarks belong to the rock carving site of Drottninghall at the very centre of the peninsula. Photo: Jenny Nord 2003.

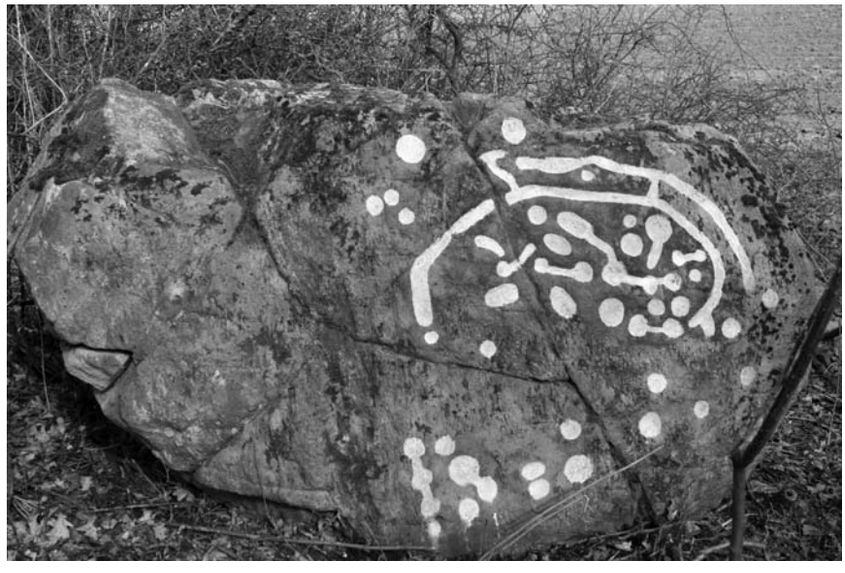

FIGURE 4. The recently found rock-carving of a ship in Broddarp, Bjäre, V. Karup RAÄ 152. Photo: Jenny Nord 2006.

something about this person's achievements in life, being a traveller on both land and water and maybe also in rituals. The ship burial in Hov is situated in the large cemetery of Tofta Högar which, besides a number of burial mounds and cup marks, also includes at least one cult house from the Bronze Age. This burial contained no grave goods; the burned bones were placed inside an urn in a polygonal stone cist in the eastern part of the ship (Burenhult 1976).

Until April 2006 there were no known rock carvings with ships in the Bjäre peninsula. Then, during an inventory with documentation of rock-carving sites in Bjäre with the help of Sven-Gunnar Broström and Kenneth Ihrestam, a carved ship was found on a big boulder. Unfortunately, the boulder was moved from its original place, but luckily not very far. when the ship was found it was sailing upside-down (Figure 4). Since the work with the inventory still is in progress the implications of this find, as well as of the other new finds, will be considered elsewhere later, but still it is worth mentioning the new ship carving in this paper when discussing the ship symbol.

Concluding remarks

The Bjäre peninsula is a landscape which has a well-preserved Bronze Age heritage, mainly consisting of burials and rock carvings. According to recent studies, prehistoric roads are connected with burial mounds and we can therefore use monuments to reconstruct likely roads and paths through the landscape. In Bjäre it seems that burial mounds are situated along border zones of settlement areas and are visible from the border zone where the communication routes supposedly were aiming for meeting points in the landscape. The meeting points where networking took place in Bjäre were located at large sites with rock carvings located in these border zones. Other examples of places that seem to be connected in this web are the coastal areas as well as burials in the form of ships. Looking at the burials and the rock-carvings of Bjäre with a "movement" and "pause" concept in focus makes a broad landscape organisation emerge, an organisation that seemed to stay in use rather unchanged once it was established. This long-term landscape organisation in Bjäre has partly been explored elsewhere (Nord 2006a). I believe that this way of analysing the Bronze Age sites of Bjäre represent one way of understanding their abundance as well as their different locations within the landscape.

Abbreviation

RAÄ = Riksantikvarieämbetet

Notes

1 I started my work (in co-operation with Jonas Paulsson) by exploring the abundance of burial mounds in the Bjäre peninsula (Nord and Paulsson 1993). Later I added other sites from the Bronze Age and became more and more interested in their landscape setting as well as in their cultural biography (Nord Paulsson 2002a, 2006a), but also in their present situation, for example, when it comes to management issues (Nord Paulsson 2002b, 2006b).

2 The reason for the renewed attention to this topic in Scandinavia could at least partly be due to recent excavations of archaeological remains of roads in southern Sweden that have been dated as early as to the Bronze Age (Rudebeck and Ödman 2000; Thörn 2000, 2006; Winkler 2004; Jansen 2006).

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RICHARD BRADLEY & DAG WIDHOLM

The mountain of ships

The organisation of the Bronze Age cemetery at Snäckedal, Misterhult, Småland

THE NORTH-EASTERN PART of the Swedish province of Småland contains one of the most conspicuous concentrations of Bronze Age monuments in Scandinavia. Snäckedal, in Misterhult, is a particularly well preserved site. Here the largest Bronze Age stone ship in Sweden is surrounded by monumental cairns and other stone settings. "Snäckedal" is the name of a modern farm which provides the focus for an extraordinary series of 120 prehistoric monuments. The main group is concentrated on a low hilltop to the north. When the first maps of this area were made in the seventeenth century that hill was called "Snäckeberget". In modern Swedish *snäcka* is the equivalent of the English word "shell", but in medieval times it referred to ships of the kind used during the Viking period and the Early Middle Ages. Thus the name *Snäckeberget* meant "the mountain of ships", and that is why we have chosen this as the title of our paper.

Lars Larsson is an international scholar who has worked in many parts of the world. He has always been interested in sea travel and has written an inspiring article about the connection between rock art ships, mountains and ancient beliefs in the voyage to the kingdom of the dead (Larsson 1999). Thus Snäckedal provides a useful starting point for another discussion of this material. Our contribution considers the interpretation of the cairns and their relationship to the stone ships on the site. It also discusses the importance of boats and travel, both real and cosmological.

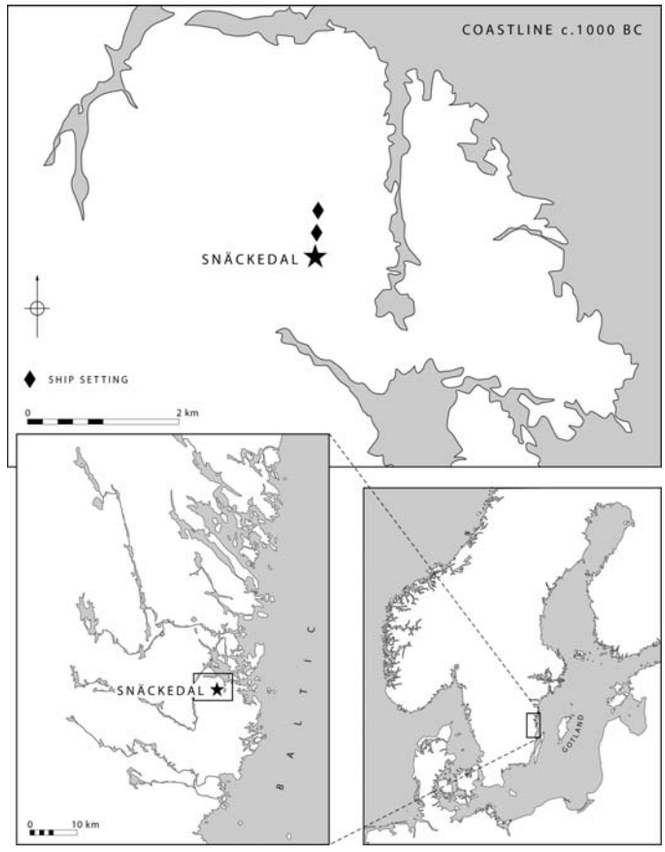


FIGURE 1. The location of the cemetery at Snäckedal in relation to the coast about 1,000 BC and to the modern shoreline of the Baltic. The map of the surroundings of Snäckedal also shows the locations of two isolated ship settings beyond the limits of the cemetery. Drawing by Aaron Watson.

The monumental landscape of Snäckedal

Snäckedal is exceptional for the number and variety of structures on the site. Stone ships are particularly common, and the site has even been compared to an "exhibition" of the various forms of Bronze Age grave monuments (Magnusson 1988). They include cairns, stone ships, rectangular and square stone settings, perched boulders and a few heaps of fire cracked rock. Rectangular settings are unusually well represented. The cemetery forms only part of a larger concentration of prehistoric monuments in the parish of Misterhult, but these occur singly or in smaller groups of circular cairns and stone settings. The number of sites is impressive, especially around the manor of Virum about two kilometres north of Snäckedal (Dahlin in press).

Snäckedal itself has been regarded as a sacred area, serving a wider population (Widholm 1998). Pollen analysis shows no evidence of agriculture in the local landscape (Widholm and Regnell 2003; Widholm 2006), and no settlements have been found in the vicinity. The mounds of fire-cracked stones on the edge of the cemetery might be connected with cremation burial or with other rituals. Michael Dahlin has produced an inventory of the stray finds of Neolithic and Bronze Age date from Misterhult parish, and this will provide the basis for a new study of the relationship between monuments and settlements in the region (Dahlin in press).

The surrounding countryside

Misterhult is a coastal parish, and Snäckedal was situated a kilometre west of a long inlet of the Baltic. There was also an estuary 1.5 kilometres to the south. The Late Bronze Age shoreline was about ten metres higher than it is today, meaning that ships could have anchored quite near to the site, although the cemetery was separated from the sea by areas of higher ground (Figure 1).

There was another inlet not far north of the site, and this would have provided direct access to the Baltic Sea. In fact the mountains of Misterhult can be recognised from the open water. In clear weather modern sailors can approach this area without losing sight of land as they travel from the Karlsö islands immediately north of Gotland by way of the northern tip of Öland (Winberg 2003). This bears directly on the subject of this paper, for stone ships of Bronze Age date are unevenly distributed. One of the main concentrations is in Misterhult and the north-eastern part of Småland, whilst no fewer than 350 examples are found on Gotland, where some of them are associated with house urns (Hallin 2002). That is particularly striking, for 70 % of the house urns in Scandinavia come from Gotland and 75 % of those discovered on the island were found in the excavation of ship settings. The connection between boats and houses may be echoed at Snäckedal where ship settings are associated with rectangular monuments which resemble the forms of domestic dwellings. The link is especially relevant since this part of Småland was so accessible from Gotland.

Ships of stone and ships on rocks

Ship symbols in Bronze Age Scandinavia take three distinctive forms: those on decorated metalwork, the vessels depicted in rock art, and the distinctive ship settings. The first group has little relevance to Snäckedal where only one bronze artefact still survives: an undecorated razor dating to Montelius period IV. Despite intensive fieldwork when the inventory of ancient monuments was compiled, no rock carvings apart from simple cup marks have been discovered any nearer than Lagmanskvarn twenty kilometres to the south. These include drawings of ships and foot-soles. Lagmanskvarn is surrounded by Bronze Age cairns but, in contrast to the situation in south-east Skåne, there is no evidence of a close connection between the two phenomena (Bradley 1989). There is another group of rock art sites, including drawings of ships, twenty kilometres north of Snäckedal in the parishes of Gladhammer, Törnsfall, Lofta and Gamleby. Although Bronze Age cairns are also found, there are not many ship settings. It seems as if ship symbolism was important in all these areas but took rather different forms. On the other hand, at Hjortekrog to the north of another concentration of rock art around Västervik both these elements are found together. Here a group of carved ships was buried beneath a Late Bronze Age cairn, whilst stone ships occur in an adjacent cemetery. One group of images was concealed, whilst the other was displayed in the same manner as similar structures at Snäckedal.

The local topography at Snäckedal

The main cemetery at Snäckedal overlooked a bog 250–300 metres in diameter. This area is surrounded by a ridge of higher ground on which other cairns were constructed. The modern farm is located on part of that ridge and is surrounded by the remains of a cemetery whose components are smaller and more homogenous than those in the main group of monuments. The same applies to the isolated structures found at other locations overlooking the edge of the bog. To judge from the modern pattern of roads and footpaths in the area, Snäckedal would have been readily accessible from the surrounding area.

The layout of the principal cemetery

North of the Snäckedal farm is the main cemetery which contains nearly forty monuments. It has two main components. First, there are three exceptionally large round cairns, up to 20 metres in diameter, arranged in a line running across the site from north east to south west. Each is located on top of a small area of high ground. The middle cairn is the most considerable and has a second structure of the same kind beside it. It also provides the focus for the principal ship setting, which is 37 metres long.

The other feature of the cemetery is the presence of four clusters of smaller monuments (Figure 2A). Again two of these focus on the biggest round cairn; group 3 is to its north and group 1 to its south east. The large cairn towards the south-western limit of the cemetery is surrounded by a third group of structures (group 2), whilst group 4 is close to a similar cairn at the opposite end of the complex. The four clusters correspond to monuments 98–100 in the Swedish Inventory of Ancient Monuments which is based on the definitions of the Central Board of Antiquities.

The chronological development of the cemetery

The cemetery is on the hill overlooking the north-western limit of the bog, but the natural topography has been altered by the construction of the cairns. The local bedrock had been smoothed by the passage of ice, and over its surface there was a dense distribution of boulders, many of them of considerable size. They can still be identified beyond the distribution of the Bronze Age monuments. The cairns and other structures are formed from two kinds of material: the rounded stones that occur in large numbers across the site, and larger slabs or blocks that have obviously been quarried.

There is a striking contrast between the ways in which the main groups of monuments were built. All four of the large round cairns were constructed from surface stones.

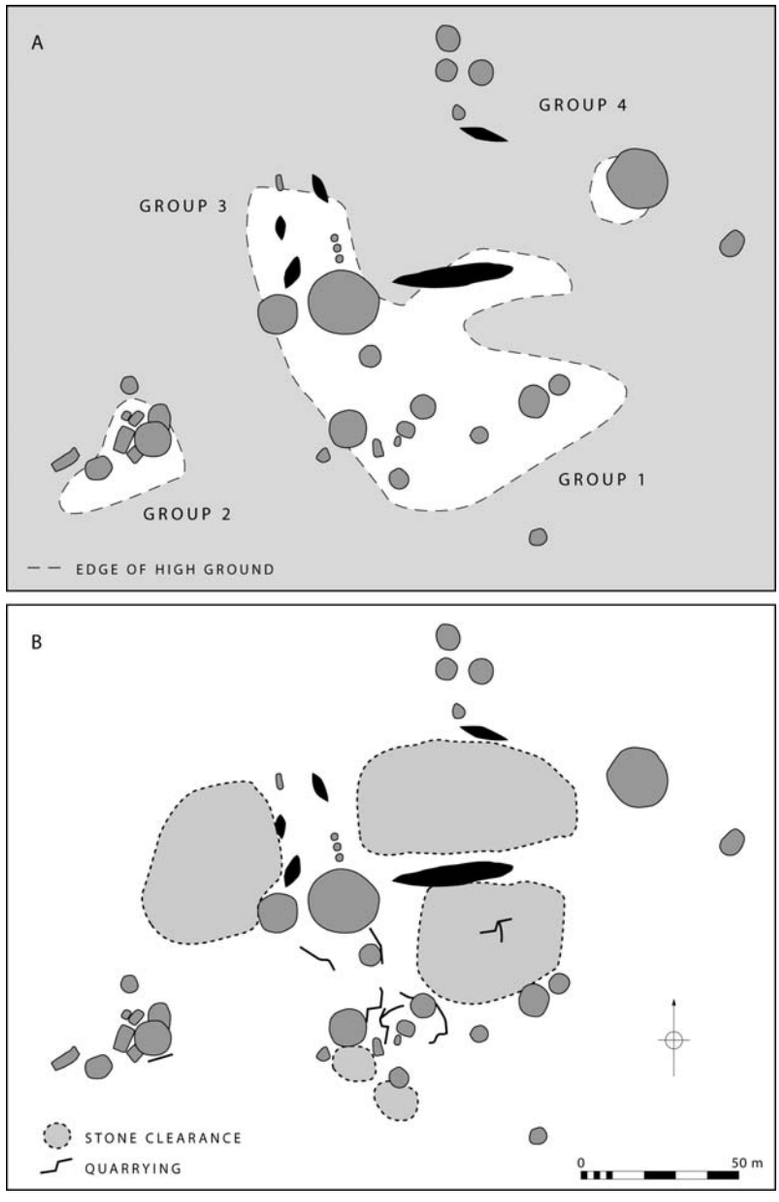


FIGURE 2A. The locations of the surviving monuments in the Bronze Age cemetery at Snäckedal. The three areas of higher ground are unshaded, and the ship settings are depicted in black. Note that the outline of the northernmost ship setting, discovered in 2005, has been restored in this plan. Drawing by Aaron Watson.

FIGURE 2B. Plan of the Bronze Age cemetery at Snäckedal, showing the positions of the prehistoric quarries and the areas that were cleared of surface builders. From a GPS survey kindly undertaken by Cecilia Ring. Drawing by Aaron Watson.

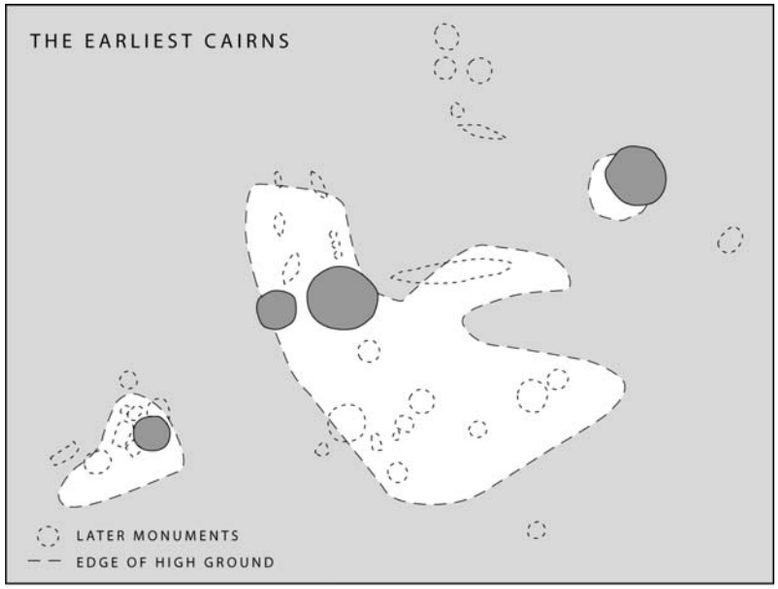
Although they have not been excavated, two of them lack any kerb, one provides evidence of a kerb of rounded boulders, whilst only one shows any sign of quarried stone, and this is perhaps in a secondary context; that monument was built beside the largest cairn. All of these structures are flanked by areas of exposed bedrock from which all the stones have been cleared. They appear to have been the sources of the material used to build the monuments.

Three of the four groups of smaller structures employ quarried rock, the exception being group 2 to the south west which is built in an area where exceptionally large boulders can be found on the surface. The other three concentrations include ship settings, rectangular stone settings and small circular monuments. In two of these clusters (1 and 3) there are the remains of quarries which are located close to these structures, and in two other areas, one to the south west and the other to the south east, it is still possible to define the limits of the areas from which large pieces of rock were removed (Figure 2b). Some of the quarries seem to have been abandoned before all the raw material had been taken, and here the fissures in the natural bedrock had been enlarged as a preliminary to extracting the stone. Such features cannot be dated on the basis of surface evidence, but the kerbstones used in the monuments are of exactly the same character as the rock exposed in the quarry faces beside them. If people had been seeking suitable material during more recent periods it would have been easy for them to take it from the monuments themselves, but this did not happen.

The structures at the north-eastern limit of the cemetery make use of similar sources, but it is the only part of the cemetery in which the small circular stone settings are built out of quarried rock. In this case the original sources were probably reused by more recent quarries. These features are quite unlike those attributed to the prehistoric period. They are less weathered, more substantial and much more regular. It may be no accident that they are located by a modern road.

These observations are important in studying the development of the cemetery at Snäckedal. The dense deposits of rounded boulders on the surface of the hill would need to be removed before any quarrying took place, and that sequence seems to be reflected by the forms of the different monuments. The largest round cairns were constructed of surface boulders. By contrast, some of the smaller structures that were erected around those four monuments have kerbs of quarried rock. They include the smaller circular stone settings. All these have counterparts on excavated sites of the Late Bronze Age. The evidence from Snäckedal supports this argument, for one of the rectangular monuments was associated with a bronze razor.

Thus it seems as if the chronological sequence at Snäckedal is reflected by the use of different construction methods: the clearance of surface boulders during an initial phase, and the use of quarrying when later monuments were built. It seems as if the large round cairns were the first to be built (Figure 3). They were eventually supplemented by a series of smaller constructions. It is possible that the



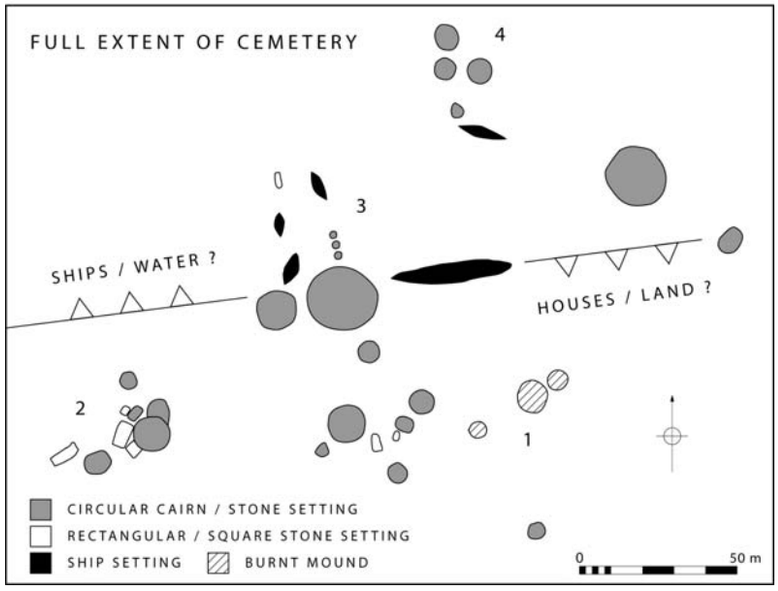


FIGURE 3A. Distribution of the earlier cairns at Snäckedal in relation to local areas of high ground. Drawing by Aaron Watson.
FIGURE 3B. An interpretation of the developed cemetery at Snäckedal emphasising the distinction between the distribution of rectangular cairns and that of ship settings. The plan also indicates the positions of three mounds of burnt stone on the edge of the bog. Drawing by Aaron Watson.

latest monuments were located on the flank of the cemetery close to the edge of the bog. One was a perched boulder of a kind attributed to the Late Bronze Age / Early Iron Age, whilst another, now destroyed, was a cairn containing a bronze razor. Both are near to three mounds of fire-cracked stones, but these have not been dated.

Landscape architecture at Snäckedal

The use of raw materials at Snäckedal has another implication, for the construction of the monuments changed the character of the local landscape. That is certainly true of the biggest round cairns. Each is flanked by an extensive area of bare rock from which the building material has been taken. That helps to distinguish these structures from the natural distribution of stones across the hilltop. Quarrying enhanced this process, for it seems to have extended up to the flanks of the largest cairn and had the effect of raising that monument on a plinth of unexcavated rock. There is nothing to suggest that it was rebuilt when this happened.

The use of massive slabs and blocks of quarried stone gives some of the newer monuments an impressive aspect, out of all proportion to their actual size. At the same time, they also appear more prominent because the natural surface in between them has been cut away; indeed one of the smaller circular monuments is almost completely surrounded by the quarry from which the builders obtained the material for its kerb. That is particularly obvious to anyone approaching from the south east where different groups of monuments come into view one after another, each of them apparently placed on a ledge of natural stone. The last to appear is the central cairn on the hilltop. These visual effects are mainly a feature of the cemetery at Snäckedal. A few cairns in the surrounding area are also associated with quarries, but they do not enhance the appearance of the monuments to the same extent.

Of course the cemetery developed over a substantial period of time, but in its developed form the focal point was the large circular mound at its centre. To the east this monument overlooks an expanse of bare rock extending towards the edge of the bog. Along one side this area is bounded by the largest ship setting, and to the south east it is delimited by the most prominent of the quarries. Viewed from the summit of the cairn, it resembles an open arena, with mounds of fire-cracked stones along its farthest limit (Figure 4).

The components of the cemetery

The individual monuments show a restricted range of variation. Apart from circular settings of various sizes (some of which may be multi-period constructions), there are at least five ship settings and six rectangular stone settings; another three are approximately square. Our work suggests that one of the "ship settings" identified as number 12 on the map from the fieldwork of 1937 may actually be a row of three small round stone settings following the summit of an elongated spine of rock. On the other hand, an isolated standing stone identified as number 10 in 1937

proved to be the prow of a badly damaged ship setting which had not been recognised before. Two further examples are recorded beyond the limits of the cemetery.

The rectangular stone settings are equally diverse, but two features seem to be important. Examination of the best preserved structures suggests that they may originally have been enclosures which were filled with rubble some time after they were built. Although they are usually described as rectangular, two examples have slightly curving side walls. At Snäckedal some of these monuments abutted a large round cairn, whereas the ship settings were usually positioned further away.

All four clusters of monuments are located beside routes leading around the bog at Snäckedal and providing access to the cemetery. Each group has its own character. The south-eastern section of the cemetery contains two rectangular structures, the larger of which is aligned on the cairn in the centre of the complex; its neighbour is orientated on the end of the large ship setting. On the other side of the cairn, there is another rectangular stone setting which is directed towards that monument, but in this case there are also the remains of three poorly preserved ship settings, each with a similar alignment. The large ship setting was also aligned on the principal cairn, but it is set apart from all the other structures in the cemetery.

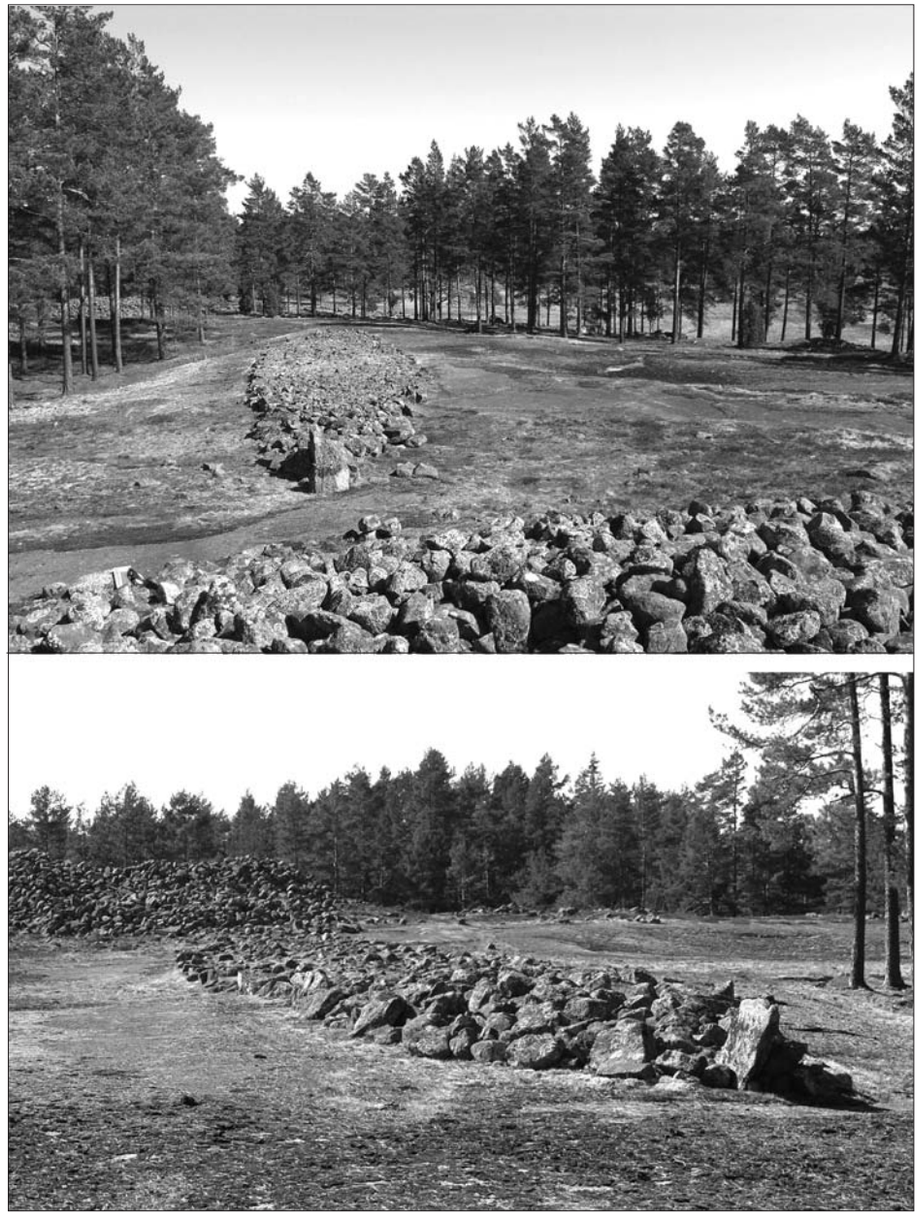


FIGURE 4A. The largest ship setting at Snäckedal, viewed from the cairn in the centre of the cemetery.
FIGURE 4B. The same ship setting, seen approaching the cairn.

Until recently it seemed as if the cluster of monuments towards the north (group 4) was restricted to circular stone settings which were on the opposite side of a small bog to another massive round cairn. That is no longer true, for this structure provides the focus for the recently-discovered ship setting. Again it was aligned on the earlier monument. It also ran approximately parallel to the enormous ship setting for which this site is well known.

The arrangement of the structures in the south-western part of the cemetery (group 2) is different again, for no fewer than four of the square or rectangular stone settings are built against a large round cairn. Two others seem to have acknowledged the position of the monument at the centre of the cemetery. One of the most massive rectangular stone settings is aligned upon it, whilst a neighbouring structure, which is slightly oval, has approximately the same long axis.

It seems as if each of these four groups is organised in a different way, but in every case they emphasise the importance of the monuments that may have been the earliest on the site. In three instances individual structures within them are aligned on the round cairn in the middle of the cemetery. This is surely emphasised by the orientation of the largest ship setting which is not connected with any other monument at Snäckedal. One way of thinking about this evidence is to suggest that each of the primary cairns became the focus for a series of later features. The large cairns at the centre of the complex had two groups of monuments associated with them, whilst the others each had

one. It seems possible that Snäckedal provided a ceremonial centre used by different sections of the local population, and this is surely the implication of the pollen evidence which suggests that no one was living at the site itself (Widholm and Regnell 2003).

Symbolism and the structure of the cemetery

An unusual feature of Snäckedal is the concentration of rectangular stone settings and ship settings, compared with the monuments in the surrounding area. It seems possible that the rectangular stone settings began as walled enclosures, rather like the cult houses of the same period (Figure 5). The curving side walls of some of the structures at Snäckedal suggest another connection, for this feature is found in some of the domestic buildings of the Late Bronze Age. It is as if the dwellings of the living had been memorialised in stone. The ship settings are easier to understand and belong to a series of stone-built monuments following the Baltic coast. The same image appears in Bronze Age rock art, and it may be significant that to a large extent the distributions of these two phenomena complement one another, although, as we have seen, in the Västervik-Gamleby area they overlap.

At Snäckedal the groups of monuments towards the south west and south east contain all but one of the rectangular cairns, and those to the north of the largest monument include most of the ship settings. The distinction is marked by the large stone ship which divides the cemetery in half. With just one exception, it seems as if the monuments in one part of the cemetery evoked the idea of the house – and thus of land – whilst those in the other section referred to ships and the sea. Circular monuments are common to both. That same two-fold division extends into the surroundings of the cemetery where further ship settings are found in one area and a series of rectangular cairns in another. It would be easy to imagine that this distinctive structure reflects the unusual siting of Snäckedal on the edge of a large tract of land but close to an inlet of the sea. On the other hand, that overlooks the distinctive character of the ship settings.

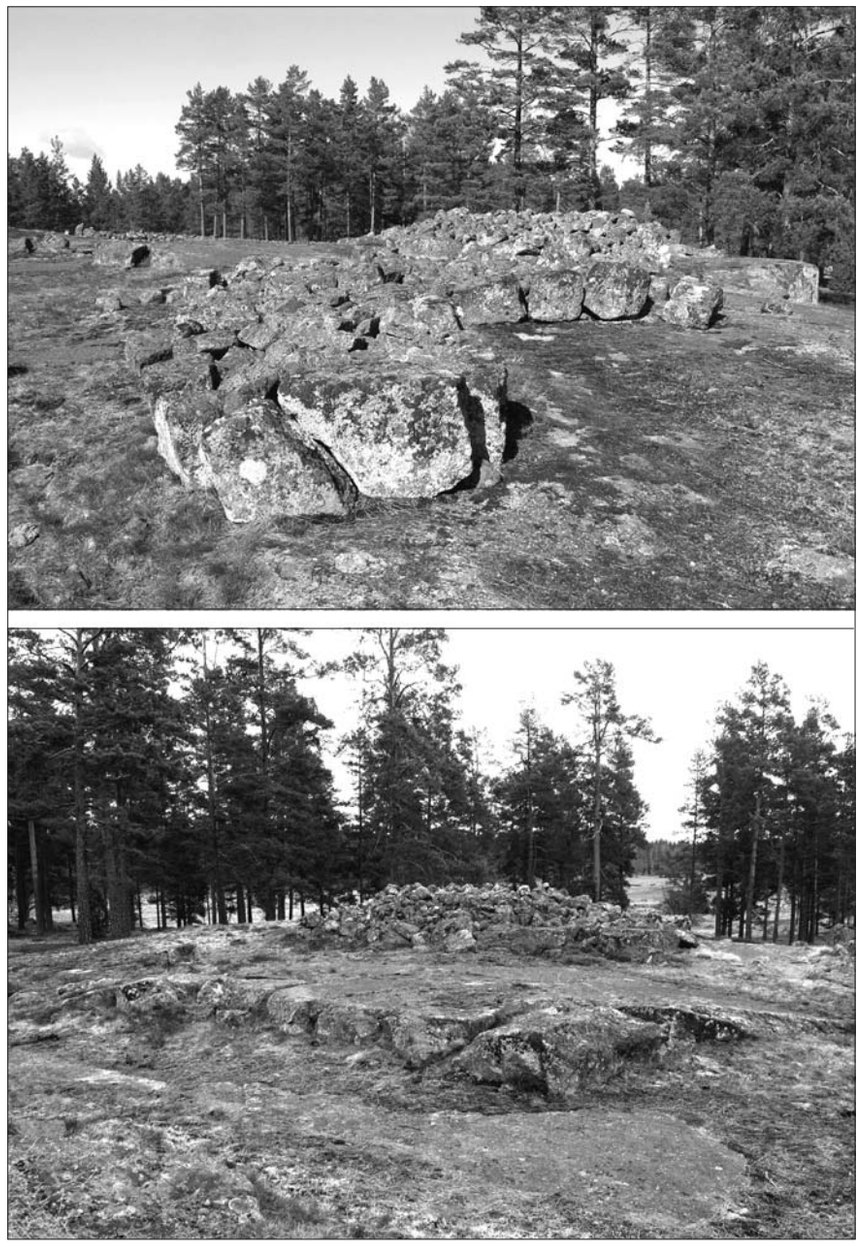


FIGURE 5A. Two rectangular cairns at Snäckedal, with a round cairn in the background located above a prehistoric quarry.
FIGURE 5B. The same round cairn with the remains of quarrying in the foreground.

Ships and the travels of the dead

Two points are especially important here: their relationship to the round cairns and the directions in which the ships are sailing. There are at least five ship settings in the cemetery, all of which are orientated on one of the large round cairns. The enormous stone ship is aligned on the most prominent example (Figure 4a–b), and three others are either directed towards that monument or towards the circular cairn that was built beside it. They emphasise its pivotal position on the high ground in the centre of the site. The round cairn at the north-eastern limit of the cemetery was almost as big. It provided the focus for the remaining ship setting which was aligned upon it from the other side

of a small bog. With one possible exception, none of the stone ships was orientated on the highest part of the cairns; rather, they seem to have been directed towards the edges of these monuments. All the ship settings are aligned on the cardinal points. Three of them run approximately north south, and so do two others beyond the limits of the cemetery. The remainder adopt an approximate east west axis. The distributions of these groups do not overlap.

It is harder to establish which way the ships are travelling. In principle they could have been sailing to the cairns, or they could have been moving away from them. Fortunately, there are two cases in which a standing stone marks the positions of the prow. Both ships follow an east west alignment and each is sailing towards one of the largest cairns. Despite the different scales on which they were built, they seem to be paired with one another. The ship settings with a north-south axis present more of a problem. Those in the cemetery itself are poorly preserved and it is not possible to tell whether they are approaching the round cairns or leaving them. On the other hand, the two ship settings beyond the limits of the cemetery provide more information. Again they follow a north south axis, but in this case neither is associated with any cairn. In both instances the vessel is travelling away from the main group of monuments.

Several points are important here. There is the contrast between the distribution of rectangular cairns and that of ship settings. The largest stone ship divides the cemetery in half along an axis that extends through the central cairn. To one side are most of the monuments that may be associated with houses, settlements and the land. On the other side are all the monuments whose form evokes boats and the sea. These vessels follow two different axes, one of them extending from west to east, which is the direction of a former inlet of the Baltic a kilometre from Snäckedal. The other ships are orientated from south to north. This course runs parallel to that inlet and would have led to open water three kilometres north of the site. It may be that these directions had different associations.

Two of the ships, including the largest vessel of all, are travelling into the cairns. They might have been carrying the dead to the monuments where they were commemorated. On the other hand, at least two smaller examples were sailing back to the sea, but along a different route. If so, then the "cemetery" at Snäckedal may have been less a burial ground than a place where the dead were transformed. They were brought to the site in ships and they may have been taken away. It is no accident that they travelled by boat since each of these alignments connects the hill at Snäckedal to a different point on the coastline.

If the image of the ship suggests travel, it is the travels of the dead that were important here. This is a topic that has been discussed in studies of Bronze Age rock art and decorated metalwork (Bradley 2006). At Snäckedal it is represented in yet another medium. Prehistoric cosmologies might have been expressed on many different scales and it is essential that prehistorians remain sufficiently flexible to draw the various elements together. Lars Larsson has worked on every period from the Palaeolithic to the Iron Age, and his career provides a model of how such flexibility can be achieved.

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BERIT VALENTIN ERIKSEN

Travelling craftsmen in Early Bronze Age Denmark

Addressing the evidence of leftover lithics

Introduction

DURING THE 5TH millennium BC, the use of copper is documented in many Neolithic tool assemblages and in the course of the next few millennia metal technology is introduced in prehistoric societies all over Europe. Denmark is rich in high quality flint, but lacks deposits of copper and tin. In this region flint craftsmanship therefore presumably survived quite a while by comparison to Southern and Central European metal producing societies. A very relevant question thus is: what happened during the last millennia of presumed decline and fall of flint technology? For how long did flint tools and flint knapping retain a general importance in everyday life? And what happened to flint knapping specialists? For how long did they persist in refining their technological skills – manifest for instance in the renowned pressure flaked artefacts of the Earliest Bronze Age?

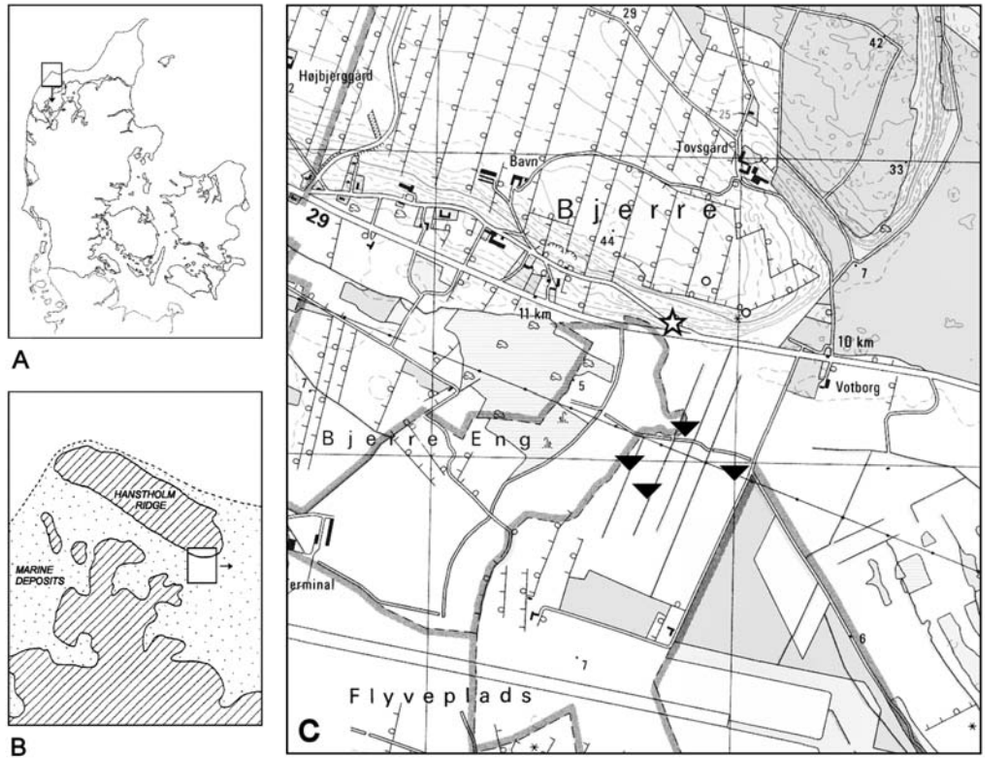

FIGURE 1. Maps showing the location of the sites in Denmark, northern Thy and Bjerre Eng. The grid in map C is divided into full square kilometres. Triangles mark the location of the Early Bronze Age Settlement sites analysed in the present study. A star marks the location of the Early Neolithic flint mines excavated by C. J. Becker. Maps in part after Bech 1997, fig. 2.

In keeping with the theme and title of the present Festschrift, and in honour of a first-rate colleague who himself is a travelling professional, this contribution presents some of the more controversial results of an ongoing research project aiming at a contextual *chaîne opératoire* analysis of Early Bronze Age flint sickle production technology.[1]

Archaeological data

The lithic inventories examined here belong to a cluster of some 15–20 settlement sites from Bjerre Eng situated in the flint-rich province of Thy, Northern Jutland (Figure 1). Seven sites were investigated systematically in connection with the Thy Archaeological Project – a joint venture between local museum archaeologists from Denmark and an international team of university researchers from USA, England, and Sweden (Bech 1993, 1997; 2003; Bech and Mikkelsen 1999; Earle *et al.* 1998).[2]

The archaeological investigations were carried out mainly from 1990 to 1997 – initially as rescue excavations and subsequently as research excavations. It is stressed that both rescue and research excavations were characterized by high standards of documentation. Moreover, a unique combination of wetland conditions and extensive sand drift has blessed the area in question with rather exceptional conditions for preservation. Thus, at Bjerre we find the buried remains of a well-preserved cultural landscape, which apparently was exploited continuously throughout the period 1,500–800 BC. For a more detailed presentation of the Bronze Age cultural landscape at Bjerre please refer to Bech 1993, 1997 and 2003. Suffice it here to state that this is an

	Bjerre 1	Bjerre 2	Bjerre 3	Bjerre 6
WASTE PRODUCTS – TOTAL	**1262**	**234**	**8586**	**2335**
Nodules	0	2	2	5
Cores & core remnants	15	26	64	55
Atypical worked flint	1	1	9	10
Debitage	1246	205	8511	2265
BLANKS & PREFORMS – TOTAL	**7**	**0**	**24**	**20**
Cached preforms for blade or flake tools	0	0	9	16
Biface preforms	7	0	15	4
TOOLS – TOTAL	**47**	**23**	**112**	**132**
Bifacial sickles (early Bronze Age)	5	1	25	14
Other bifacial tools	1	0	5	3
Scrapers	17	11	45	45
Borers	1	0	2	3
Strike-a-lights & fabricators	1	0	2	2
Slender knives	2	0	5	2
Large blade knives (late Bronze Age)	3	1	1	0
Ad hoc tools	17	10	27	63
OTHERS – TOTAL	**0**	**1**	**0**	**1**
Mesolithic single find	0	0	0	1
Neolithic single find	0	1	0	0

FIGURE 2. Schematic outline of the Early Bronze Age lithic inventories from Bjerre.

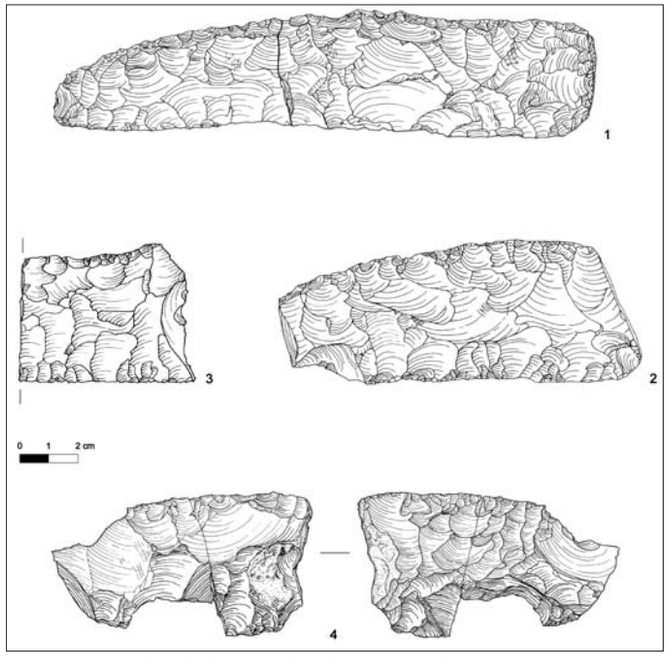

FIGURE 3. Bifacial flint sickles from Early bronze Age Bjerre. 1. Complete sickle; 2. Nicely resharpened, complete sickle; 3. Nicely resharpened sickle fragment; 4. Badly reworked sickle fragment. Drawing by Beth Møller.

excellent research material well suited for addressing questions concerning the contextual role of flint craftsmanship within the past local and regional socio-economic structures.

The following presentation will focus on a few key issues related to Early Bronze Age flint sickle production technology, including the raw material economy and the technological and typological profile. The discussion will touch upon issues pertaining to technological skills and degree of specialization in tool production. The analysis is currently based on the examination of four different settlement inventories from the sites of Bjerre 1, 2, 3 and 6 (*i.e.* some 12,800 pieces of flint, cf. Figure 2). These four sites are situated very close to one another, and they are archaeologically and in part perhaps even truly contemporary. Radiocarbon dates range from approximately 1,500–1,100 BC and thus confirm the typological dating to the Early Bronze Age phases II–III (Montelian system).

It is stressed that the data material is statistically sound, but also geographically restricted. Bronze Age societies were characterized by a high degree of regionality as well as interregional contacts; for methodological reasons the results of the Bjerre analyses thus cannot be applied directly and uncritically to contemporary lithic inventories from other geographic areas – not even on a regional scale within Northern Jutland. However, some of the behavioural inferences proposed in the discussion may perhaps serve as inspiration in the interpretation of Bronze Age lithic inventories from elsewhere.

Typological profile

A general summary of the artefact inventories is presented in Figure 2. The typological profile of the Early Bronze Age inventories from Bjerre is quite simple. Formal tool types especially are few. Most prominent are the bifacially worked asymmetrical sickles (Figure 3). These are very characteristic for the region (Northwest Jutland, Denmark) during the period in question (Bech 1997:12f). From technological analyses of the flint debitage and confirmed by reconstructions of core reduction sequences through refitting, we know that these sickles were produced locally, albeit in small numbers. On the other hand, there is evidence that most of the bifacial sickles found at Bjerre were in fact imports produced somewhere else. They are worn out, broken, discarded pieces. Sometimes they are even reworked into scrapers or strike-a-lights. The few sickles actually produced in Bjerre were generally exported or carried along, *i.e.* used and left somewhere else.

Other formal tools include numerous large, regular scrapers usually on heavy flakes (Figure 4 #1–2), some knives made on slender, blade-like flakes with more or less regular lateral retouch (Figure 4 #3), some borers, which are usually quite irregular pieces (Figure 4 #4), and a few strike-a-lights, which are rare, but often quite nicely worked implements (Figure 4 #5–6). The remaining tool-inventory, however, has a much more accidental (*ad hoc*) character. Use wear analysis by Peter Aperlo (1994) has confirmed the use of numerous, more or less regular flakes or blades for scraping hide, working wood, cutting meat, bone/antler, and for various other activities. These crude ad hoc tools usually make out one third or even half of the total number of tools.

Despite the rather limited range of formal artefact types, it is emphasized that the proposed typological classification

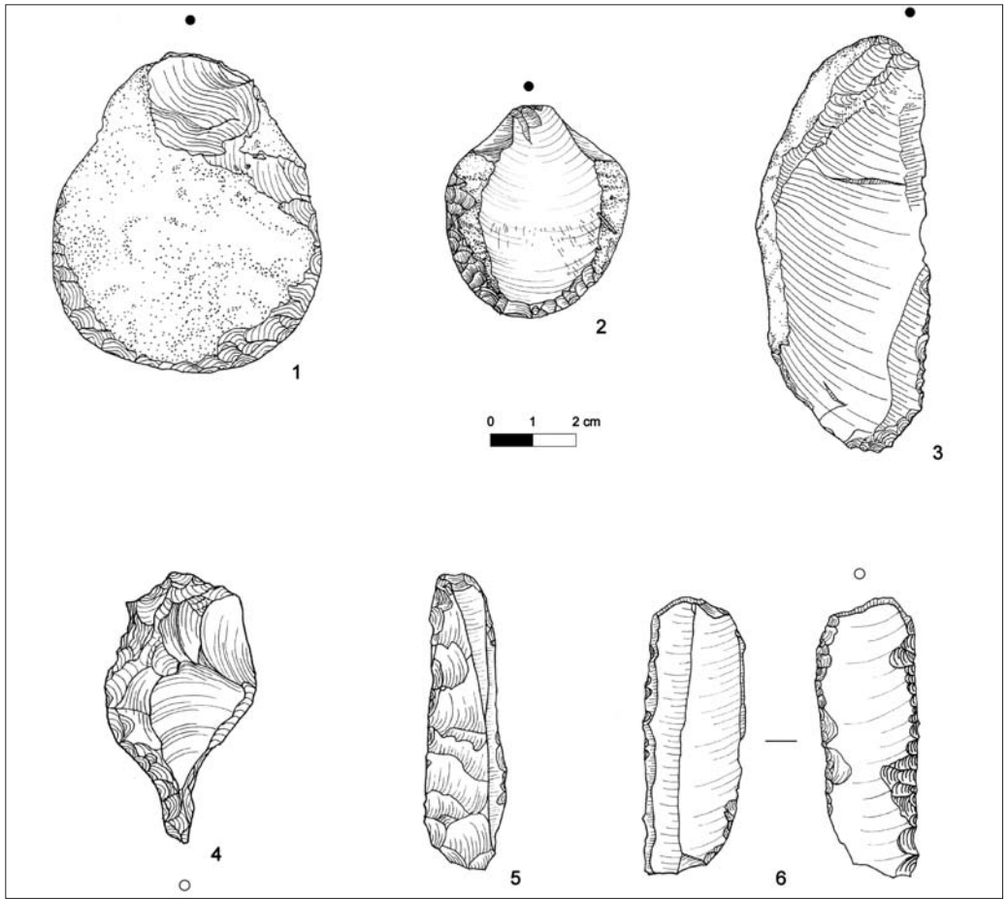

FIGURE 4. Flake tools from Early Bronze Age Bjerre. 1–2. Scrapers; 3. Slender knife; 4. Borer; 5. Strike a light on sickle fragment; 6. Strike-a-light on blade. Drawing by Beth Møller.

of the Bjerre inventories was not easily accomplished. Especially the retouched flake tools display a large variation, and a clear morphological distinction between this diversity of more or less regular scrapers, knives, and retouched pieces is often very difficult. From a relative chronological point of view it is evident that some of the major tool types which were frequent during the preceding Neolithic (*e.g.* flint axes, chisels and daggers) most certainly have been replaced by bronze tools, whereas less frequent Neolithic types (*e.g.* burins, denticulates, and other flake tools) may have vanished among the numerous *ad hoc* artefacts, many of which defy a clear typological classification.

Raw material economy

Danish prehistoric archaeology has a very limited record of provenance studies of lithic raw materials, and practically no tradition for discussing lithic use and procurement strategies. The Weichselian ice age left most of Denmark covered by young morainic sediments rich in high quality flint in secondary glacial deposits. For this reason it is generally impossible to distinguish between locally and regionally procured raw materials in the inventories.

The geological situation is no less complicated in the region of Thy (Figure 5). Here we find numerous, primary outcrops of Maastrichtian (Cretaceous chalk) and Danian (Tertiary limestone) deposits – both with in situ flint layers, which were exploited by way of flint mining in the Neolithic (Becker 1980). The size and shape of flint nodules from these primary deposits is variable, but generally the quality, *i.e.* knappability, is quite high. Moreover, the morainic soils, as well as the old Atlantic beach ridges in the area are littered with redeposited flint nodules – some of which are high quality and perfectly suitable for artefact production. Consequently, there is no evidence of truly exotic raw material in the Bjerre inventories. There are some apparently unique flints, but this is rather a matter of frequency of use. All raw materials used were available locally or regionally, *i.e.* occurring naturally within a range of less than ten kilometres from Bjerre.

According to the raw material analysis, the Early Bronze Age flint knappers at Bjerre exploited nodules from primary outcrops as well as erratic flints. Moreover, one of the frequently used raw material varieties is exposed at an outcrop situated a few hundred metres from the settlements at the base of the Hanstholm ridge (Figure 1). Quite interesting, this site also comprises the remains of Early Neolithic flint mines (Becker 1980:464ff; 1993:113ff). Here people of the Funnel Beaker Culture procured flint for making thin-butted axes. The Early Neolithic mineshafts apparently were

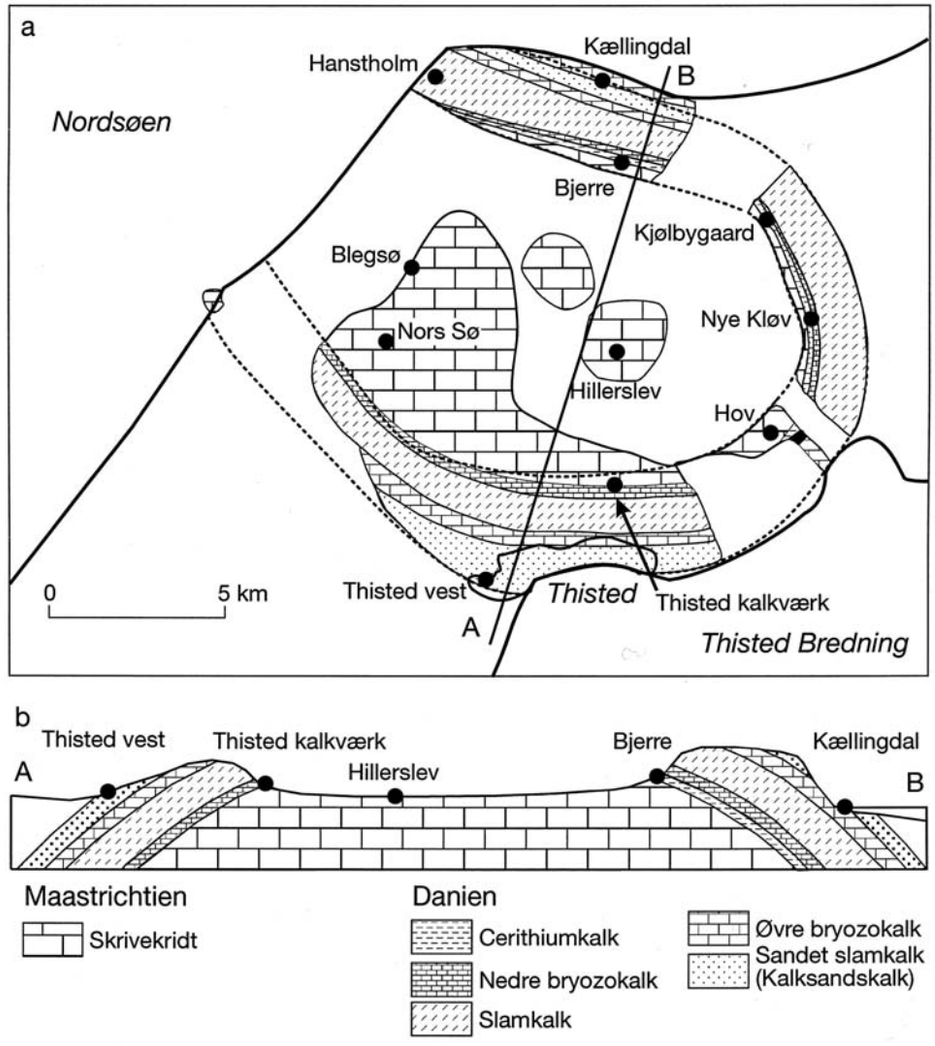

FIGURE 5. Map and cross section of the geological situation of northern Thy showing the occurrence of flint bearing Maastrichtian and Danian strata. Neolithic flint mines have been excavated by C. J. Becker at Bjerre, Hillerslev and Hov (Becker 1980). After Thomsen 2000, fig. 8.

filled in at the time of the nearby Early Bronze Age settlement, but it is quite likely that some of the open-air activity areas, where nodules were transformed into axe-preforms, were still accessible. We have manifest evidence that the Early Bronze Age settlers at Bjerre knew about this outcrop. Apparently they did not mine or quarry flint themselves, but very likely they procured raw material, *i.e.* nodules, cores and large flakes, left over by the earlier Neolithic flint miners and knappers. They used this flint in the production of ad hoc as well as formal tools, *e.g.* scrapers, many of which are made on heavily patinated flakes just like the ones recorded from the Early Neolithic activity areas.

When analysing the production of bifacial sickles it is found that some of the preforms and a fair amount of the debitage correspond well with the raw material nodules available from the local outcrop, while others do not. Some sickle blanks would seem to originate from secondary, morainic soils, and some apparently was obtained from another, geologically different, primary outcrop. According to geological analyses, the latter might well be situated some five kilometres to the south. A possible location of this raw material thus is Hillerslev (Figure 5) where archaeological investigations have also revealed the remains of a Late Neolithic flint mining area (Becker 1980:470). Admittedly, there are several other possible sources for the raw material in question, and although the Hillerslev mines are only a few hundred years older, and thus within the likely range of historical knowledge, we have as yet no conclusive evidence that the Early Bronze Age flint knappers at Bjerre knew about this flint mining area.

In summary, the raw material analyses evidence that with respect to the formal tools – *i.e.* especially the bifacial sickles, but to some extent also scrapers and knives – there is clear evidence of a direct procurement pattern, combined with a consecutive selection of the best raw material for these tools. Considering the ad hoc tools and the borers the analyses indicate, that there is no distinct exploitation pattern with respect to embedded or direct procurement. Those should be considered accidental tools. They were made on any available raw material lying around, including frost flakes and other erratic pieces weathered out of the moraine or the old beach ridges, or on scrap such as broken tools, preforms, etc. These observations on raw material exploitation are very interesting in relation to the *chaîne opératoire* analysis of the inventories.

Technological profile and *chaîne opératoire*

Modern flint analyses are based on contextual, typological, technological, and functional studies as well as experimental flint knapping. The archaeological investigations are further supplemented by a conceptual terminology pertaining to the role of technology in society and focussing on the concepts of *schéma* and *chaîne opératoire* (Eriksen 2000 with detailed references). On this analytical basis it is possible "to decipher and reconstruct, with great precision, the coherence of the knapping process, the techniques employed, and

the aims of the actor" (Pigeot 1990:126). Under favourable conditions it is even possible to distinguish the products of individual prehistoric flint knappers and to explore the field of interaction between distinct persons.

In the case of the Bjerre inventories refitting and technological analyses document on site production of asymmetrical sickles, some scrapers, and possibly numerous crude ad hoc tools. Dynamic technological analyses and reconstructions of core reduction sequences clearly indicate that formal and accidental tools as a rule were manufactured by different flint knappers, *i.e.* flint knappers possessing highly different skills, different abilities and different goals (Eriksen in prep.).

Not surprisingly, the analyses show that crude flake tools (including the ad hoc tools, borers and some scrapers) were indeed produced ad hoc – by anybody, anywhere, anytime – at all four sites. Evidence of sickle production on the other hand is most prominent at Bjerre 1 and 3, and barely present at Bjerre 2 and 6. Nonetheless, the production of asymmetrical sickles at Early Bronze Age Bjerre is well documented through finds of finished as well as unfinished tools, along with rough-outs, preforms and a variety of debitage from all stages in the production process. The preferred blank was usually a flat nodule or core. The sickle preform was shaped by initial hard direct percussion, and the manufacture was completed by increasingly delicate soft direct percussion, probably using an antler billet. Pressure flaking was used exclusively for the final trimming of lateral edges.

In contrast to the expedient production of ad hoc tools, the manufacture of bifacial sickles was generally characterized by a high degree of precision, control and anticipation of explicit intentions. The above-mentioned selection of the best raw material for the sickles is thus also matched by a generally high quality of the flint knapping. Most of these tools obviously were made by very skilled flint knappers. Similarly, we find that among the flake tools some scrapers and some knives distinguish themselves by being particularly well made and regular. Thus, there is technological, morphological and in part raw material evidence that they belong to the same conceptual framework (*schéma opératoire*) as the bifacial sickles – and sometimes perhaps even to the same primary production sequence (*chaîne opératoire*).

The first stage in this production sequence involves the primary decortication of nodules. As an example of this production stage, we find some large regular scrapers made on primary (or secondary) cortical flakes, produced by hard direct percussion (Figure 4 #1). The second stage involves the shaping of the biface preform and the production of large bifacial thinning flakes. Representing this stage, we find the slender knives (Figure 4 #3) (and a few scrapers), which are made on regular blade-like flakes, produced by soft direct percussion on a large bifacial "core". Finally, the production of asymmetrical sickles is finished by very delicate, soft direct percussion and a minimum of pressure flaking retouch along the lateral edges (Figure 3 #1).

Formal tools were obviously curated and they very rarely do refit within a production sequence. Accordingly, most formal tools seem to have been imports. Especially the sickles were usually made somewhere else and brought to the site. Conversely, the few sickles actually produced in Bjerre were generally exported, *i.e.* removed from the site of production, used and left somewhere else. Formal tools were also quite often resharpened or recycled. Sometimes the secondary modification was executed by a skilled flint knapper (Figure 3 #3), though most often by a distinctively less skilled person (Figure 3 #4). In the case of the bifacial sickles it is often evident that the artefacts were not "resharpened" by the same person who made them originally. Again, we are clearly dealing with different flint knappers, *i.e.* flint knappers possessing different skills, different abilities and different goals, and it appears that some of these flint knappers, the specialists, were not always present.

Discussion

It is stressed that these observations represent the preliminary results of an ongoing research project. The Bjerre sites may be unique or biased in various ways, and the present analysis obviously has to be supplemented by investigations of contemporary lithic inventories from other areas.

On the other hand, we now have a set of data and questions to proceed from. For a start it is well known that during the Late Neolithic and Earliest Bronze Age the art of flint knapping reached an exceptionally high level in Denmark. A few, very skilled flint knappers produced magnificent, pressure flaked artefacts in flint. Many of these masterpieces are easily recognizable as copies of bronze weapons – daggers, swords, scimitars, and arrowheads. Unquestionably, many of these artefacts were unique and probably loaded with symbolic meaning. During this period flint knapping certainly would have been a commonly practised craft, however, not many knappers would have mastered the skill revealed in artefacts such as the renowned Hindsgavl dagger, Favrskov scimitar, Næsbjerg short sword or numerous other masterpieces kept in the National Museum of Denmark. The people, who manufactured these prestige objects, were not just masters of the flint knapping art; they were artisans. They presumably were few and stayed near the location of high quality flint sources in Northern Jutland and on Southern Zealand (Jensen 2001:517ff). Like the famous master painters of the Renaissance, there may even have been a sort of "flint knapping school" where pupils and apprentices worked with and learned from these high-level masters (Apel 2000; 2001).

A few hundred years later things had changed significantly. With a few exceptions metal tools are largely superior to flint tools, and bronze was now becoming increasingly important and widespread. The decline and fall of the flint knapping craft was inevitable, and the quantity of crude ad hoc tools in the Bjerre inventories shows that it was no longer

widely mastered. Yet, it is maintained here that flint knapping specialists continued to be around throughout the Bronze Age. In the Early Bronze Age they made bifacial sickles, scrapers and a few other formal tools, cf. above; in the Late Bronze Age they made heavy sickle blades, scrapers and few other formal tools (Eriksen in prep; Högberg 2001; 2005). However, the Bronze Age flint knappers were craftsmen – not masters. They did not make prestige objects, but tools. Their skills were not for display, but for daily use.

During the Late Neolithic and Earliest Bronze Age, when bronze was first introduced, flint artefacts obviously were important as status markers. This "symbolic" aspect was lost through time, but flint tools did not loose their "value". They still were important in everyday life, and continued to be until the Iron Age. Flint knapping specialists, however, were not as important as they might have used to be, and there is no more evidence of high-level masters or "schools". In the Bronze Age it was becoming increasingly difficult to make a living from just knapping flint.

In the Early Bronze Age, there may still have been a few who lived largely by it, perhaps as "journeymen", who would spend part of the year visiting different farmsteads within a specific area, offering their services as handymen. Some 25 kilometres south of Bjerre, we find the Early Bronze Age site of Vilhøj, where hundreds or even thousands of asymmetrical sickles apparently were produced for export (Mikkelsen 1996:113; 2003). According to a very preliminary examination of the Vilhøj flint, the predominant raw material would seem to correspond well with the raw material known both from the flint mining area at Hillerslev and from a number of sickles found at Bjerre. Vilhøj then could be the home of our "journeymen", and perhaps some of the "imported", worn-out sickles found at Bjerre were indeed made here. The lithic inventory from Vilhøj is very comprehensive and still awaits a detailed study, but presumably it would tell a quite different and complementary story from the Bjerre inventories.

Notes

1 The financial support of the research project "Flintworking in the Danish Bronze Age" by the Danish Research Council for the Humanities, Beckett Foundation, Elisabeth Munksgaard Foundation and Queen Margrethe II Archaeological Foundation is gratefully acknowledged.

2 The lithic assemblages examined have been made available for study courtesy of Thisted Museum. I am especially indebted to Jens-Henrik Bech and Anne-Louise Haack Olsen for their profound interest in and support of my studies. A detailed presentation of the lithic inventories will be included in the monographic publication on the Bjerre sites (Eriksen in prep.).

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CARIN ORRLING

Razors on the road

IN 1973 I WAS given the task of mounting a temporary Bronze Age exhibition for the Museum of National Antiquities in Stockholm, where I was employed. This meant spending a lot of time selecting objects in the store rooms, where I became fascinated by the figures on some of the Late Bronze Age (LBA) razors, which previously had totally evaded me. My focus had, until then, been directed towards the figures on rock carvings, and now I found that the pictures on some of the razors were very similar to those.

Razors made of bronze are known already from period II of the Early Bronze Age (EBA). Some of them are decorated, but merely with straight lines and/or repetitive pattern-punched straight lines. It is only on some razors from the LBA that figures are found.

When the exhibition was completed, I started to search in the literature for this kind of decorated razors, without much success. In the early 1970s, just a few descriptions of figure-decorated razors were published, and the ones depicted and described were the same, over and over again.

It proved impossible to find out from the literature how many figure-decorated razors might exist, and how they were distributed geographically. Were there other interesting figures on the razors to be compared with the rock carvings? Who had produced those razors and for whom? Many more questions arose in my mind and I wanted to find out more. One has to remember that this was before the Internet and the computerised central registration of the archaeological collections of prehistoric objects.

Armed with a small grant I set out, in March 1974, to find out more about these intriguing objects. My intention was to gather as much information as possible, and to depict the razors in order to make a comparison with rock carving pictures.

I visited both private collections and museum collections in the Scandinavian countries, Finland, Northern Germany in both east and west, and also the Netherlands. Later I also searched in northern Poland and the three Baltic countries. I personally searched through all collections of Bronze Age objects, and tried to wring out as much information as possible from the registrations on the figure-decorated razors. I photographed and made rough drawings of the razors. Some of them were even cast in silicon rubber. Also Scandinavian collections, sold to the British Museum and the American Museum of Natural History in New York during the 19th century, were carefully searched for my kind of razors. Many of the museums and collections I visited did not have any figure-decorated razors at all. All the registered razors, with one or two exceptions, have been found within an area between the boundaries of the Nordic LBA culture sphere, as defined by Kossinna (1926).

At the outset of my search I had imagined that there might be one thousand, or even two thousand, of these figure-ornamented ones in my search area. However, at the end of my search, I had found less than five hundred.

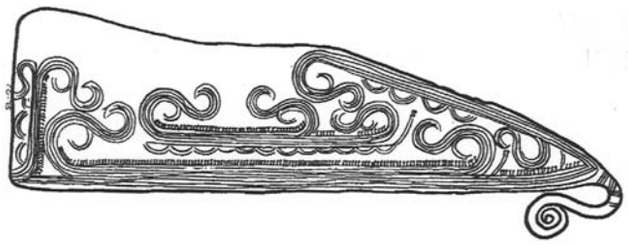
Many of the razors are chance finds. The majority of the razors were found during the 19th century or at the beginning of the 20th century. At this time the combination of objects in a find mostly was considered insignificant and therefore it was not properly noted and described. Probably the bulk of the so-called chance finds emanate from destroyed graves.

When I made the final drawings of all the figure-decorated razors I had found, I observed different groups of razors with almost the same appearance. The similarity of design and craftsmanship suggested that one hand might have manufactured all the razors in a group. Some of these "groups" are found within a small area, while others are more widely spread. The largest "group" consists of eight razors. The three razors below are the ones that were found with the largest distance between them.

The word *razor* here refers to small one-edged cutting-tools with a *blade* and a *handle*. One-edged razors have an *edge part* and a *back part*, the latter mostly a little thicker than the edge part, of which about half is the real cutting edge. On the opposite side of the handle, the blade ends squarely, as the *short side*. There are also other types of razors but they are not involved in this paper.

Figure decoration is defined as a punched ornament, which can either be traced or line-punched or executed by repeated punching with a pattern punch. The punched lines diverge from the contours of the edge and create a pattern which does not only consist of straight lines.

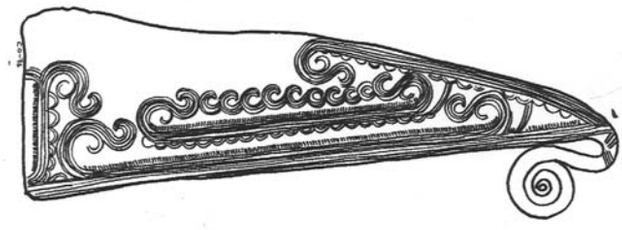
In this paper I shall describe three razors, found in three different countries: Sweden, Denmark and Germany. All three belonging to the subdivision B4a according to the Baudou classification (1960: Taf. VIII), and can be dated to period V of the LBA.



Razor no. 1

Museum of National Antiquities Stockholm, Sweden.
Catalogue Number: SHM 17093.
Provenance: Södra Hjärpetan, Grava parish, county of Värmland, Sweden.
Length: 130 mm.

Found during stone quarrying in January 1923, in a cache resembling a smith's scrap-bronze, consisting of a number of fragments of many different objects of bronze, *e.g.* a sword and such a rare object as a bronze lure. Among the objects there is even a rod of lead, which is a very unusual find. The cache also included some absolutely perfect objects, ready for use. The razor together with an ornamented knife of bronze is in very good condition and does not seem to belong to a stockpile which was to be melted down. The razor has been sharpened several times, as the concave edge proves. One can observe that the razor has not been used so much that the punched lines of the decoration are worn out, which is often the case with heavily worn razors. The decoration consists of ships, three or five, depending how they are counted. The ships are so integrated into each other that it is difficult to separate them. The stems and sterns end with a curl like an animal head and an extra curl down the neck, just as *e.g.* in the decorations on some of the Maltesian megaliths and also on some EBA bronzes from Eastern Europe. Under the upper ship there is a row of double and single half moons, "waves". The lower and longest ship follows the border of the razor, from the beginning of the short side, then it is folded over to follow the back and then again folded over to follow the edge and ends where the very cutting edge starts. This ship is thus folded twice to fit in. The "waves" are found inside the ship. This is also the case with the smaller ship, under the folded one, at the short end. Two different pattern punches seem to have been used, besides the tracing line punch. One made an S-shaped impression, and one made semicircular impressions (Oldeberg 1928; Hoffmann 1938, Nr. 479, Taf. VIII; Kersten 1939, Nr. 442 Abb. 108; Sprockhoff 1956 Nr. 124, Abb. 31:11; Baudou 1960, grave 24).



Razor no. 2

Haderslev Museum, Haderslev, Denmark.
Catalogue Number: HAM 3308.
Provenance: Lille Vejbøl, Arnitlund, Vedsted, Gram, Haderslev County.
Length: 145 mm.

Found in a grave mound and registered in 1899. Unfortunately, the findings from many graves in the mound have been mixed, which makes it impossible to reconstruct the find associations with certainty. The razor has been used, or at least resharpened, which is clearly proven by the concave edge, but it has not even been used as much as no. 1, and is in excellent condition. This razor basically has the same decoration as razor no. 1 and consists of three or five ships arranged the same way as on no. 1. The semicircles underneath the upper ship mostly consist of two parallel punch stamps, but there are two single punch marks at each end of the ship, and on the ship, along the edge. A number of semicircular punch marks are seen, of which six in the middle are double, and six and three respectively on each side are single. There is also a characteristic type of punch, which is sometimes shaped like an S and sometimes looks more like a comma, inside the upper ship and inside as well as outside the ship at the bottom. At the short end there is also, below the ship, a row of S-shaped punch marks. The handle of the razor has a square section (Broholm 1946: gr. 1361; Baudou 1960: grave 425; Kaul 1998: no. 332).

Razor no. 3

Archäologisches Landesmuseum, Schloß Gottorf, Schleswig, Germany.
Catalogue Number: Kieler Samlung 1327 a.
Provenance: Poyenberg, Kellinghausen in Steinburg?
Length: 153 mm.
The razor was bought before 1913 from Dr Kirmis in Neumünster, who had inherited it from a goldsmith in Kellinghausen. The exact provenance is unknown. No find association is registered.

The figures on the razor are more or less the same as on the two above, only here there are three ships which are clearly discernible. The central ship is furnished with the double-lined "waves" underneath the hull. The S-shaped stems have the curls with the extra curls on the back of the neck. The stripes on the "neck" of the handle are fewer, but can be clearly seen. This razor, in contrast to the two others, has a figure made up of two circles, one inside the other, at the angular field ahead of the handle (Hoffmann 1938, grave 479; Kersten 1939:442, Abb. 108; Sprockhoff 1956:124, Abb. 31:11; Baudou 1960 as grave 24).

I consider that the three razors above are too similar to have been produced by two different craftsmen. I will try to describe why I think that all three emanate from the same hand.

First of all, the three look absolutely similar at first glimpse. They stand out as a group. The combination of figures on the blade and also the punch patterns, as well as the very special decoration on the handle, are similar. Secondly all three are a bit larger in size than the average razors in my collection. On closer inspection they are not exact copies of each other. There are small individual particularities in the decorations on each of them.

The blanks from which the razor blades were individually hammered out may very well have been cast in the same mould. An analysis of the composition of the bronze would perhaps give an answer, but I have had no opportunity to have such an investigation made. The smith used one ordinary punch to trace the lines on all three, and one pattern punch with an S-shaped edge and probably also another one with a curved edge in order to make the "waves". It cannot be decided whether it is the same punch or not that was used in all three cases, as punches wear out quickly and have to be sharpened often. A punch changes its characteristics every time it is sharpened, irrespective of what material it is made of. The handles were individually formed by first hammering out one end of the blank to a long slim rod, which was then shaped into a flat spiral. The section of the rod can be made either square or round. The handle on the razor from Haderslev has a square section and the other two have a round section.

The three razors described above were found with a total distance of 850 km. between them, as the crow flies, and if one considers the real water-land distance it would be close to 1,000 km. This can give us a glimpse of the distant transfers that people and objects undertook during LBA. I dare say that the manufacturer of the three razors worked just a few miles north of the proposed finding place of the southernmost of the three razors.

The Swedish writer August Strindberg once mocked archaeologists for being "buttonologists" (Swedish: *knappologer*) and I sometimes feel like one. My conviction, however, is that this kind of detailed study of archaeological objects is necessary to balance the theoretical constructions of theoretical models, if we are to find out more facts about our ancestors.

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THE IRON AGE PAST

BERGLJOT SOLBERG

Pastimes or serious business?

Norwegian graves with gaming objects c. 200–1000 AD

Introduction

WHEN THE ROMAN legionaries carried their favoured games to all the frontiers of the Empire board games were adopted by the local populations and somewhat later by the neighbouring peoples. The Germanic word *tafl*, derived from the Latin loan word *tabula*, underlines the Roman connection (Holtsmark 1957:223), and also indicates that the Germanic tribes had not previously played any board game (Murray 1952).

The earliest appearance of gaming objects in Norway is in a grave at Avaldsnes, Rogaland, from C2.[1] From then on they are found in graves until Christianity forbade the old burial custom. In the present paper, the main focus will be upon the interred persons. Were they ordinary men and women, or did they belong to a special group or class? Were board games pastimes only or practised as a means of foretelling the future?

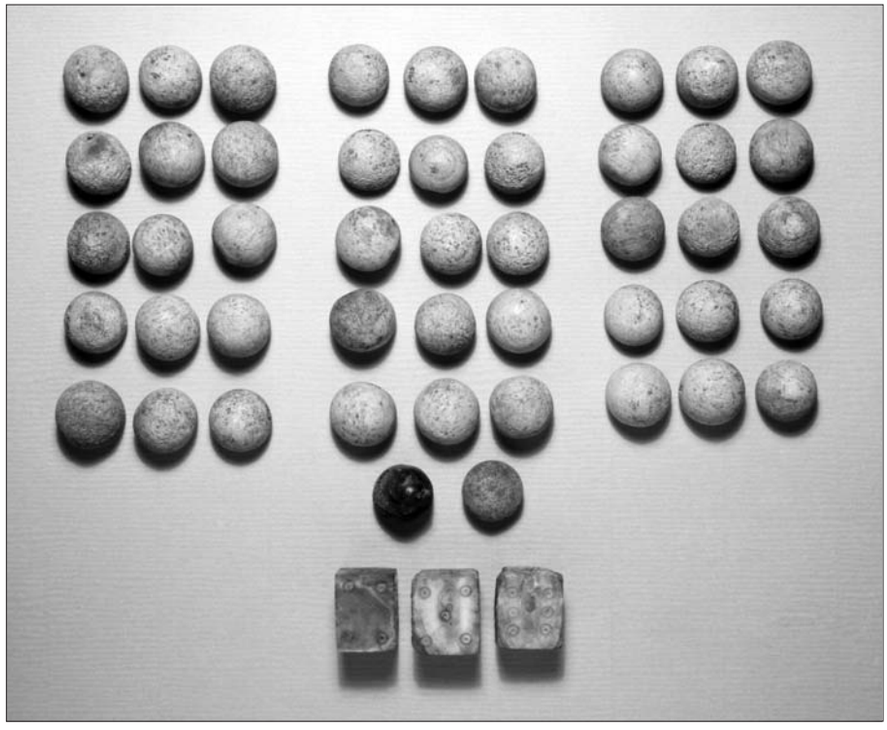

FIGURE 1. Gaming pieces and dice found in a grave at Nes, Salten, Nordland County. Photo: Bergen Museum.

It is generally accepted that the context of death is one of ritual action and communication as opposed to everyday practical communication. However, archaeologists lack the opportunity of personal observation of rituals, and their interpretation of ritual as communication depends upon material remains of ritual acts and analogies. In the present study, mortuary ritual is seen as a particular arena for social activity, where ritual performance works by addressing the participants. Performance is a most effective form of communication as it elucidates its purpose far more clearly, to the participant, than words ever could (Schieffelin 1993). Ritual works through the senses to structure our sense of reality and our understanding of the world around us.

The philosopher Ernst Cassirer has stated that man is essentially characterized by his unique ability to use the "symbolic forms" of myth and language as a means of structuring his experiences and thereby understanding both himself and the world of nature (Cassirer 1923). This ability makes every sense datum ripe with potential meaning. Accordingly, symbols are present in all forms of communication, but are especially in evidence in religious rituals.

When gaming objects are present in graves they may be regarded as symbolic expressions with direct reference to the status and roles of the deceased persons.

Gaming objects in Norwegian graves

Gaming objects have been recorded in 141 Norwegian graves, 85 from the Late Roman/Migration period and 56 from the Merovingian/Viking period. The gaming objects include pieces, dice and a gaming board. Gaming pieces are used in the playing of games of chance or skill, usually on a specially designed board. The individually shaped and fashioned gaming pieces have a circular basis and a flat under-side. The large majority is of bone/antler, but pieces of stone, clay, amber and glass are found as well (Figure 1).

Hemispherical button-like pieces of bone (R 177) have been recorded in 68 finds. They appeared in late C3 and gained popularity in the Migration period. Later on this type became very rare.[2] Low pieces (R 178) of stone or clay have been recorded in eleven finds, five in combination with

pieces of bone. In addition, nine finds include gaming pieces of glass. The mentioned find from Avaldsnes has 14 black and 14 blue gaming pieces. The finds with type R178 are from the Late Roman and Migration periods. Type R 474 is taller than R 177 and R 178, and includes pieces of bone as well as pieces of clay, stone, glass or amber. This type has been recorded in 50 finds, all from the Merovingian/ Viking period.

Dice are numbered staves or cubes. Two types are recorded, the "long-die" and the rectangular/cubic die. The "long die", R 176, has four rectangular, long and narrow sides. The dice found in Celtic oppida all belong to this type (Krüger 1982:220; Maier *et al.* 1992), indicating that the Germans may have received the type from them. This type of die has been found in ten graves, usually in combination with gaming pieces. All finds are from Late Roman/Migration period.

The cubic die represents a later invention than the long die. The numbering of the faces of these dice seems to have been early standardized (Murray 1952:8). The dice found in Roman camps all belong to this type (Krüger 1982:220), indicating that it represents a culture loan from the Romans. The cubic/rectangular dice in the Norwegian finds are made of antler or stone. The numbers usually are on all six sides. These dice appear in 18 grave finds, 13 finds in combination with gaming pieces. Two finds are from the Migration period, the remaining from the Merovingian and Viking periods.

Gaming-boards are specially designed portable surfaces on which playing pieces are moved in the practice of various games of skill or chance. Only one gaming board has been recorded in Norway. The Gokstad ship burial from around 900 AD produced a fragment of a gaming-board (Nicolaysen 1882, pl. VIII). It is a finely made example of 13x13 squares or cells. On the opposite side there was a layout of another type of game, similar to today's mill (Murray 1952:58).

Social identity

In all societies individuals, during the course of a lifetime, are assigned different roles and statuses. Quite frequently the status receives public display through material items. Such markers displaying and representing the sex, status and roles of the individuals were frequently included in Norwegian graves in the first millennium AD. However, the cremation burials in the Late Roman and Migration periods represent an exception to this, as sex-specific items are very rare.

Sex

Among the fifty-one cremation graves[3] from the Late Roman/Migration period six have been defined as female graves based upon objects in the graves,[4] whereas male-specific objects have been recorded in one grave only.[5] The overrepresentation of females does not, however, reflect the actual sex representation in the graves. Examination of the human bones in eleven graves[6] resulted in five male graves (of which one probable) and four female graves (of which two probable).

The next to absence of sex-specific items in the Norwegian cremation graves has parallels in other regions. In Oxfordshire, England, a richly equipped cremation grave with gaming pieces and die had neither male-specific nor female-specific grave goods (Dickinson and Speake 1992:108). At the burial ground at Sutton Hoo, cremations in bronze bowls were found in mounds 4, 5 and 7. Apart from the gaming implements, the graves included few items (Carver 1992:368). Both in Norway and in England the lack of sex-specific objects is as result of intentional acts (see below).

Eleven graves from the Late Roman and Migration periods are inhumations, six belong to men, one to a female and one is a double burial for a man and a woman. This demonstrates that in the Late Roman and Migration periods, the difference in sex representation in the cremation and inhumation burials is marked. Most inhumation graves (8 of 11 finds, or 73 %) include sex-specific objects, compared to only 13.7 % of the cremation burials.

Among the fifty-six finds recorded from the Merovingian and Viking periods[7] there is no difference in the types of objects found in the cremation and inhumation burials. Based upon the presence of weapons thirty-two graves belong to men, whereas oval brooches refer two graves to women. There is also a double burial of a man and a woman.

The difference in sex representation in the Late Roman/Migration period and the Merovingian/Viking period is marked. In the former period about as many men as women seem to have been buried with gaming objects, in the Merovingian/Viking period female graves make up only 3–5 % of the graves with gaming objects.

Status

Twenty cremation graves from the Late Roman/Migration period include items that are usually related to high status.[8] For instance one grave[9] included an arm ring of gold, three finger rings and a double bracteate of gold, *c.* 625 grams of gold in all. A Roman bronze vessel served as urn. Another[10] included a solidus with the inscription "Gratianus" (AD 375–383). The urn is a Roman cauldron of the "Vestland" type (Shetelig 1912:83ff, figs. 193–97). About half of the cremation graves, however, include few items besides the gaming objects.

Six inhumation burials from this period are characterized by high status objects, the Avaldsnes grave being the most prominent (Shetelig 1912). Also the grave goods from the double burial at Sætrang, Buskerud – with gaming pieces of glass – signal high rank (Slomann 1959) as does the female burial from Mæle, Hordaland (Bjørn 1923).

In the Merovingian/Viking period gaming objects have been found in three ship graves, all representing male burials. The graves from Storhaug,[11] Karmøy, and Gokstad.[12] Vestfold, are inhumation burials, whereas the grave from Myklebostad,[13] Eid, Sogn og Fjordane, is a cremation. The Storhaug grave was covered by a 40 metres wide mound. The diameters of the mounds at Gokstad and Myklebostad were 50 and *c.* 30 metres, respectively. Graves with gaming pieces of bone in boats from the Viking period have been recorded at Åkra, Rogaland,[14] Myklebostad, Sogn og Fjordane[15] and Nordland.[16] The Åkra grave belongs to a woman, the remainder are men's graves. A gaming piece of amber – shaped like a phallus – appeared in a boat grave from Gloppen, Sogn og Fjordane.[17]

In both the Late Roman/Migration period and the Merovingian/Viking period a large part of the graves with gaming objects can be attributed the social elite. The main difference in the two periods is the sex representation, with a much weaker female representation in the Merovingian/Viking period than in the Late Roman/Migration period.

Board games as pastimes

The mentioned grave from Avaldsnes with its blue and black gaming pieces of glass is not only the earliest evidence of board games in Norway, it is also one of the rare finds where the whole set of gaming pieces seems to be intact. Most likely, the pieces have been used for playing Ludus Latrunculus, the most popular thinking man's game in the Roman Empire.

Roman literature contains many explicit references to the game. Varro in the first century BC describes a board marked with lines and spaces, and pieces of variously coloured glass or precious stones. Ovid who confirms the custodian capture, adds that pieces can move backwards as well as forwards, and has the player capturing the most pieces declared imperator (Parlett 1999:235). Most likely, the chieftain at Avaldsnes adopted the game through his contacts with the Romans, something that has been emphasized in the burial ritual. The adoption of board games may reflect a lifestyle that separated the high status group from the rest of society (Graham-Campbell and Kidd 1980:84; Dahl 2003).

Board games and cleromancy[18]

And indeed, the connection between many of the finds with gaming objects and the social elite seems obvious. But does this mean that the gaming objects should be linked to pastimes only? If we are to believe Tacitus, board games were taken very seriously by the Germans: "While sober they play dice as one of their serious pursuits, which one would wonder at, with such great recklessness in winning or losing that, when all else has been exhausted, they put their liberty and persons up as the stake on the very last throw".[19]

Around the turn of the 19th century the American museum anthropologist Culin (1893–1896, 1898) claimed that divination[20] was the origin of board-games. From the earliest stages of civilization people have used various means of divination to communicate with the supernatural when seeking help in their public and private lives, most often by persons who are specially trained.

The methodology for practising the divinatory skills seems to divide into two categories: the first is the observation and interpretation on natural phenomena, and the second is the observation and interpretation of man-made "voluntary" phenomena. The latter may be defined as being deliberately produced for the sole purpose of soothsaying and includes such acts as shooting arrows and casting lots.

According to Tacitus, the Germanic peoples often resorted to divination to ascertain the will of the gods. One of the many forms of divination is cleromancy, or divination by throwing dice or casting lots. Maybe this practice is illustrated in one of the golden horns from Gallehus showing two persons with a gaming board between them, one holding a drinking horn in the right hand. The two horns from Gallehus that were deliberately damaged before being put in the ground are usually linked to religious ceremonies (Brøndsted 1977:506ff). The depiction of a board game may therefore reflect an important social act.

Tacitus also tells that there "is the known practice of divining events from the voices and flight of birds" (*Germania* 10). Augury is among the oldest known type of divination. In the Roman Auspicium a specialist called the Augur was entrusted with observing the birds. He would sit on a hill in a special robe and circumscribe an area of the sky with his divining staff. He would then watch this region of the sky for birds to determine a good or a negative sign (Telesco 1998:65f). Among the Celts priests were searching for prophetic signs in the flights of birds (Ellis 1998:184) and some birds were symbols of divinity and messengers of the gods (*ibid.*:128). In Norse mythology, the ravens Hugin and Munin were Odin's followers. They were sent out at dawn to gather information and return in the evening. They perched on Odin's shoulders and whispered the news into his ears.

The Germanic peoples also took warnings from horses (*Germania* 10.2). "But to this nation it is peculiar, to learn presages and admonitions divine from horses also. These are nourished by the State in the same sacred woods and groves, all milk-white and employed in no earthly labour. These yoked in the holy chariot, are accompanied by the Priest and the King, or the Chief of the Community, who both carefully observed his actions and neighing. Nor in any sort of augury is more faith and assurance reposed, not by the populace only, but even by the nobles, even by the Priests. These account themselves the ministers of the Gods, and the horses privy to his will" (*Germania* 10.2).

The term priest[21] probably refers to persons who had special roles in cult, for instance to kings or leaders who acted

as intermediaries between people and their gods. Among the Goths, each *kuni*[22] (subtribe) had its own shrines and priests and no doubt its own cult (Wolfram 1988:96). The priests wore bracelets and necklaces as signs of dignity (*ibid*.: 107).

One of the Norwegian cremation graves from the Late Roman period with gaming pieces includes a bracelet of gold, another a heavy spiral ring of gold, and yet another a solidus used as pendant. These items may reflect persons with a "priestly" role. None of these graves included sex-specific items (see above). The lack of sex-specific grave goods has been difficult to explain, but maybe Bede's *De Ecclesia Anglorum et Gentes* has the answer. According to Bede, a pagan priest had to observe certain taboos, not being allowed to carry weapons or to ride on anything but a mare; he was believed to be able to bind the hands of his enemies by chanting spells from a high mound (Blinkhorn 1999). Bede's description is from England, but the similarity between Anglo-Saxon and Scandinavian grave finds indicates that "priests" in Scandinavia were subjects to the same rules.

One of the cremation graves from the Late Roman/Migration period with gaming objects included the un-burnt bones of a horse.[23] Also the ship grave from Storhaug, mentioned above, from the late Merovingian period, included a horse, as did a boat grave from Åkra, Rogaland, the grave at Gokstad from *c.* 900 AD, included 12 horses. Horse teeth were also found in Gloppen, Sogn and Fjordane.

The deposition of horses in graves has usually been regarded as evidence of affluence and high social status. This may well be true. However, if horses were "privy to the gods' thoughts", their presence in graves may well have an additional meaning, indicating that the deceased persons were able to interpret "their neighing and snorting".

As we have seen also augury represented a way of foreseeing future events. Remnants of birds have been found in some of the graves with gaming implements. Two un-burnt bones of a bird and a shell (*Patella vulgata*) have been found in Kongshaugen, Valderøy, Møre. A large spiral ring of gold, weighing 156 g., lay on top of the cremated bones. Also some graves from the Merovingian and Viking period include bird remains. The ship grave from Storhaug (see above), included feathers of a bird, the grave at Gokstad a peacock, and a grave from Bø, Gloppen, bones of bird. Thus, the graves with bird bones all represent persons belonging to the social elite. In the *Rigsthula* poem, verse 45, we learn of Jarl's son (the young Kon)

> Fowls' speech he knew, and quenched fires,
> could sooth (sorrows) and the sick mind heal;
> in his arms the strength of eight men had.
> Snorri Sturluson *The Poetic Edda*
> (translated by Robert Hollander).

The ability to interpret fowl's speech indicates augury and it is of special importance that this ability is associated with the young Kon. Bede's description of priests, quoted above, refers to men. However, in the Late Roman/Migration period the number of male and female graves with gaming objects is about even. This is in marked contrast to the situation in the Merovingian/Viking period when only two female graves have been observed, compared to 32 male graves. The marked decline in female graves in the Late Iron Age may be the result of women's altered roles.

In Old Norse society, status was either ascribed, *e.g.* by birth (family), age or by marriage, or achieved, *e.g.* by demonstrating certain abilities, for instance in magic. According to Tacitus, women and sacred power were related: "They [the Germanic tribes] think that there is a sacred and prophetic quality in women, and so they neither reject their advice nor scorn their forecasts" (*Germania* 8). In these famous words Tacitus offers the quintessential features of Germanic women as they were perceived by Germanic men.

In the Roman and Migration period, religion was part of ordinary life and maintained by individual members of society, and the rituals were performed in the homes of farmers and chieftains. But it seems likely that those who had religious power, exercised this to a certain degree in public. In the Viking period many rituals moved from the farm to the public arena, for instance took place in association to thing assemblies which mainly were men's arenas. This probably restricted women's roles in rituals to the home department, and may be the reason why so few graves with gaming objects belong to women in this period.

Conclusion

The earliest find with gaming objects in Norway, from around 200 AD, indicates the adoption of board games, most likely as a result of contacts with the Romans. In the Late Roman/Migration period, the number of finds increased, indicating the popularity of board games. Not to underscore their role as pastimes, lots and dice may also have been used in divining practices.

In the Late Roman/Migration period men and women alike received gaming objects as part of their grave goods, in contrast to the Viking period, when only 3–5 % of the graves with gaming objects belong to women. If board games and divination were interlinked, the few female graves with gaming objects in the Viking period may indicate that women's role in divination had diminished.

In the period 200–1,000 AD the gaming objects are clearly associated with "rich" graves. On one side this may reflect a lifestyle that separated the high status group from the rest of society. On the other side the correlation may result from the fact that the aristocratic group was in charge of both the private and official cult. After the transition from the old religion to Christianity, the link between board games, magical power and religion has not been understood. Now, board games were only linked to pastimes of the aristocracy.

Abbreviations

B = Bergen Museum
C = Universitetets Oldsaksamling, Oslo
S = Arkeologisk museum i Stavanger
R = Rygh, O. 1885. Norske Oldsager. Kristiania
T = Vitenskapsmuseet, Trondheim
Ts = Tromsø Museum

Notes

1 B 615 (Shetelig 1912).
2 Three finds, C9672–76; C34331;T17934 belong to the Merovingian period.
3 The burial custom has not been defined in 23 graves from the Late Roman/Migration period.
4 B 12046 and C 34758 (spinning whorl), C 29262 and B 4161 (hair pin), S 3552 (special knife), B 4207 (bone needle).
5 C5939–46.
6 The cremated bones have been examined by Dr. Per Holck, report topographical archive Bergen Museum.
7 The burial custom has not been defined in 21 graves from the Merovingian/Viking period.
8 Bronze vessels, glass, objects of silver and gold (Myhre 1986).
9 B 12048, Haram, Møre og Romsdal county.
10 B 3358, Sæbø, Hordaland.
11 B 4438.
12 C 10384–466.
13 B 2978–3000.
14 http://www.karmoyped.no/avaldpros/historie/akra.htm.
15 B 5730 cremation grave.
16 Ts 1212–13; Ts 2679–82 inhumation graves.
17 B 5150.
18 A system of divination practised by throwing, small bones or dice, anything, in short, that could be used for lots.
19 Aleam, quod mirere, sobrii inter seria exercent, tanta lucrandi perdendive temeritate, ut, cum omnia defecerunt, extremo ac novissimo iactu de libertate ac de corpore contendant, victus voluntariam servitutem adit (Germania 24,2).
20 In the present context, divination is narrowed down to meaning sets of rules that explain how to decipher the message of cosmos.
21 Religious historians have refuted the presence of pagan "priests" in Germanic societies. Tacitus and Bede, accustomed to societies with religious specialists in their own societies, regarded persons who had roles in official pagan cult as priests.
22 The *kuni* formed the most important political unit, but it was at the same time also a community of descent. The head of the *kuni* was the *reiks*. The *kuni* and its independent leadership fell victim to the great migrations.
23 B3358, Sæbø, Hordaland.

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TOVE HJØRUNGDAL

Far beyond the frontier

Creolizing the Cauldron Grave Horizon of Iron Age Medelpad, northern Sweden

THE TITLE OF this paper refers to the evidence that foreign cauldrons have acquired importance far away from their context of provenance. It also indicates that the issue dealt with is a challenging one. When local and foreign objects meet within the same geographical setting, they can jointly create a locale for the invention of new forms in other materials, *hybrid* forms in objects. They might further be integrated in traditional practices, and become actants in key social processes. A reading in this vein is attempted of some vessels from Iron Age contexts in the present province of Medelpad, northern Sweden (Figure 1). My suggestion is that the meetings between foreign metal cauldrons of different types and local wooden tubs have played a role in the construction of iron bill cauldrons, characteristic of Medelpad and adjoining areas. Some of the effects of such innovative processes on the material and social setting are sketched.

This paper makes up a case study of how "imports" can be understood, used, and be co-influential on new material forms in a local, "barbarian" context. A question is how new forms and objects come into being. Different terms about imitations are tested. A point in this argument is also to have a closer look at the Cauldron Grave Horizon of Medelpad in the light of the alternative terms *hybridization* and *creolization*.

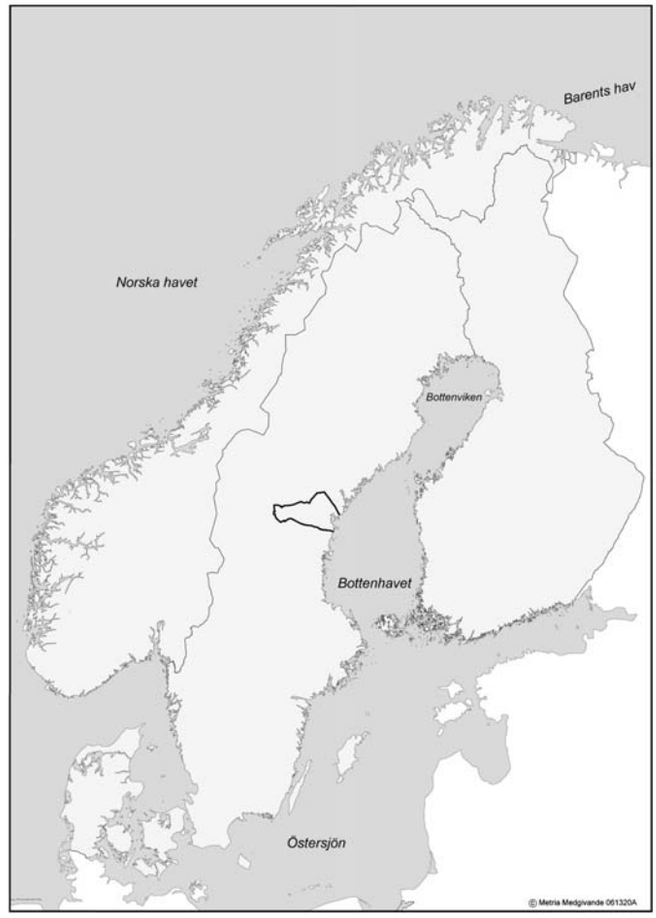

FIGURE 1. Medelpad, Northern Sweden. © Lantmäteriet.

Background and objective

The premises of the argument are found in recognized interpretations of the local Cauldron Grave Horizon of the initial Migration Period, defined by Klas Göran Selinge. Primary objects of the cauldron horizon are seven Vestland cauldrons of foreign provenance (Figure 2), all of them used with cremations (Selinge 1977:270; 1985:125ff). Selinge's picture of the Cauldron Grave Horizon is that it comes to interrupt an old local burial tradition (Selinge 1985:140). Later on, the iron bill cauldrons of local origin are attributed to the Cauldron Horizon too. It is explicitly Per Ramqvist's statement that the iron bill cauldron in the primary grave of Mound 4 in Högom (Figure 3) is a typical representative of the burials in the cauldron horizon and dated within roughly the same interval, AD 350–450. Iron bill cauldrons are made of iron currency bars, or bills. These bills are found in different contexts in northern Sweden, mostly as a collection of bars in a hoard; but more rarely they are used in the manufacture of a cauldron. Anyway, the link between the construction of the iron bill cauldron and the currency bars is found to be very interesting, according to Ramqvist (1992:196).

I agree totally, although Ramqvist does not enlarge on the motivating link he finds between them. Therefore, I will draw attention to this cauldron type, but instead clarify their specific *bill construction*.

In my opinion this characteristic bill construction evidently has a link to the all-Scandinavian traditional *wooden tubs*, or stave buckets (Figure 4). A few of them are known in Medelpad, but usually identified only through their resin caulking, while the wooden bill-like staves of the tubs more often than not have decomposed (Shetelig 1912; Ramqvist 1992:130ff and 132 fig. 82).

FIGURE 2. Vestland cauldrons with cremated bones from Kvissle, Njurunda Parish (SHM inv. 15,746) and from Västland, Skön Parish (SHM inv. 17,062), Medelpad. Photo: ATA.

FIGURE 3. Iron bill cauldron and iron bills. Valla, Selånger Parish, Medelpad (SHM inv. 26,185). Photo: ATA.

Further, I do not disagree with Selinge's view that the Cauldron Grave Horizon is interruptive to a local burial tradition. To me, however, the question would rather be how we consider an interruption of a tradition. On this occasion, I prefer to inform new, interruptive objects with a capacity of mutual influences of local and foreign, and call them actants, or partners in a creative process of different changes in a local setting (Sørensen 2000 with references; Cornell and Fahlander 2002 with references).

Thus, it depends on how we conceive of interruptions of traditions, and I think that some consequences of a likely interruption can be discussed. As with the Cauldron Grave Horizon, it is most likely that the cauldron graves in Medelpad are constructed throughout a period of time, and not absolutely simultaneously – does this mean a horizon?

As the discourse is about burials, we can imagine that mourners together with material things are actants in the process of burial construction. I think people made the decisions, communicated through discussions and negotiations, and some of them were also in a position to give orders about how things should be done. Materiality is apt to have strong influences on human thought, action and memory. We can thus see people and objects as actants in a partnership of how acts and material things work together in social processes of change as well as of maintenance.

The Cauldron Grave Horizon in context

Foreign objects have without doubt been brought to Medelpad from far off in different ways. In spite of the low number of imports, Vestland cauldrons, Østland cauldrons as well as glasses are found, and as an exception the vessel from Harv, Attmar (Katalog; Slomann 1950; Lund Hansen 1987:452); (see Figure 5). Vestland cauldrons acquire a noticeable position in the history of Medelpad's Iron Age. This is probably due to their comparatively high figure among a rather small amount of distant objects. The first synthesis of the Iron Age in Medelpad was written by Wencke Slomann (1950 with references).[1] Klas Göran Selinge's thesis, coining the concept of *cauldron grave horizon,* was an important step in the writing of Medelpad prehistory. The mode of classification had its inspiration in the American archaeologists Willey and Philips' analytical model of tradition and horizon (Selinge 1977 with references). The concept of the Cauldron Grave Horizon is a notion recently in use, explicitly in Per Ramqvist's elaborate publication (Ramqvist 1992) on one of the most illustrious Iron Age locations in Medelpad.

Most of the equipment found in these Vestland cauldron cremation graves in Medelpad is also found in other contexts in Medelpad and throughout Scandinavia as well. The only abnormal (sic!) traits Selinge finds with the burials of the cauldron horizon are the cauldrons themselves, and the size of the mounds to which they are attached (Selinge 1977:282ff).

The iron bill cauldrons, on the other hand, are held to be of local origin, although they have hardly been studied. Their function was however initially discussed in relation to salt production (Tholander 1971). But as the cauldron is made out of iron bars, most likely from its vernacular region, it has instead been associated with regional iron production (Ramqvist 1992: 196).

There are close parallels in the cremation burial practices connecting Vestland cauldrons, traditional local wooden tubs, and iron bill cauldrons. The novel use of foreign vessels along with newly created types of vessels combined with a traditional burial custom, cremation, makes a further interesting meeting point among material traits in this geographical setting.

FIGURE 4. Wooden tub from Gödåker, Tensta Parish, Uppland, Sweden, Late Roman Iron Age. Inv. no. 17,698:22. Photo: © Christer Åhlin/Statens Historiska Museum.

Imitations, creolization and hybridization in archaeology

As to the question of how the process of creating new things and forms is approached in archaeology, I confine myself to Eva Stensköld's discussion (Stensköld 2004). She writes substantially on Late Neolithic metal-imitating objects in other materials, such as the copying in stone of metal objects. Among her points is that an artefact becomes an imitation by resembling certain qualities of the original – form, function, surface, colour, or a combination of these qualities. She further states that the act of imitation is not perceived as a passive copying of an object but as a continuing dialogue between artefacts. These imitations are viewed as filling a function wherein they help to prepare society to express social and political processes in a different material, as a way to meet and relate to the new world-view that metal objects implied through their existence. One of the points of importance is that imitations usually are about similarity in form – the same form, but in another material (Stensköld 2004: 59ff and 263f).

All of these points would surely be of consequence to the Medelpad vessels under discussion.

There are, however, other context-specific circumstances to be aware of in the Medelpad setting. Above all, the term *Roman import* is of significance in a discussion of foreign objects and possible imitations of objects. Of special bearing are Vestland cauldrons as they, first, have an established position among Roman imports (Lund Hansen 1987), and second, they are of profound influence to interpretations of the Medelpad Iron Age.

To widen this critical discussion, I would like to relate to a substantial issue emanating from contexts outside "Barbaricum". The point is that terms relating to Roman, especially to dichotomies of Roman/non-Roman, are increasingly problematic to scholars who study interaction and cultural conditions in the Roman territories and provinces (van Dommelen 1997; Webster 1997; 2001). As alternatives the terms of creolization and hybridization are taken up, terms with a background in post-colonial discourses, and in theories of language (for northern Sweden cf. also Loeffler 2005).

From a "barbarian" Scandinavian point of view it is consequently the term *"Roman import"* that is becoming problematic and other approaches are sought after. Only occasional concerns about this have so far been expressed in Scandinavian archaeology. Lotta Fernstål's study of the Apollo Grannus vase from Frycklinge, Västmanland, has an explicit background in post-colonial theories, and discusses the application of the terms hybridization and creolization in a small-scale locale (Fernstål 2003).

This is my general background to an alternative choice of approach. Instead of connecting to the well thought-of idiom of Cauldron Grave Horizon, I thus seek to problematize it by highlighting terms deriving from post-colonial theories and small-scale studies.

A modest suggestion as to how the iron bill cauldron came about

The *hybrid* iron bill cauldrons are indeed objects out of the ordinary. The closeness in principle of construction between iron bill cauldrons and wooden stave tubs is too obvious to be ignored. It is likely that the practice as well as the general form were disseminated from wood to iron. An iron bill cauldron looks like a metal cauldron in the shape of a modified wooden tub. The Högom iron bill cauldron has a diameter about 40.5 cm. and a height of 23.5 cm., making up a volume of 15 litres. The side plates (bills) are seven in number, and one of them is slightly narrower that the other six (Tholander 1971:9). Bills of the cauldron are riveted together, and moreover to a separate bottom piece – this is close to the appearance of the wooden tubs. The iron staves of the cauldron are only slightly broader than the wooden staves of traditional wooden tubs, and the staves of the wooden tubs seem to have been kept together by bands, rather than riveted together.

The course of action of this certain degree of imitation might however have needed another source of inspiration in order to be given a next-to semiglobular cauldron. It might have been the foreign metal cauldrons which gave the

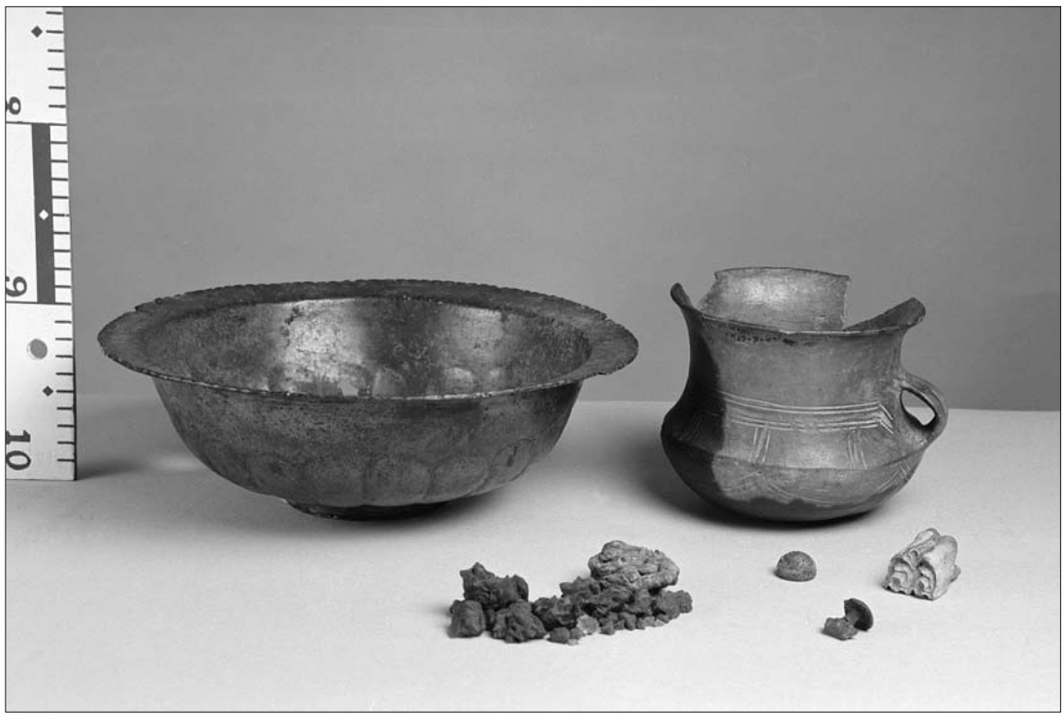

FIGURE 5. Vessel from Harv, Attmar Parish, Medelpad (SHM inv. 1,267). Photo: ATA.

inspiration to construct the iron bill cauldrons, but following standards already familiar to local Northern crafters.

Vestland cauldrons are not imitated in this process, and iron bill cauldrons are not plain copies of wooden stave tubs. Further, we might take a look at the Harv vessel, too. It is appealing to think that its general look as well as its figure could have given some inspiration for the idea of the iron bill cauldrons.

In the iron bill cauldrons there are parallels and similarities in other objects, just as there are mainly innovations in form and not least in material, namely iron – a material extraordinary to vessels as a whole. So I will wind up by suggesting that there were several sources of inspiration for the iron bill cauldron, and that the process of manufacturing was never intended to be like an imitation. Rather, the creators saw an opportunity to bring out a new form of object in a material they were familiar with, and which was of importance to their social and geographical situation in many respects.

The word *hybrid* is thus an appropriate term in an attempt to understand the emergence of the iron bill cauldrons of Medelpad, in their out-of-the-ordinary form and material.

A modest suggestion about the role and effect of the iron bill cauldron of Högom

The iron bill cauldron from Högom is used the same way as are both some of the traditional wooden tubs and some of the new foreign metal cauldrons – namely as an urn (Slomann 1950; Selinge 1977; Ramqvist 1992). The osteologist Elisabeth Iregren interpreted this urn as holding the cremation burial of a probable male individual. The cauldron is lined with birch bark. Cremated bones are placed on the bark, and among the bones were only a collection of small objects, a bone comb, and small fragments of iron and bronze. The grave goods were burnt (Schönbäck 1956; Ramqvist 1992:197 with references).

My claim is further that this iron bill cauldron represents an explicit example of how a hybrid object is used in this setting, and also how it intersects with a traditional burial practice. The iron bill cauldron of Högom Mound 4, assumed to hold a cremated male individual, represents a specific situation in the history of the Högom setting. As part of the cauldron horizon it antedates the later male inhumation chamber tomb of Högom which counts among the high-status burials in Iron Age Scandinavia (Ramqvist 1992), and has been classified in a later horizon of rich inhumation graves (Selinge 1985).

In this specific cauldron burial, local and foreign have overt expressions and meanings through the use of a hybrid form of cauldron. The use of a hybrid form might have had especially strong effects on the notions and practices of how to conceive of and construct burial mounds with urn cremations in this geographical area. The deceased in the iron bill cauldron might have had special effects on the setting, also in a long-term perspective.

To shed some more light on social aspects like these, I will connect to chosen context specific issues related to the discourse on gender. More precisely I use issues from an approach to gender and context as found in Derevenski's consideration of burial sites as gendered locations (Derevenski 2002). The male cremated body with its references in

and its attachment to material objects and structures makes up a specific situation in the history of the Högom setting. A particular meaning is created through the interaction between material objects and the human remains in this particular setting. Högom Mound 4 can partly be conceived of as a setting where space is a medium through which gendered social relationships are negotiated. More exactly it is embodied through the male cremated body integrated with the hybrid cauldron made of local iron products, and inserted in a new type of burial setting, the big mounds (cf. Derevenski 2002:192ff). Gendered practice is thus part of the process of building the Högom mound environment. Further, a gendered value system related to aspects of the vernacular iron production is embodied through the practices connected with the acts of constructing the mound landscape.

The burial with the iron bill cauldron of mound 4 in Högom was one of the first burials in this grave field of big mounds. It is therefore seen as being of importance to the entire idea and practices encircling the huge and long-term project of building the Högom mound setting.

Creolizing the Cauldron Grave Horizon: a critical discussion

Issues in the discussion of the use of post-colonial terms in the "barbarian" world far beyond the Roman and Gaul frontier are, for example: What is creolized? The objects? The contexts? The burial practices?

Together the different types of vessels focused on here illustrate an interesting meeting between local and foreign material culture, and an example of how local burial practices intersect with foreign objects and forms. The development in time of local cremation burial practices is seen as a process of creolization through the use of foreign and hybrid vessels in the burial rites performed in order to construct the cauldron graves of Medelpad. When a new type of object is taken up, the process of cremation burial practices will be partly differently performed than it was with local types in urns, and the display of bones and things in a big cauldron will appear different than it did with smaller urns – cremation burial procedures undergo a process of creolization.

Foreign vessels together with locally made iron bill cauldrons are seen as actants in the processes of altering and changing, not only individual forms in objects, and not only a part of the local burial practices of Medelpad during the Middle Iron Age, but are also actants in the substantial processes of altering the local landscapes, most perceptible and physical through the building of the big mounds in Högom. As such the monumental mounds must also have been regarded as actants in the long-term processes of negotiation and restructuring, and changing. So they were too during their processes of construction, as afterwards, because they together made up substantial rearrangements of the landscape; the mounds structured and influenced many people's actions and thoughts in different ways.

Thus the objects are given an active role in the acts performed by humans, having as their goals, and consequences, processes of more or less profound social changes that touch on relationships at a personal and wider group level, in social and political respects. These aspects concern the creations of differences, both informing and afflicting social groups concerning the distribution and/or reorganization of working tasks according to factors such as age and gender, as well as personal qualities of leadership, social aptitude and ability to cooperate, and different skills. In the context discussed, we consider some of the locales for negotiations and creations of gender. More exactly, it can be understood as an embodiment of a process of creating and communicating male gender in the ways this was associated with the time-specific iron production discourses and with their interrelated fields of contact in Medelpad and adjacent regions.

The assumption that each of the burials of the Cauldron Grave Horizon is constructed on quite different occasions, and by quite different groups of mourners, makes the time aspect a little more visible. We do not know exactly how far they are from each other in time, but the whole group of cauldron burials might encompass at least one hundred years. The different groups and individuals of mourners might have held different attitudes to human bodies, alive and dead, and to interpretations relating to social processes of gender, class, and location, and to the overall situation in the local environment. This might also include attitudes to what male and masculinity was, dependent on the local economic and political context. Against the background of these aspects, we must expect to find different intentions behind the integration of cremated bodies with the individual cauldrons, local or foreign, and with the burial mound setting through time.

Concluding remarks

Selinge's and Ramqvist's interpretations together set me off to conduct the present inquiry, as I saw new potentials beyond their conclusions. Issues are raised about the production of hybrid forms in objects, as an effect of how foreign and local objects can influence each other in the construction of specific new types of objects. The hybrid form of the iron bill cauldron might thus have been deduced from a combination of ideas about the foreign metal cauldron forms and the locally known stave tub construction. The iron bill cauldron of Mound 4 in Högom is focused on as an actant vital to the construction and continuity of the Högom mound landscape.

A few ways of problematizing terms like *Roman import* and the *cauldron horizon* are indicated. Each of the cauldron cremation locales should rather be analysed situationally, and if a questioning of the term Roman import is

about to become important in Scandinavian archaeology, it must be questioned situationally, too.

Cases and approaches in this paper are inclined to characterize only a few aspects of possible processes of hybridization and creolization, of gender, and of social processes in general in Medelpad in this specific phase of the Iron Age. Their aim is rather to draw attention, first of all, to the issue of recognized terms like the Cauldron Grave Horizon and Roman imports. Second, it is to draw attention to an alternative approach to how to deal with foreign objects adopted and incorporated in local practices, and how these can become actants in social processes far away from their areas of provenance.

Abbreviation

ATA = Antikvariskt Topografiskt Arkiv

Note

1 Literature and archive material compiled in Slomann 1950; Biörnstad 1962; Selinge 1977; Ramqvist 1992.

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PETER SKOGLUND

A traveller's view of Migration Period Scandinavia

Jordanes' Scandza and the material evidence

Introduction

IN THE SPRING of 2004 I joined Lars Larsson, his colleagues and Ph.D. students to visit archaeological remains in northern Italy. The dramatic landscape and the interesting history of the country left a long and lasting impression on me.

In a way we made a trip similar to many generations of scholars before us going to Italy to find the "foundations of western civilisation". In the 18th century there was a tradition among northern European humanists to finish their education by going to Greece and Italy to visit monuments and places that were thought of as the birthplace of European civilisation. There are two other areas in the western world connected to these kinds of values: one is Palestine, where the biblical genesis unfolded, and the other is Scandinavia.

The Goths on the Continent during the Migration Period thought of Scandinavia as a region of origin with special stories attached to it, describing the genesis and spread of various Gothic tribes[1] (Wolfram 1988:326; Hedeager 1997; Kaliff 2001:13ff). Our knowledge of this myth is based on the information given in the book *Getica* written by Jordanes in 551 AD. Here we can read the story of the Gothic leader Berig and his crew, who left Scandinavia with three ships and settled south of the Baltic. Jordanes' original text is lost but several copies exist, the oldest dating to the 8th century (Nordin 1997:23f).[2]

In essential parts Jordanes' work is a shorter version of a lost book by the writer Cassiodorus written in 519. Working at the court of Theoderic the Great, Cassiodorus had in turn received the information from earlier written sources and from informants who had knowledge of various geographical areas (Nordin 1997:9ff).

Of special value for those interested in the Scandinavian Iron Age is the description of the Scandinavian peninsula, referred to by Jordanes as *Scandza*. Jordanes' description of Scandza includes a list with notations of different "peoples". Many of these names have been identified with places and regions on the western coast of Sweden and the southwest coast of Norway (Svennung 1964b; Nordin 1997:208f).

The description of Scandza is compiled from various sources, such as books of history and geography, maps and people who knew of Scandinavia (Lönnroth 1972). The Swedish philologist Josef Svennung has identified several different informants or travellers who had provided information about Scandinavia to Cassiodorus (Svennung 1964a:3f).

In recent years archaeologists have used these names of various Scandinavian people to draw important conclusions on political structure and social identity in Migration Period Scandinavia (Callmer 1991; Hyenstrand 1996). However, the perspective of the traveller has tended to be neglected. To understand the structure of the list it is important to analyse it from the point of view of those who provided the information to Cassiodorus.

In this article I will use a historical-archaeological method (Andrén 1998). I will confront Jordanes' record of Scandinavia with the evidence from material culture, and argue that the list of tribes tells us primarily how southern Scandinavia was experienced by people travelling on the sea: *i.e.*, Jordanes gives us the traveller's perspective on Iron Age Scandinavia. With this as a starting point I will thereafter discuss in what way Jordanes' work provides us with information on political and social structures in Migration Period Scandinavia.

Peoples on the Swedish west coast

The more detailed descriptions of various Scandinavian tribes in Jordanes' work are concentrated in two different regions: the west coast of Sweden from northwest Scania to Bohuslän and the southwest coast of Norway (Svennung 1964b; Callmer 1991; Nordin 1997). In this article I will focus on the first region (Figure 1).

The first name that attracts attention is *Theutes,* which probably refers to the inhabitants by the river Tjute, *i.e.*, a district around present-day Helsingborg in northwest Scania. Thereafter Jordanes mentions *Vagoth,* which has been interpreted as the Goths around the Skälderviken just north of Helsingborg. Next in the list is *Bergio*, which must be the people living in what later became the Bjäre Hundred on the Bjäre Peninsula. Then comes *Hallin*, a name identical to the landscape of Halland. In those days the name probably referred to a limited area in the south of Halland, *i.e.*, the plain around the cities of Laholm and Halmstad (Svennung 1964b:74ff; Callmer 1991:258; Lundqvist 1996; Nordin 1997:208; Aspeborg 2002:266ff; Helgesson 2002:154).

Next in the list is *Liothida,* which means "the fertile people". The name refers to the area that later became Luggude Hundred in northwest Scania (Svennung 1964b:77f; Nordin

1997:208; Aspeborg 2002:266ff; Helgesson 2003:154; Wahlberg 2003:198). Instead of a name referring to northwest Scania we would expect here to find a name denoting the area around Falkenberg where there is a settlement district that has been identified by Lars Lundquist and others (Lundqvist 1996:41ff; Nicklasson 2001:139f). Probably the list here is not totally accurate due to mistakes by Jordanes when compiling the list from Cassiodorus' original text.

After having mentioned these tribes Jordanes states, "All their habitations are in one level and fertile region. Wherefore they are disturbed there by the attacks of other tribes" (Jordanes §22). Here one can draw attention to similar attacks carried out in the Kattegatt area about 300 years earlier, at the beginning of the 3rd century AD. From his detailed study of the Danish war spoils finds, Jørgen Ilkjær has been able to demonstrate that the Danish area close to Kattegatt at this point of time suffered several attacks by people coming from southern and western Norway (Figure 2) (Ilkjær 1993:376ff). We do not have similar types of finds from the west coast of Sweden, but Påvel Nicklasson has drawn attention to a find in Östra Karup in southern Halland that might be interpreted as a war spoils find (Nicklasson 2001:138). It is quite probable that the war spoils finds and Jordanes' notion refer to a similar phenomenon – the fertile plains surrounding southern Kattegatt being the target for attacks by people living further north in Scandinavia.

FIGURE 1. Southern Scandinavia with some of the place-names mentioned by Jordanes. The figure illustrates the close connection between these geographical names and a possible sea-route in the Kattegatt area.

Thereafter Jordanes mentions the people of Ahelmil, Finnaithae, Fervir and Gauthigoth. It has been suggested that *Athelmil* originally was two words meaning "and the people of Himle" for the area around present-day Varberg. This identification is uncertain but it would follow the structure of the list that goes from the south to the north (Svennung 1964b:78f; Callmer 1991:260; Nordin 1997:208).

The next name in the list is easier to interpret: *Finnaithae* is the district name Finnveden that during the Viking Age was one of the larger districts in the landscape of Småland (Burström 1991; Callmer 1991:260; Nordin 1997:208; Svanberg 2003; Wallerström 2004). This is not the original extent of Finnveden. During the Migration Period Finnveden probably was a small district in the northern part of what later became the larger Late Iron Age Finnveden. Several cemeteries from the Migration Period mark this district (Andrén 1991a; Nicklasson 2005:133). Finnaithae breaks the order of districts situated close to the sea – this is an inland area. But accepting the proposed location means that the district was situated northeast of *Athelmil* and southeast of the next name in the list, Fervir.

Fervir can be associated with what later became Fjäre Hundred in the northernmost part of Halland (Callmer 1991:260: Nordin 197:208). *Gautigoth* has been interpreted

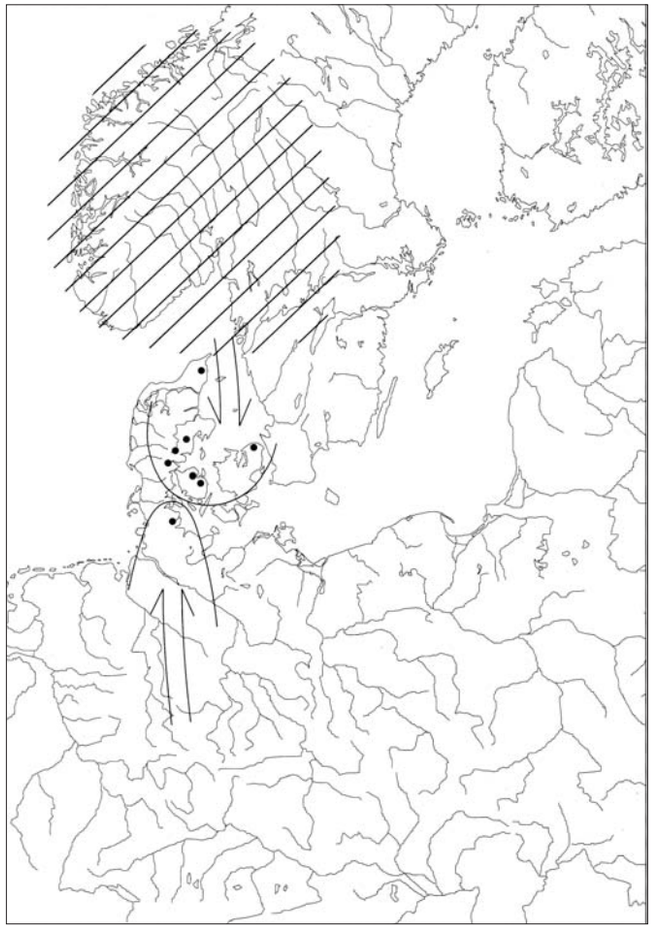

FIGURE 2. Scandinavian war spoils finds from about 200 AD and their probable place of origin (hatched area). From Ilkjær 1993:379.

as "the Goths from the Göta älv" a large river with its inlet close to Gothenburg (Nordin 1997:208). Jordanes' characterization of these people is "a race of men bold and quick to fight" (Jordanes §22). This area is one of those that might be the origin of the people who attacked southern Jutland and Funen in the Roman Iron Age (Ilkjær 1993:376ff; Ringtved 1999:57ff).

Then come the *Mixi*, *Evagre*, and *Otingis*. These names are very hard to interpret, but according to Josef Svennung who studied these names in detail, they probably refer to the coastal area north of Gothenburg, *i.e.*, the area around the island of Orust (Svennung 1964b:81f; Nordin 1997: 208f). Jordanes then states "All these live like wild animals in rocks hewn out like castles" (Jordanes §22). This fits well with the archaeological evidence, since we have now entered a part of Scandinavia where the density of hillforts is very high. These hillforts are generally thought of as being in use during the Roman Iron Age and the Migration Period (Svennung 1964b:82ff; Olausson 1995).

The names I have discussed so far have several features in common. With one exception they were situated by the sea and with one exception located on a north–south axis; their (equal) size is similar to one or a few medieval hundreds; Jordanes' references to war and castles makes sense when compared to archaeological evidence like war spoils finds and hillforts.

The next names in Jordanes' list have a different character, "And there are beyond these the Ostrogoths, Raumarici, Aeragnaricii, and the most gentle Finns, milder than all the inhabitants of Scandza" (Jordanes §23). According to Svennung this passage is compiled from information coming from two different sources where only the information about people in western Scandinavia (the Ostrogoths, Raumarici, and Aeragnaricii) is from the same source as the names discussed above (Svennung 1964b:90).

The *Ostrogoths* are the Östgötar, a people that later on inhabited the province of Östergötland, a large district in eastern Sweden. Even though the extent of the district in the Migration Period is not evident, it is obvious that the district differs from the names hitherto discussed, since it is situated in eastern Sweden. *Raumarici* denotes Romerike east of Oslo in Norway and *Aeragnaricii* refers to Ragnaricii in northern Bohuslän, Sweden. The north–south geographical axis that was so evident earlier is not possible to identify in this passage. The names Raumarici and Aeragnaricii are interesting since the word *rici* actually means kingdom, indicating that we are dealing with greater agglomerations of minor settlement districts (Skre 1998). In accordance with Josef Svennung I find it reasonable that our presumed traveller had no personal experience of those areas that are more generally and randomly described (Svennung 1964b:89).

A traveller's perspective

Reflecting on Cassiodorus' – or rather his informants' – knowledge of Scandinavia, it is obvious that for some regions, such as the Swedish west coast, he had detailed knowledge, of some areas like Östergötland in eastern Sweden he had vague knowledge, and for other areas like in southeast Sweden, he had no knowledge at all.

This kind of geographical knowledge is what one would expect from a traveller. Those places that he or she had visited, the traveller would know a lot about. This applies to the Swedish west coast where the description is accurate and logical. On the other hand, the traveller would know nothing about huge areas since he or she had neither visited them nor heard about them: this would be the case here for southeast Sweden. The traveller would have heard about other places but not visited them – these places would be referred to with names covering large areas. This kind of fragmentary geographical knowledge is well known from later descriptions of Scandinavia: for example, the work of Adam of Bremen in the 11th century (Nyberg 1984:317ff).

Taking this as a starting point, it is possible to reconstruct a sea-route dating to the Migration Period (Figure 1). The traveller most probably started somewhere in the Frankish area following the west coast of Jutland, going through the

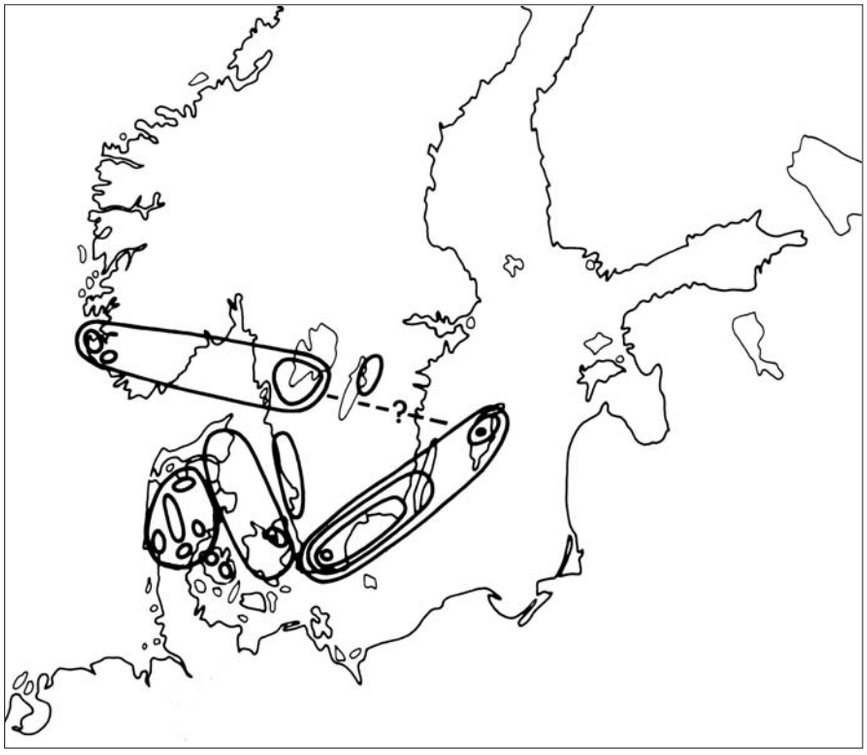

FIGURE 3. The distribution of die-identical gold bracteates in Scandinavia. Notice how they cluster in three different spheres that can be connected with the Baltic, the Kattegatt and the North Sea, respectively. From Andrén 1991:253.

Limfjord (Nielsen 2002; Segschneider 2002), and then southwards to the northern parts of the islands of Funen and Zealand (Näsman 1991). We must assume that Cassiodorus' informant – the traveller – had a detailed knowledge about these areas in present-day Denmark but since Cassiodorus was only interested in the geography of Scandza – *i.e.*, present-day Sweden and Norway – this knowledge was never documented.

The traveller crossed the strait of Öresund between Zealand and Scania at its narrowest spot heading north to southern Bohuslän. Till now the ship had been following the coast, but if it did not go back the same way, it had to cross the Kattegatt. The distance between Bohuslän and Jutland is approximately 60 kilometres and we must assume that the crew rested here before crossing the sea. This would explain why Cassiodorus' informant had some fragmentary knowledge of peoples like the Ostrogoths, Raumarici, Aeragnaricii: while stopping here and waiting to cross the sea they heard about distant people and places they never had visited themselves.

Some thought on political units

Jordanes' catalogue of Scandinavian peoples has been used to identify political units in Scandinavia during the Migration Period. For example, Johan Callmer makes the point that it is possible to detect political units of various sizes ranging from quite small areas to units that must have been a confederation of different minor districts (Callmer 1991: 261).

Looking at the list from the perspective of the traveller, I would argue that the various sizes of the political units reflect primarily the visitor's knowledge of these areas. When there was detailed knowledge gained by a visit to a specific area, the region was described in detail, using a unit that covered an area of one or a few medieval hundreds. When the knowledge was more fragmentary, since the informant had no personal experience to rely on, the region would be described with a name referring to a confederation of several minor units. This implies that the same place could simultaneously be denoted by various names depending upon the person's knowledge and the distance to the region described.

Consequently it is difficult to use Jordanes' list for any wider political interpretations because, when he gives us the detailed information, he does not inform us about the wider political unit, and vice versa. The perspective of the traveller enables us, however, to draw another conclusion that has bearing on the interpretation of the larger political frameworks in Scandinavia during the Migration Period. We must conclude that our presumed traveller never went south of Öresund and hence never entered the Baltic.

Studies taking their starting point in war spoils finds and the distribution of imported goods in the Roman Iron Age and the Migration Period have pointed to the fact that the Baltic and the Kattegatt were two separate spheres of interaction (Andrén 1991b; Ilkjær 1993:376ff). This is reflected in the work of Jordanes where the informants had no knowledge about the area around the south of the Baltic (note 3). The people travelling from the land of the Franks to the Kattegatt area were in need of protection and this was guaranteed by magnates living on manors along the coast. These persons were related to each other in a larger socio-political framework. The strait of Öresund was probably a crucial point and a kind of border between two different political spheres of interaction.

The interpretation of Öresund as a border between two political spheres is underlined when studying the distribution of Migration Period bracteates. Anders Andrén has argued that the bracteates were used as gifts when political alliances were established. This is strengthened by the inscriptions on the bracteates that often contain one or several of the following words: invitation, leek and ale. These words have many meanings, but in this context they seem

to refer to the magnate as a fair person being responsible for the cult and festivals through which alliances were created and maintained (Andrén 1991b).

When studying the distribution of bracteates that are similar – *i.e.*, die-linked bracteates – some interesting patterns are found. Bracteates identical internally but different from the other two regions are distributed in the Baltic area, in the Kattegatt area and in the North Sea area. Bracteates produced in the Baltic area never occur in the Kattegatt area and vice versa. Thus alliances were more commonly created in the area surrounding the Baltic and the Kattegatt areas than between these two areas (Figure 3) (Andrén 1991b). The Baltic as a specific sphere of interaction is also reflected in the spread of the Sösdala style and in the distribution of some types of Migration Period fibulas that occur both in southern Scandinavia and south of the Baltic but rarely in the Kattegatt area north of Öresund (Bitner-Wroblewska 1991).

Concluding words

Jordanes' *Getica* is one of very few written sources describing Scandinavia in the Iron Age. Therefore it has become an arena where linguists, historians and archaeologists can meet, discuss, interpret and reinterpret the information. Jordanes' information about Scandinavia is a complicated piece of work and there are many layers of meaning attached to it. In this article I have tried to confront the written sources with some archaeological evidence of travel and contacts in Scandinavia during the Migration Period.

My conclusion is that Jordanes' Scandza primarily reflects the traveller's or informant's knowledge of an area that he or she only partly knew. It is possible to use Jordanes' information for various purposes: for example, to draw conclusions about political structures, etc. But in doing this, we must first reflect upon what kind of persons Cassiodorus got his information from and what kind of knowledge they had about Scandinavia.

Notes

1 I use Swedish terminology: *i.e.*, the Migration Period covers the time span 400–550 AD.

2 In 1882 the German philologist Theodor Mommsen edited a critical translation of Jordanes' work that since then has been the basis for many other translations (Nordin 1997:23f). Mommsen divided the book into chapters and they are used as a standard when referring to Jordanes' text. The English citations in this article are taken from Charles S. Mierow's English translation of Jordanes' book (1908).

3 Cassiodorus was informed about people living further north in the Baltic, for example the *Svear*, but this information was given to him by other sources than those discussed in this text: see Svennung 1964a and 1964b.

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GÜNTER MANGELSDORF

Remarks about the looped serpentine brooch from the Vendel Period in the Baltic Sea region

ONE OF THE special fibulae from the Vendel Period in Scandinavia is the looped serpentine brooch or snake-shaped brooch. The first pieces were discovered in the 19th century and published by Aspelin (1880) from Finland. At the beginning of the 20th century Stjerna (1906) described these fibulae and divided their forms into three types: a snake with one loop, a snake with double loop and two snakes with one loop each. He believed that the origin of these fibulae was to be found in an ornament figure on bracteates of the Migration Period.

Later Cleve (1928) gave a first compilation of all looped serpentine brooches from Finland. He made a classification of these brooches in stage e1 and stage e2. He divided this phase e2 into the subcategories II:1 and II:2. But this last separation is not convincing. In stage e1 the fibula is formed of one animal (snake). In stage e2 the brooch is made with two snakes. The origin of this kind of brooches is unknown. Later Cleve (1943) derived its form from S-shaped fibulae of the Migration Period in Central Europe. But all this is very unsure. Ørsnes (1966) described the "slange- eller sløjfeformede fibler" in his group L ("Dyreformede pladefibler"). There it is characterized as type L2. Following Ørsnes, finally, Høilund Nielsen (1987) divided type L into the subcategories L2A (one snake) and L2B (two snakes). I propose to divide type L2A into the subtypes a, b and c:

Type L2A is a snake with one head looking to the right. At the head there are one or three eyes and an open mouth. Between the head and the body there is a break. A similar break exists between the body and the tail of the snake. One fibula has an eye at the tail (Gulldynt, Vörå sn., Österbotten). This type can be divided into three groups: L2Aa is a little form (Figure 1:1–2) and L2Ab is a large form (Figure 1:3–4). Brooches of the little form show us snakes with a slightly open mouth. The snakes of group L2Ac have their heads looking to the left (Figure 1:5–6).

Type L2B is usually a large brooch. Two snakes are entangled, looking like a figure of eight. One head looks to the right and the other head to the left. Both of them have one eye. The head is somewhat highlighted. The loops are closed. They have breaks between the heads and also between tails and the double loop. There is a breakthrough at the point, where the necks of both snakes cross (Figure 1:7–8).

Besides the types L2A and L2B there is a special case.

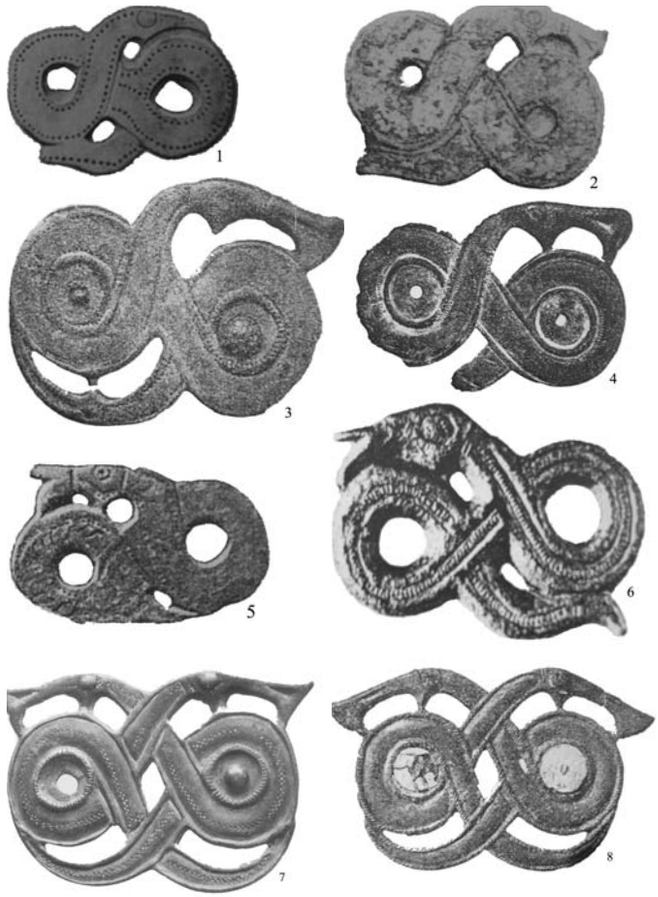

FIGURE 1. Type L2Aa: 1 Trullhalsar (No. 41), 2 Bukkegård (No. 30); Type L2Ab: 3 Gulldynt (No. 3), 4 Hinttala (No. 9); Type L2Ac: 5 Ålsta (No. 31), 6 Ulltuna (No. 42); Type L2B: 7 Levänluhta (No. 22), 8 Harby (No. 36). Photos after: 1 Nerman 1919; 2 Vang Petersen 1991; 3 Cleve 1928; 4 Cleve 1928; 5 Åberg 1953; 6 Arwidsson 1942; 7 Cleve 1928; 8 Arrhenius 1960.

From Gotland (Barshaldershed, Grötlingbo sn.) we know a fibula of type L2Ab which has a tail, shaped like a head, under its left loop.

The surface of the brooches, especially those of type L2B, is decorated with humps in the middle of the loops. The rim ledge of the snake's body is notched or even. On the snake's body there are often one or two lines of pricks and dotted lines; an unusual feature are small triangles filled with points. The eyes of some fibulae are filled with red enamel (Hugg-

by, Vallby sn., Södermanland; Pappilanmäki, Eura sn., Satakunta) and originally the humps in the middle of the loops were covered with white paste (Harby, Ljungby sn., Småland). Some of the fibulae lost these humps (Skogby, Gammelgarn sn., Gotland; Odenslund/ Uppland; Hinttala, Messuby sn., Satakunta, two finds from Gotland with unknown find place).

On the back of the fibula there is a needle holder and the fastening of the needle. The material of the fibulae is bronze. All fibulae were produced in a loam mould. Remains of such moulds were found during excavations at Helgö (Arrhenius 1960: 71, fig. 5; Waller 2002:216f).

The looped serpentine brooch is a product of rural art handicraft. Craftsmen produced them in local workshops. They created the fibulae in equal traditions. In Scandinavia there were three great centres of fibula production: in Norway conical-round brooches, in eastern Scandinavia looped serpentine and quadrangular brooches and in Denmark beak-shaped brooches were produced (Callmer 1984).

All looped serpentine brooches belonged to women's dress. But they were found in men's graves too. We do not know where these fibulae were fastened on the dress. Most of the looped serpentine brooches were found in cremation or skeleton burials; some in hoards. From many fibulae the find circumstance, are unknown.

FIGURE 2. Map showing the distribution of looped serpentine brooches in the Baltic Sea region. Open ring Type L2A, filled ring type L2B.

The origin of the looped serpentine brooch is still under discussion. In Scandinavia there is no direct forerunner of this type of fibula in the Migration and Vendel Period. The snake motif and the 8-loop we know from the art in Animal-style II according to Salin (1904). Such snakes appear for example on a wooden spear from Kragehul on Funen (Engelhardt 1867:5, fig. c). Arwidsson (1942:123) tried to find comparable forms for the 8-loops and animals in snake-form in Western Europe. The 8-loop motif existed at the same time in Nordic and Western European material. Only in the Vendel Period did it become more popular. Prototypes of looped serpentine brooches could be large elongated S-fibulae in England and Norway in the Migration (Gjessing 1934) and early Vendel Period (Arrhenius 1960:85). We have S-fibulae only in Sweden, Norway and Denmark in period VII:1 (550–600 AD) of Iron Age (early Vendel Period), but not in Finland (Lundström 1980:112). The Scandinavian S-fibulae show a close relationship to those in central and southwest Germany (Schmidt 1961; Koch 1967). Finally, Rundkvist (2003:97ff) demonstrated the connection between snake brooch (Ørsnes type L1) and looped serpentine brooch. Snake brooches existed during the same time as looped serpentine brooches. But only his type L1a seems to be related to looped serpentine brooches. The snake had a head and one tail or paw seen in profile. The snake curled into an "S". According to Rundkvist (2003:103), type L2 was the typological descendant of type L1.

There are still many questions about the chronology and dating of looped serpentine brooches. One chance for dating Scandinavian jewellery of the Vendel Period is to examine the relationship to continental material. But the looped serpentine brooch is not typical in the Merovingian Period in Western and Central Europe. The formation of looped serpentine brooches took place in Scandinavia. We have no fixed dates for these brooches, neither for their beginning and development nor for their disappearance. It is not certain whether type L2A existed first and later on the looped

serpentine brooch of the double type (L2B). The former dating of brooches by Nerman (1919) was based on the typological method without absolute dates. The brooch is known from graves in combination with other fibulae and also with weapons. Nerman (1919:48f) and Gjessing (1934:130ff) dated these fibulae to the time from 550 to 600 AD and the latest forms up to 650 AD. These are periods VII:1 and VII:2 in Nerman (1969). According to Nerman, brooches typical of period VII:1 are those formed with only one animal, while those with two are typical of period VII:2. We have no proof for this dating. It is possible that both forms co-existed at the same time. Arwidsson (1942:59) added the looped serpentine brooches to Vendel style D. Ørsnes (1966:207; 223f) linked these fibulae to the south Scandinavian style C in phases 1 and 2 (575–650 and 650–725). In her phase VII:A (550–600) Høilund Nielsen (1991:130, 131, fig. 2) combined looped serpentine brooches L2A and L2B and equal-armed brooches F1A and F1B for the Mälaren region, Bornholm and Öland. She has proposed an absolute chronology for the Late Germanic Iron Age, based on the numismatic dating of continental finds and the occurrence of similar grave goods on the continent and on Bornholm.

In contrast to other fibulae of the Vendel Period, the looped serpentine brooch is very rare. In archaeological papers we find only 39 examples and four still unpublished brooches in museums in Helsinki, Visby and Mariehamn. Most of them were discovered in Finland (Figure 2). Up to the middle of the last century 23 fibulae were known (Kivikoski 1947:44). Today 28 examples are mentioned in Finland. For Sweden I found 12 and from Denmark only two brooches. One fibula was published from Germany. It may be that there are still some unpublished looped serpentine brooches in Scandinavian museums, but it was impossible for me to get a complete overview.

As for the types, 17 brooches belong to type L2A and 21 to type L2B. The rest of our find list is not identified due to the poor condition of the brooches.

In Finland looped serpentine brooches were found especially in Egentliga Finland, Österbotten, Tavastland, Satakunta and in southwestern parts of the country as well as on the Åland Islands. On Gotland we have six, on Bornholm two, on Öland one fibula. The other Swedish find places are in Uppland (3), Småland (1) and Södermanland (1). The distribution in the latter two provinces may have emanated from Uppland and Gotland. The brooch from Germany was found in Vorpommern. We can see the main distribution in Finland.

Type L2A was found in Finland (Österbotten, Satakunta, Egentliga Finland), on Bornholm, on Öland and in Uppland. Only type L2B was discovered in Småland and Södermanland. From Österbotten and Satakunta in Finland we know both types. The same is true for Gotland. So far we have no answer to the question where types L2A or L2B were first produced and developed.

There are different opinions about the origin of distribution. Cleve (1928:5) believed that the fibula was formed on the islands in the Baltic Sea (Gotland and Bornholm) because especially the small forms of type L2A were found there. In his opinion this was the older form. From there these fibulae were distributed to Finland. We have no proof for this argumentation. On the other hand, Cleve marked a part of looped serpentine brooches as Finnish art production by imitation of Swedish forms from Gotland. Arwidsson (1942:59) held that this type of brooch was created at the peak of Vendel style C and D in Sweden.

In southwest Finland we have the greatest accumulation of looped serpentine brooches of both types. Therefore we believe that the fibulae were first produced there. Other centres of production were located on the Swedish mainland (Uppland) and on the Baltic Sea islands. The low degree of distribution in Södermanland and in Småland may be a fact of trade. How the fibula was brought to Vorpommern in northeast Germany is still unclear (Mangelsdorf 2001).

We can resume our discussion by pointing out that there are many open questions about the origin and the progress of the distribution of looped serpentine brooches in the Baltic Sea region.

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List of finds

Abbreviations:

ÅMM = Ålands Museum Mariehamn
GFV = Gotlands Fornsal Visby
MT = Museum Turku (Åbo)
MVFB = Museum für Vor- und Frühgeschichte. Stiftung Preußischer Kulturbesitz. Berlin
NMC = National Museum Copenhagen
NMH = National Museum Helsinki
SHMS = Statens Historiska Museum Stockholm

Finland

1. Folkskolebacken, Letala (Laitila) sn., Egentliga Finland. Type L2B: NMH 2548:588 – Cleve 1928:4.
2. Folkskolebacken, Letala (Laitila) sn., Egentliga Finland. Type L2B: NMH 2496:197 – Cleve 1928:4.
3. Gulldynt, Vörå sn., Österbotten. Type L2A: NMH 8562:1 – Cleve 1928:4, 6, Figure 4.
4. Hattelmala, Tavastehus lands f., Tavastland. Type L2B: NMH 8615:2 – Cleve 1928:4.
5. Hattelmala, Tavastehus lands f., Tavastland. Type L2B: NMH 8615:4 – Cleve 1928:4.
6. Hattelmala, Tavastehus lands f., Tavastland. Type L2B: NMH 8615:1 – Cleve 1928:4, 9, Figure 9.
7. Hattelmala, Tavastehus lands f., Tavastland. Type L2B: NMH 8615:3 – Cleve 1928:4.
8. Hiukkavainionmäki, Vittis (Huittinen) sn., Satakunta. Type L2B: NMH 3149:88 – Cleve 1928:4. Figure 3
9. Hinttala, Messuby (Messukylä) sn., Satakunta. Type L2A: NMH 5351:39 – Cleve 1928:5,
10. Jussila, Tiihala by, Kangasala sn., Satakunta. Type L2A: NMH 6369:55 – Cleve 1928:4, 3, Figure 2.
11. Jomala, Gölby, Lagneskärsbacken (Åland). Type L2B: ÅMM 325:3 – unpublished.
12. Kalmumäki, Kallela by, Nykyrko (Uusikirkko) sn., Egentliga Finland. Type L2B: NMH 8339:212 – Cleve 1928:4.
13. Kalmumäki, Kallela by, Nykyrko (Uusikirkko) sn., Egentliga Finland. Type L2B: NMH 8339:173 – Cleve 1928:4.
14. Kalmumäki, Kallela by, Nykyrko (Uusikirkko) sn., Egentliga Finland. Type L2B: NMH 8339:180 – Cleve 1928:4
15. Kalmumäki, Kallela by, Nykyrko (Uusikirkko) sn., Egentliga Finland. Type L2B: NMH 8780:21 – Cleve 1928:4.
16. Kalmumäki i Kallela, Kalanti sn., Egentliga Finland. Type L2A: NMH 9365:701 – Cleve 1943:77.
17. Käräjämäki, Eura sn., Satakunta. Type L2A: NMH 2001c:2 – Cleve 1928:7, Figure 5.
18. Käräjämäki, Eura sn., Satakunta. Type L2B: NMH 2995:gr. 7 – Cleve 1928:4; 9, Figure 8.
19. Karholannokka, Vesilaks (Velilahti) sn., Satakunta. Type ?: NMH 9249:1 – Salmo 1938, Pl. 30, 5.
20. Kjuloholm, Kjulo (Köylliö) sn., Satakunta. Type L2B: NMH 10955:63 – Cleve 1943:44f, Figure 169.
21. Larsas Kvarnbacke, Saltvik sn., (Åland). Type L2B: ÅMM 336:22 and 337:381 (2 fragments of one fibula?) – Kivikoski 1963:17.
22. Levänluhta, Storkyro (Isokyrö) sn., Österbotten. Type L2B: NMH 2441:3 – Cleve 1928:4, 8, Figure 7.
23. Norrgård, Saltvik-Syllöda (Åland). Type L2A: NMH 4624:15 – unpublished.
24. Päiväniemi, Lempäälä sn., Satakunta. Type L2B: NMH 3304:21 – Cleve 1928:4, 10, Figure 11.
25. Pappilanmäki, Eura sn., Satakunta. Type L2B: NMH 8811:1 – Cleve 1928:4, 8, Figure 6.
26. Ragnsby, Saltvik sn., (Åland). Type L2B ?: ÅMM 187:16 – unpublished.
27. Raimola, Virmo (Mynämäki) sn., Egentliga Finland. Type ?: NMH 12916 – Cleve 1943:7.
28. Ribacken, Saltvik sn., Syllöda (Åland). Type L2B ?: NMH 4624:15 – Kivikoski 1934:386, Figure 9.

Denmark

29. Bækkegård, Osterlars sn., Bornholm. Type L2A: NMC – Jørgensen 1990:33, 133: Pl. 22, 7.
30. Bukkegård, Bornholm. Type L2A: NMC ? – Vang Petersen 1991: Figure 5p.

Sweden

31. Ålsta, Uppland. Type L2A: SHMS ? – Åberg 1953: Figure 191.
32. Gotland. Type L2A: SHMS 5909 – Nerman 1969: Pl. 108, 914.

33. Gotland, Grötlingbo sn., (?). Type L2A: SHMS 9866 – Nerman 1969: Pl. 13, 106.
34. Gotland. Type L2A: GFV A1643 – Nerman 1969: Pl. 13, 107.
35. Barshaldershed, Grötlingbo sn., Gotland. Type L2A: GFV C 8498:1.
36. Harby, Ljungby sn., Småland. Type L2B: SHMS 25151 – Arrhenius 1960:71: Figure 6.
37. Huggby, Vallby sn., Södermanland. Type L2B: SHMS 20139:80 – Arrhenius 1960:70, Figure 4.
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39. Öland. Type L2A: SHMS ? – Stjerna 1908:159, Figure 67.
40. Skogby, Gammelgarn sn., Gotland. Type L2B: SHMS 5648 – Nerman 1969: Pl. 108, 915.
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42. Ulltuna, Uppland. Type L2A: SHMS ? – Arwidsson 1942: Figure 55.

Germany

43. Nehringen, Kr. Nordvorpommern. Mecklenburg-Vorpommern. Type L2B: MVFB Ic 4226 – Petzsch 1935: Pl. 8c.

MICHAEL MÜLLER-WILLE

Four Viking Age boat burials in comparison

Gausel – Scar – Kiloran Bay – Balladoole

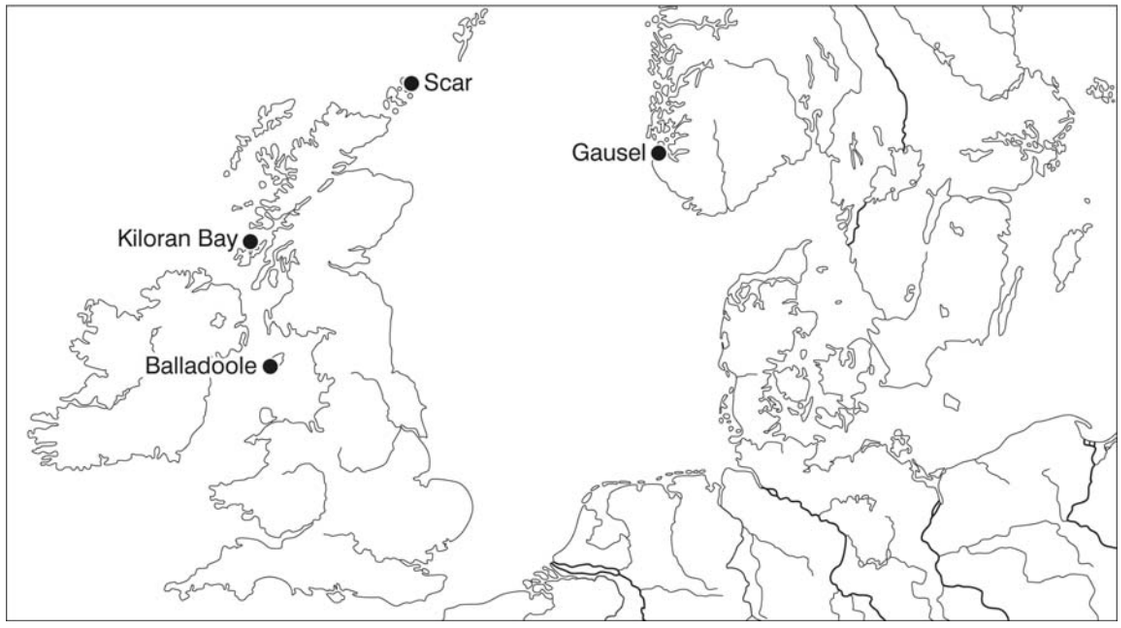

FIGURE 1. Location of boat graves described in the text: Western Norway and British Isles.

Introduction

IN AN ESSAY published posthumously, Egil Bakka has described and analysed a richly furnished woman burial of the early Viking Age (Bakka 1993). By way of introduction he states: "In 1883, at Gausel in Hetland, Rogaland, inland from the Stavanger settlements on the west side of Gandsfjorden, Samuel S. Gausel found a grave from the Viking Age with the matchless collection of antiquities of Norwegian and Irish origin that goes under the name of the Gausel find." The remains of this grave, denoted in specialist literature as the "grave of the Queen of Gausel" (*Gauseldronningens grav*) or "grave of the Queen" (*dronninggrav*), was rediscovered more than a hundred years later in large-area excavations from 1997–2000 (Børsheim and Soltvedt 2002).

Before I return on the woman burial as a significant attestation of western Scandinavian–insular relations, I will compare the boat graves which have been discovered during the excavations, especially the construction A-3751, to three other boat burials of the insular area and put them into the western Scandinavian–insular context (Figure 1).

Gausel

The woman burial as well as the three boat graves were situated south of Gausel on the northern and eastern slope of the Husaberg, which has a height of 90 metres, within a loosely distributed group of nine verifiable grave constructions. The largest part of the burial place is located in the woodlands of Gausel, lying lower and a little off to the east; ninety grave structures and clearance cairns have been discovered and excavated there (Børsheim and Soltvedt 2002:19 fig. 7, 178 fig. 142). They are primarily burials of the Viking Age.

The three boat graves in the western part of the cemetery were positioned in an area between 65 and 75 m. above sea level and approximately 750 m. west of Gandsfjord, a fjord leading in a wedge-shaped form from Stavanger to Sandnes, which, at the latitude of Stavanger, merges into a passage to the open Atlantic Ocean north of Randaberg (Børsheim and Soltvedt 2002:10 figs. 1 and 3).

The excavator Ragnar L. Børsheim has only recently published a thorough documentary and analysis of the undisturbed boat grave A-3751 (Figure 2), excavated in 1999 (Børsheim 2002/03; cf. also Børsheim 1999; Børsheim and Soltvedt 2002:194ff). The results of the excavation he sum-

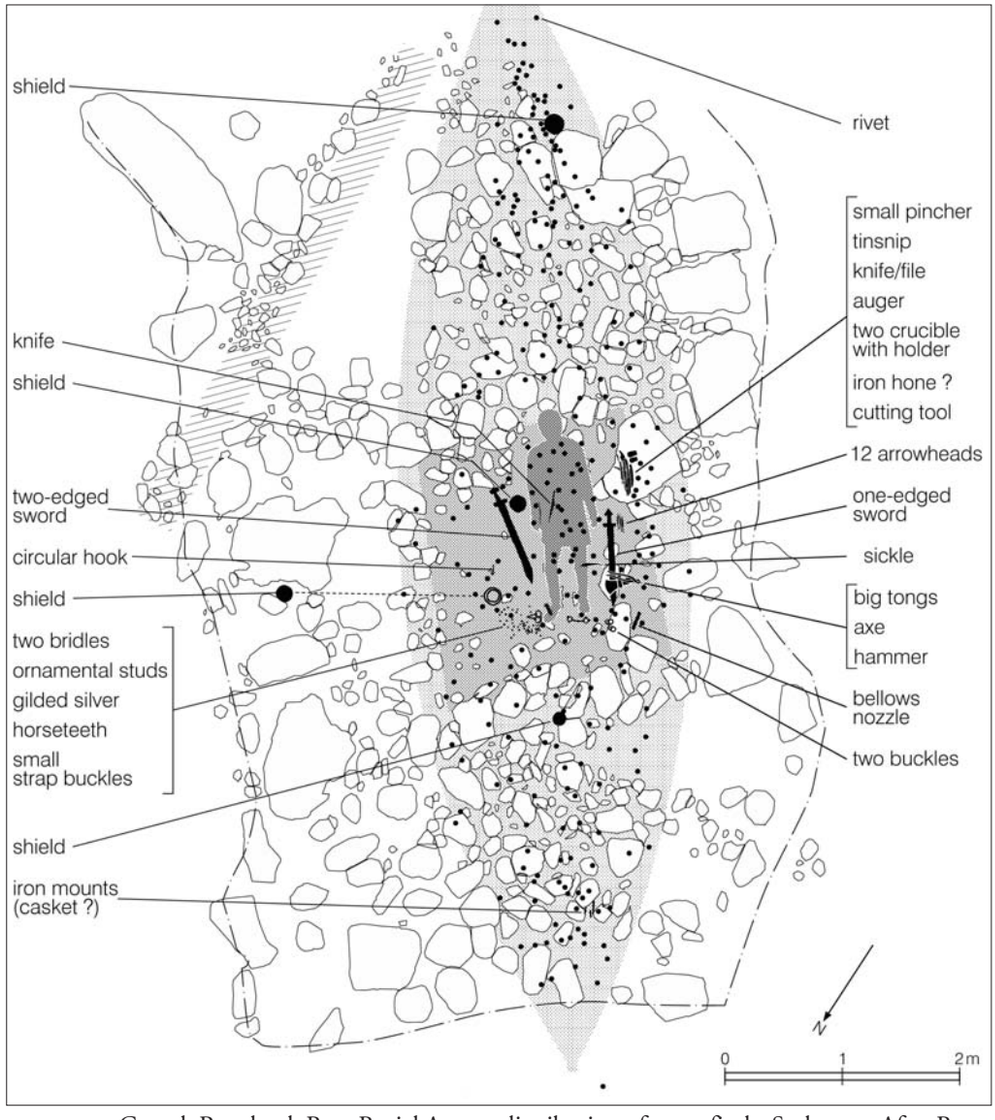

FIGURE 2. Gausel, Rogaland. Boat Burial A-3751, distribution of grave finds. Scale 1:70. After Børsheim 2002/03.

marizes as follows: "Boat burial A-3751 belonged to a group of three grave mounds already levelled some time about 1860. Fortunately only the upper layers of stone and soil were removed then, leaving – due to the unusually thick layer of humus in this field – the burial layers intact, so that the artefacts were found in situ. The boat burial can be described as follows: About 850 AD a man was laid down in a vessel, which was 9.8 m. long (detected by more than 600 clench nails), dressed in his finest clothes, furnished with two swords, probably two axes, four shields, twelve arrows, knives, a comprehensive set of smithing tools (*e.g.* hammer, tong, tinsnip, crucibles) as well as woodworking tools (*e.g.* auger, iron file), a horse's head with one prestigious bridle-bit (together with ornamental studs and buckles representing a headstall) and one everyday bridle-bit of iron. The deceased was a man of rank and status, belonging to a wealthy elite with political and (due to his grave goods) economical connections to Western Europe and the continent" (Børsheim 2002/03:140).

The distribution of the finds shows that the man was buried in the centre of the boat, on his back with his head pointing south-south-east. The boat had been laid down on the earth's surface in a south-south-east to north-north-west direction and covered with a mound built of earth and stones, originally 2.5 m. in height and approx. 15 m. in diameter.

According to the excavator, an almost square area of 2 x 2 m. became visible in the centre of the boat. In this area, the stones were generally smaller and more dispersed than in the surrounding parts; most of the grave-goods were found within it. A kind of wooden chamber may have been built of planks, surrounded by stones (Figure 2). Moreover, in the south-eastern corner of the stone covering of the boat burial, measuring 7.6 x 5.1 m., a stone was found, 2 m. in length, which probably had formerly stood in an upright position ("bauta stone").

The grave-goods also consisted of remarkable weapon equipment, as they included two long weapons, namely a double-edged sword of type H and a single-edged one of

the type C, besides an axe, twelve arrowheads and four shields. This complex of grave-goods does not only represent the furnishings of a warrior – the spear is missing however – but also the vessel's equipment (shields). The double-edged sword was lying on the right-hand side of the deceased, the single-edged one on his left, where also the arrowheads (in a quiver?) and an axe were to be found.

At the dead man's feet, two bridle-bits, 87 small ornamental rivets with tin knobs and beaded silver rims together with the piece of ornamented gilded silver and a row of horse teeth were found (reconstruction: Børsheim 2002/03:134 fig. 8). The horse harness with a bridle-bit with bronze rings and the headstall strap decorated with small silver rivets and gilded silver mounts – a prestigious harness indeed – is seen as an imported item of western (Celtic) provenance. The same goes for the damascened blade of the double-edged sword, probably of continental origin (most recently Martens 2006:222–226).

On the left-hand side of the deceased, along his lower and upper body, items of smith's and carpenter's work were deposited and additionally a sickle. Following the rows of the clench nails, the boat probably had had six strakes from the keel up. A vessel of this size was usually moved by eight to ten oarsmen (Norw. *femkjeiping, tiæring*). It must have measured at least 9.8 m. in length (Figure 2). The boat as well as the burial with the appointed grave-goods has been demonstrated several times in impressive reconstructions by the excavator (Børsheim 1999: fig. p. 7; Børsheim and Soltvedt 2002:209 fig. 169; Børsheim 2002/3:137 fig. 10; www.gausel.no, April 2006). Instead of presenting a grave chamber, he marked the centre of the burial with a floor of planks and an ornamented ceiling.

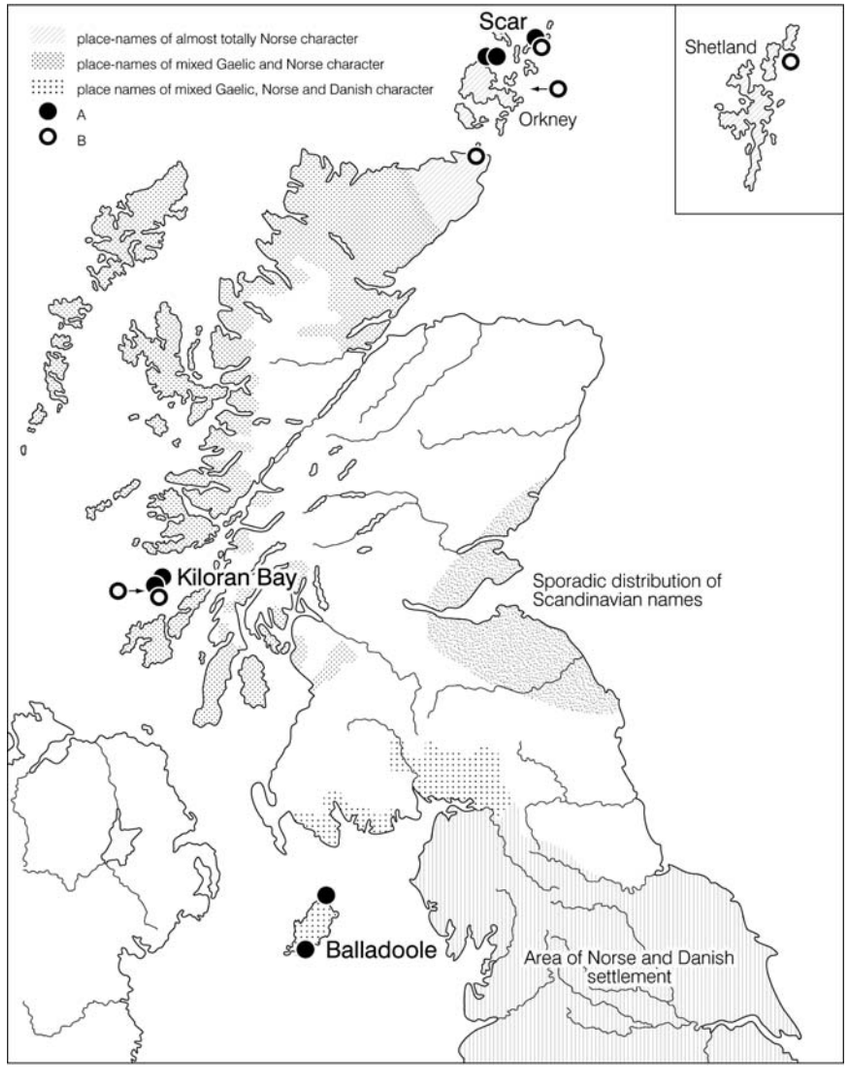

FIGURE 3. Distribution of Viking boat graves in Britain. A Certain grave, B Uncertain grave. After Graham-Campbell and Batey 1998; Müller-Wille 2002.

After the accurate analysis of the furnishings, the excavator came to the conclusion that the burial of a single individual – a man from the highest social classes of the Viking Age in Rogaland – had been constructed in the middle of the 9th century (Børsheim 2002/03:126ff with figs. 2–5), according to the find of a mineralized beetle sometime between May and September around 850 AD (*ibid*.:131).

Another grave had been unearthed situated close by the burial described above (Burial A-3298), which had been severely disturbed. About 300 clench nails give evidence of the existence of a boat where a male individual had been interred. The deceased had been equipped with weapons such as a double-edged and a single-edged sword, as well as a shield, an axe and arrows. Due to the fragmentary state of the artefacts, the burial can only very generally be assigned to the Viking Age (Børsheim and Soltvedt 2002: 212ff).

The third boat burial (Burial A-2346) was found around 60 m. north of the other two entombments. It had also been severely disturbed. Only around 70 rivets and nails could be recovered. Fragments of two shield buckles indicate a male burial of the early Viking Age (Børsheim and Soltvedt 2002:218ff).

Of the very few boat graves which are known from the insular sphere – these being eleven sites with either verified or assumed grave structures (Figure 3) – three are to be taken into closer inspection, as their furnishings include male equipment from the second half of the 9th century or the time around 900, and, taking this into account, they are more or less synchronous or one or two generations younger than the boat burial at Gausel described above. In contrast to the boat burial (and another two) at Gausel, which

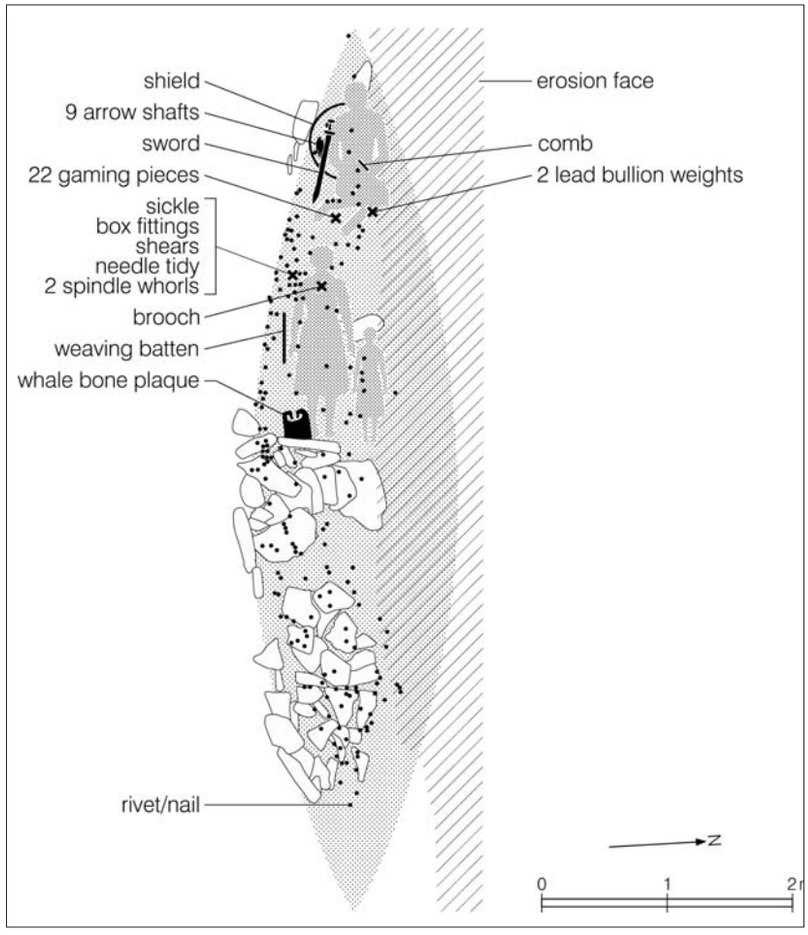

FIGURE 4. Scar, Orkney. Boat burial, distribution of grave finds. Scale 1:70. After Owen and Dalland 1999.

belong to the complex of a major burial ground, the graves at Scar, Kiloran Bay and Balladoole are to be seen as singular monuments, at least as far as the present state of research is concerned.

Scar

In the year 1991, a boat burial was unearthed at Scar on the coast of the North Sea on the island of Sanday, which belongs to the Orkney Islands (Graham-Campbell and Batey 1998:138f; Owen 1999:30ff; Owen and Dalland 1999). One part of the 7.15 m. long clinker-boat built of oak wood had already been eroded, yet it was possible to recover a major part of the grave-goods (Figure 4). The boat had been positioned in west–east direction in a dip, lying parallel to a low sandy cliff. The position of about 300 remaining rivets and nails allows the conclusion that it was a vessel with ten to twelve planks, which had probably been equipped with six rudders (Norw. *sexæring*) (Owen and Dalland 1999:40 fig. 29; cf. Graham-Campbell and Batey 1998:147 fig. 8.1).

In the western and central part of the boat the remains of three individuals were discovered, of a man more than thirty years of age with his head pointing west and in a crouching position on his left-hand side in the western part of the boat, which was probably the stern, and then, lying next to each other close to the centre of the boat, a woman, more than seventy years of age and a ten-year-old child, both on their backs and their heads also pointing west. The eastern part of the boat was filled up with stones. The space inside the boat had been divided into two by the insertion of a large stone slab. This slab was set on edge across the width of the boat and formed the eastern edge of the burial chamber, as the authors call it, which occupied two thirds of the interior of the vessel (*ibid.*:27).

The man had been provided with a sword, most likely of the type H; the lower guard was plated with alternating vertical strips of silver and brass, as well as nine arrow shafts and with eight arrowheads, very likely in a quiver (and with a bow?), and probably also a shield. The weapons lay on the right-hand side of the deceased. Of the further furnishing there are a comb, two lead weights and 22 gaming pieces remaining, which had all been deposited at the dead man's feet (Figure 4).

Of the preserved grave-goods which could be attributed to the male burial, none are of insular origin. All the artefacts point to Scandinavia. Additions to the three-dimensional reconstruction of the inhumation, suggested by Christina Unwin, are a ringneedle pin, bracelet, axe, knife and other objects which had originally not been passed down (Owen and Dalland 1999:150 fig. 105). Mineralized remains, found adhering to some metal objects, show that the bodies were buried fully dressed, in clothes made out of different types of textiles. Similarly, items made out of wood, textile and leather had also been added to the reconstruction, such as the cloth bag, the leather pouch, the latter probably containing the gaming pieces, as well as blankets and pillows.

The woman had been furnished with the following objects: a large, equal-armed brooch of gilded bronze with adornment of high quality, a comb, sickle, weaving batten, a whalebone plaque ornamented with an animal head and additionally – probably kept in a small chest – shears, a needle tidy containing two needles and two spindle whorls (Figure 4).

The child – the small amount of bone fragments not allowing its sex to be discerned – was apparently buried without any objects whatsoever. The relation of the three persons of very different age is not known. The problem of the multiple burial is precisely illustrated by Olwyn Owen in the main publication as follows: "At Scar, given the age difference, it seems most unlikely that the man and the woman were married … these three people either drowned

together or perished from some disease at around the same time" (Owen and Dalland 1999:157).

Comparing the weapon equipment of the male burial in the boat at Scar and that at Gausel (Figures 2 and 4), it is only in the addition of a sword and the arrowheads that close accordance is to be seen; at Scar, both had been laid down on the right-hand side of the deceased. The swords of type H with metal plating on the guards, deposited in both grave constructions, do not allow a closer chronological assessment of the burials.

The equal-armed brooch, the adornment of which shows both elements of the gripping-beasts and Borre style, and the whalebone plaque with animal-head pattern, are to be assigned to the 9th century. It is supposed that both objects became part of the grave-goods as heirlooms and antique objects, not until the end of that century or in the decades around 900 (Owen and Dalland 1999:60ff; 73ff). Both have their closest parallels in Scandinavia, especially in western and northern Norway (*ibid*.:70 fig. 49).

The conclusion: "The almost entirely Scandinavian nature of the find seemed at first to indicate that the grave was that of early settlers, perhaps dating from around AD 850 – but the picture is not so clear-cut. Our best guess, on the basis of the style of the artefacts and the radiocarbon dates, is that the grave dates to sometime between 875 and 950" (*ibid*.:88). Other archaeologists suggest the end of the 9th century, when the first generation of settlers reached the Orkney Islands (Graham-Campbell and Batey 1998:140).

Kiloran Bay

The boat burials of Kiloran Bay and Balladoole west of the British mainland are apparently contemporaneous with the boat grave at Scar (Figures 1 and 3). In contrast to the furnishing of Scandinavian imprint at Scar, the grave-goods of the two latter graves include objects of insular and continental origin, which show the existence of contacts outside the Scandinavian realm.

In 1882, Malcolm McNeill, a man without archaeological expertise, discovered and researched a burial in the dunes of Kiloran Bay on the north-western coast of the island of Colonsay. A year later, William Galloway, an architect and well-known amateur archaeologist, conducted another excavation at this site, of which he made two reports and two drawings (Bill 2005:347 figs. 3–4).

The grave was discovered near Kiloran Bay, an ideal landing place for shallow plank-boats (Graham-Campbell and Batey 1998: photograph on book cover). The precise location of the grave is unknown, but it was situated in the southern part of the dunes overlooking the beach (Bill 2005:346 fig. 2). The site at Scar, underneath the sandy cliff directly borders the Atlantic Ocean, is more dramatic by far.

The following artefacts have been passed down from this burial: a sword, a shield, a spear, an axe, two arrows, a pan with an iron handle, a chest, a pair of scales with a set of weights, three Anglo-Saxon coins (stycas), among these two perforated coins minted by Aethelred II between 841 and 844 and by Archbishop Wigmund of York between 837 and 854 and a third illegible one, furthermore a silver cloak pin, three knives, a bit, a bronze-mounted harness and a horse with a girth buckle (Bill 2005:345 and 348). All the finds, apart from the horse, were placed within an east–west oriented, stone-built enclosure, reported to be rectangular in shape and measuring around 4.05 by 2.5 metres. At each end of the enclosure a slab with a crudely incised cross was found (*ibid*.: 348). The remains of the deceased himself show him to be a strongly built, more than 40-year-old man of modest height.

Already Galloway came to the conclusion that the 130 nails and nail fragments found within and east of the enclosure were due to the former existence of a boat, which, as he supposed, had been put upside down over the grave as a roof. Consequently, it was considered to be an inversed boat grave.

Graham-Campbell and Batey (1998:122) have listed a row of counter-arguments and rejected the interpretation of Galloway. They see the grave as a parallel to the contemporary grave of Balladoole on the Isle of Man.

After the analysis of the remaining nails Jan Bill came to the conclusion "that a boat was probably present in the grave as the only item containing many nails and that it was standing on its keel and that it was of modest size not exceeding an overall length of 12 m." (Bill 2005:356). Although he does not offer an answer to the question whether the boat had been placed underneath or on top of the grave, he favours the opinion that the burial was situated inside the boat. Accordingly, the isometric depiction of the artist Alan Braby shows the inhumation of a man with his furnishings and the associated horse burial inside a boat (*ibid*.:349 fig. 6). The supposed position of the enclosure as a kind of chamber grave in the centre of a boat reminds us of the boat graves at Gausel and Scar with the burials of a man and an old woman as well as a child within a space right in the centre of the boat free of stones (Figures 2 and 4). Evidently, there were two slabs with an incised cross used for the western and eastern narrow side of the enclosure in the boat grave at Kiloran Bay, which probably had been taken from a Christian cemetery close by. The position of the objects is partly documented on the basis of drawings. In the south-western corner of the enclosure lay a male individual of 40 years of age, judging by his teeth, flexed on his left-hand side and with his head pointing to the east. Behind his back and his head, an axe, shield (conical boss covered with cloth) and a sword with silver-plated knob (type?) were deposited, and in front of him at the height of his torso with a pair of scales and enamel-decorated lead weights (Graham-Campbell and Batey 1998:120 fig. 7.4), at his feet fragments of an iron-handled pan. Obviously near the western narrow side of the enclosure, a spear was to be found. Find spots not recorded were those of two

arrows, an iron horse bit, a silver cloak pin, three knives and a chest or a large casket with a hinge.

Bronze harness mounts with finely incised decoration were found in the north-eastern corner (Paterson 2001:128 fig. 11.2). Outside the eastern end of the stone setting, in the prow or the stern of the vessel, a horse had been placed with an iron girth-buckle beneath its belly. Some time after the excavation, three Anglo-Saxon stycas were found within the enclosure.

Alan Braby has put forward a reconstruction in which the position of the assured objects, as far as they have been documented, have been taken into account (Bill 2005:349 fig. 6; shown reversed image). Just as in the isometric representation of the boat burial at Scar, he added various objects, especially wooden receptacles.

There is no doubt that the set of harness mounts in the boat grave at Kiloran Bay are of insular workmanship with four ornamental studs, most closely paralleled by the bridle from the boat grave at Balladoole on the Isle of Man. This also applies to the shield boss. The three Anglo-Saxon stycas and the decorated weights are of insular origin as well. The coins offer a terminus post quem for the deposit of the grave-goods in the boat grave at Kiloran Bay: "The coins in this grave establish that the earliest possible date for the occasion of the burial would have been the mid-ninth century, but the overall nature and the range of the grave goods suggests that this took place somewhat later, towards the end of the century – or even *c.* 900 – at a similar date therefore to that which now seems most probable for the closely comparable Manx boat-grave at Balladoole" (Graham-Campbell and Batey 1998:122).

Balladoole

The boat grave at Balladoole was excavated by Gerhard Bersu from 1944 to 1945. He had been the director of the Römisch-Germanische Kommission in Frankfurt and a refugee from Nazi persecution in Germany, who was interned as an enemy alien on the Isle of Man (Krämer 2002:72f). While researching the Iron Age enclosure of Chapel Hill (Camp Keeill Vael) west of Castletown and Balladoole House and north-east to the rocky foreshore of Bay ny Carrickey, he came across the burial mound, hardly perceptible on the surface, on the highest part of the 30-metre high fortified hill farthest to the east, south of the gate construction (Bersu and Wilson 1966:1ff, fig. 2; Wilson 1973).

The structure contained a boat burial. According to the position of more than 300 iron nails and rivets the excavator came to the conclusion that a clinker-built boat of about 11 m. in length and 3 m. in width had been laid down in north-eastern–south-western direction in a shallow trough and covered with a shallow oval mound of earth and stones, of which the big edging stones give the impression of an arrangement of stones representing the form of a ship (Figure 5). Near the south-western end of the mound a rectangular stone enclosure was to be found, probably built for a grave marker standing in upright position, in the manner of a bauta stone, as is also presumed for the boat grave A-3751 at Gausel (Figure 2). The stone enclosure was covered with an earth embankment, in which incinerated bones of horses, cattle, pigs, sheep/goat and cats were scattered (Richards 2004:80f). The emplacement of the grave structure on a hill is also comparable to that at Gausel, which allows a view of the nearby fjord or, as in Balladoole, the sea, namely the Bay ny Carrickey of the Irish Sea (Richards 1991, plate 8).

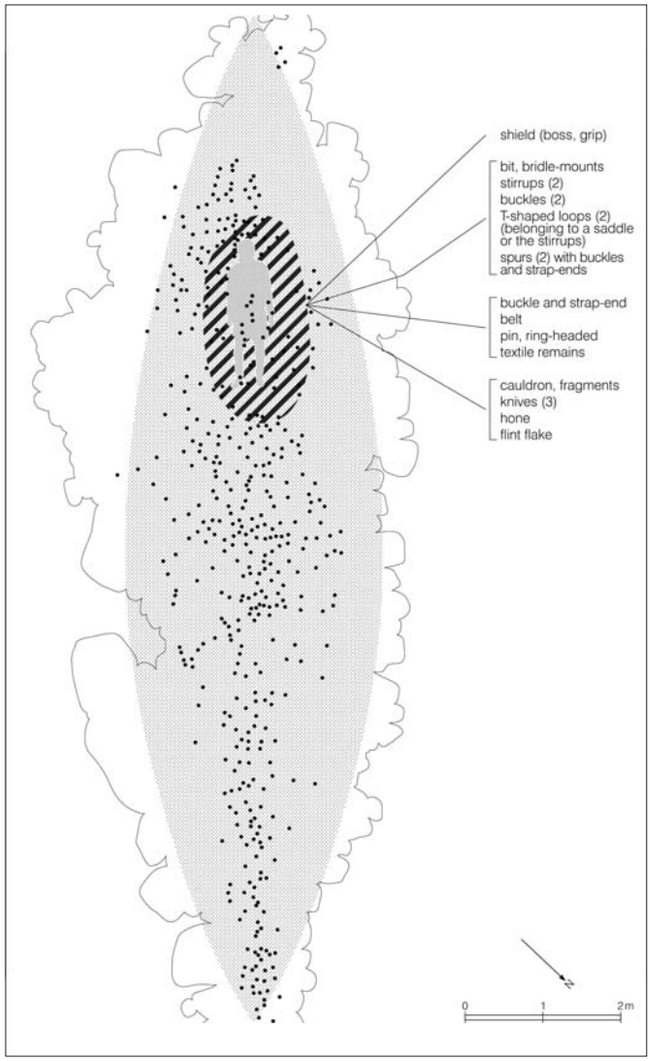

FIGURE 5. Balladoole, Isle of Man. Boat burial and earlier Christian burials. Scale ca 1:100. After Bersu and Wilson 1966; Richards 1991.

On the southern end of the boat the remains of two inhumation burials were revealed (Figure 5). An adult, probably a man (individual 1), lay on his back, his head to the south-west and his arms along his body (Bersu and Wilson 1966:5 fig. 4; Richards 1991:105 fig. 64).

The excavator assigns all the artefacts found in the south-western part of the boat to the deceased (Figure 5). Without any furnishings, according to him, another person (individual 2) had been interred, probably a grown-up woman

(Bersu and Wilson 1966:4ff). Another two skulls obviously derive from older interments of a Christian cemetery with stone cists (Figure 5).

The grave-goods comprise the following objects (Bersu and Wilson 1966:14ff with figures; Müller-Wille 2002): shield (buckle, grip, fragments of nails), snaffle and ornamented bronze mounts of the bridle, two stirrups, an accessory for the stirrups and/or the saddle, two spurs with accessories and personal belongings (belt buckle, strap end, a ring-headed pin and remains of textiles) as well as everyday objects (fragments of three knives and an iron cauldron, whetstone and a flint strike-a-light). The grave-goods, generally speaking, were no longer in the position in which they had originally been deposited, but there seemed to be no trace of grave robbery. Most of the objects have been found over the whole length of the man's body (individual 1) and near him (Bersu and Wilson 1966:7f).

David Wilson wrote a summarizing overview concerning the geographic provenience of the objects, the chronological assessment, the burial custom and its form as well as the boat (Bersu and Wilson 1966:84ff). He divided the grave-goods according to their provenance as Celtic, *i.e.* insular, as well as Scandinavian and continental objects. As a reference for the dating of the objects he gave the period from 850 to 950, albeit showing a clear tendency to limit the interment to the years between 850 and 900 due to the foreign continental objects (spurs with accessory, belt buckle and strap end) (*ibid.*: 87). He has affirmed this dating several times (Wilson 1973; 1974:22ff; 1976:104; 1995:43). A matching chronological assessment – mid-ninth century or shortly afterwards – has been put forward by Detlef Ellmers (1970) in his thorough review of the monograph by Bersu and Wilson, in which he also refers to his point of view concerning the question of the boat's reconstruction – in his opinion the distribution of the rivets and the nails indicates a boat of 13–14 m. in length (Figure 5) – and the settlement history of the Isle of Man. In more recent surveys of *Viking Age England* and *Viking Scotland*, Julian Richards (1991:104ff) and Anne Ritchie (1993:78) do not confer upon the chronological assessment of the boat burial at Balladoole any further, while James Graham-Campbell and Colleen E. Batey wrote their overview *Vikings in Scotland: An archaeological survey* (1998:111), in which they clearly favour the opinion "that the most lavishly equipped pagan graves in the best locations, to be identified with those of the primary settlers, are not likely to date much earlier than about 900".

The strap buckle and strap end with chip carving decoration from the boat grave at Balladoole – foreign objects from the Carolingian realm – belong to a group of plant-ornamented metalwork, of which the major part originates from the northern and eastern neighbouring areas of the Carolingian empire, in the centre of which only a quarter of all finds are to be located due to the state of sources. A small amount of finds from hoards, graves, settlements and single finds is known from England and Ireland, primarily in the region between Dublin and York (Müller-Wille 2002:304 fig. 6; Wamers 2005:115 fig. 39). In contrast to the latter, the insular objects show regional centres of distribution in the northern part of the British Isles; this also applies to the shield, the plain-ringed pin and the bridle with its ornamented rivets (Müller-Wille 2002:301f, figs. 4–5).

Comparison and conclusion

Verified and presumed boat graves of the Viking Age are, as has already been mentioned, known from more than ten sites in the north and the west of the British mainland. As such, the three boat graves at Scar, Kiloran Bay and Balladoole treated in this essay represent three regions: Shetland, Orkney and Caithness, as well as the southern Inner Hebrides with the islands of Oronsay and Colonsay between Islay and Mull on the west coast of Scotland, and finally the Isle of Man in the Irish Sea (Figure 3). The groups of islands belong to an area of Norwegian settlement, as is shown by the tradition of place-names. While on Shetland, the Orkney Islands and Caithness (north-eastern Scotland) only place-names of Norwegian origin have come down to the present day, the western coast of Scotland with the Western Isles is marked by a mixture of place-names of both Gaelic and Norse character. From the south-west of Scotland and the Isle of Man, also Danish place-names are known (Fellows-Jensen 2000; Owen 1999:53 fig. below).

The boat in the grave at Scar measured about 7 m. in length (Figure 4). The vessels in the graves at Kiloran Bay and Balladoole were larger and longer – 11 to 12 m. or even more. The boat at Balladoole (Figure 5) has been compared with the large longboat from the ship burial at Gokstad by Ellmers (1970:220), though he is not clearly decided whether it was imported from Scandinavia or been natively built. The boat from the grave A-3751 at Gausel (Figure 2) had similar dimensions to the vessel from Kiloran Bay and Balladoole or, to mention an example only very recently excavated, the boat in an incineration interment dated to the 10th century at Egge i Steinkjær, Northern Trøndelag (Sørheim 1997:28ff). It is most likely that all of these vessels were rowing boats (Børsheim 2002/03:134f).

The funerary rites as well as the grave-goods of the insular boat graves, of which three have more closely been inspected in this essay (Figure 1), show very close relations to western Scandinavia. In that region, by contrast, there is a larger amount of find assemblages, most of all burials, with insular metal objects, which have reached the Norwegian coast from around 800 onwards (Müller-Wille 2002a; 2005 with supplementing literature). The boat grave A-3751 and the "grave of the queen" at Gausel also belong to these find assemblages. Among the grave-goods of the boat grave, a horse harness was to be found (Figure 2), which is seen as an imported item of western (Celtic) provenance. The woman burial, situated about 200 m. south-east of the boat grave, has rendered a considerable amount of insular finds,

such as a bridle with richly ornamented mounts of gilded bronze, a bronze hanging bowl, three drinking horns with mounts of tinned bronze, two fragments of a decorated bronze plate of a reliquary and a ring of jet.

The old and new finds of this opulently equipped grave, positioned within a stone setting, to which more than 40 artefacts can be ascribed, has been thoroughly described by Børsheim several times and documented in a reconstruction of the interment (Børsheim 1997; 1998; 1999; Børsheim and Soltvedt 2002:179ff). He affirms the suggestion of the dating by Bakka, that the female grave dates from the mid-9th century, furnished with insular (Irish) objects, which had been gathered in the period from 830 to 850. During this period, according to Bakka (1993:302), "Irish annals tell how Viking activity in Ireland in this period was characterized by large, well organized operations led by men of royal lineage". The richly furnished female burial and its grave-goods of exceptional quality at Gausel indicate that the interred was a member of the aristocracy, if not even of the royal Irish-Norwegian family which took Dublin as its base for lordship over the Norwegian territories in the west.

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ANDERS ANDRÉN

A petrified patchwork

The rune-stone at Karlevi and the early history of Öland

IN THE YEAR 1900, the first volume of the corpus *Sveriges Runinskrifter* was published, covering the rune-stones on the island of Öland. The first monument to be presented in this volume was the rune-stone at Karlevi in Vickleby parish, and the editor Sven Söderberg emphasized that he had deliberately chosen this stone as number one because of its extraordinary qualities (Söderberg 1900:14ff). Unlike other rune-stones on Öland it is situated close to Kalmarsund (the strait of Kalmar) and far away from the historic villages on the island. Whereas the other rune-stones on the island were memorials, the rune-stone at Karlevi was placed in front of a mound where the commemorated man was buried, according to the text. Unlike all other rune-stones on the island, which are made of flat limestone, the rune-stone at Karlevi consists of a rounded boulder of foreign origin. The inscription commemorates a certain Sibbe Foldarsson, who is described as a sea warrior ruling over land in Denmark, although Öland was part of Sweden in the Middle Ages. The monument was raised by the dead man's companions and not by his relatives which was the common pattern. Part of the inscription is written in *dróttkvætt*, which was a panegyric skaldic metre later used by Icelandic poets. Besides, the inscription includes a unique but partly damaged text in Roman script.

This alien monument has been described and interpreted since 1634 (Söderberg 1900:14ff; Jacobsen and Moltke 1941–42:471ff). Because of all its foreign traits the rune-stone has usually been interpreted as a monument to a chieftain who happened to die on his ship, and whose housecarls buried him on the closest shore (Söderberg 1900:27). Some envisage that Sibbe Foldarsson had taken part in the more or less mythical battle at Fyrisvallarna in Uppland around 980 (Söderberg 1900:34ff), or that he had been on a raid along the Swedish coast, and died in the strait of Kalmar on his way back to Denmark (Moltke 1976:265; cf. Lund 1991). Only a few voices have questioned the common interpretation, and pointed out that the concept of "Denmark" might have had a different meaning on the rune-stone at Karlevi than in later medieval contexts (Rafn 1856:177ff; Erikson and Strid 1991:44ff). This objection opens up for interpretations inserting the monument in more local Ölandic contexts. However, even in such interpretations all the foreign elements of the monument must be considered.

The site and the stone

In 1634 the rune-stone was located in a meadow belonging to the village of Karlevi. However, the border with the neighbouring parish of Torslunda and the next village, Eriksöre, is situated only some 50 metres north of the rune-stone. This division of land dates from a radical re-organization of villages and fields in the 13th and 14th centuries on southern and central Öland (Fallgren 2006:171ff), which means that the spatial context in previous periods is unknown.

The connection between the rune-stone and the village of Karlevi is therefore ambiguous and a relation to the village of Eriksöre is as likely. Interestingly enough, the meanings of both place-names may have implications for the location of the rune-stone (Erikson and Strid 1991:44ff). *Karlevi* means "the sanctuary of the karlar", and "karl" stands for either "free man" or "warrior". *Eriksöre* derives from *Eriksrör*, meaning "the cairn/memorial of the absolute ruler". Both place-names are probably older than the rune-stone, but their meanings indicate central places to which the runic monument may have been related.

The rune-stone is placed only some 300 metres east of the shoreline and the site of a small harbour used until the late 19th century (Figure 1). The former harbour belonging to the village of *Eriksöre* is now silted up, but the remains of a small island located about 150 metres from the shore are still visible. The island and the old harbour are also marked on maps from the 18th and early 19th centuries. Thus, the harbour was well protected behind this small island, which is unusual along the west coast of Öland. No geophysical investigations have been carried out at the site, but it could have been used as a harbour even in the Viking period, because the displacement of sea level is minimal in this region.

In 1634 the rune-stone was placed in front of a mound with kerbstones. Another similar mound was situated nearby. In the 18th century the site became arable land and the two mounds were successively destroyed. However, in 1822 parts of the mound by the rune-stone were still preserved, and it could be described as a round barrow with kerbstones, 20 ells (about 12 metres) in diameter (Söderberg 1900:16ff). Excavations in the early 19th century in one of the mounds, though from which of them is unknown, revealed a cremation grave for a woman. It contained iron rings, nails, rivets, rings of bronze, opaque glass, beads of glass, fragments

FIGURE 1. The rune-stone at Karlevi and a neighbouring small harbour in 1885 (after Söderberg 1900:15).

of a glass vessel and two oval brooches (Sjöborg 1824, figs. 52–54; Svanberg 2003:265). The oval brooches belong to the specific type Petersen 51, which is generally dated to the middle and the second half of the 10th century. It is one of the most common types of oval brooches known from Iceland to the Volga, including several other examples from Öland (Jansson 1985:174f, 181ff). The material of the rune-stone has been difficult to determine. The boulder has been described as granite, sandstone or "coming from Norway". Recently it has been investigated more thoroughly and identified as porphyritic andesite from the region of Oskarshamn, some 80 kilometres north of the site on the western side of Kalmarsund (Forslund 2001:339f).

The local context of the rune-stone does not favour an interpretation as a memorial to a man who happened to die on his ship nearby. It must have taken a long time to collect the boulder and execute the inscriptions as well as to build the mounds and bury at least two persons, indicating a more permanent relation to the site. The meanings of the neighbouring place-names indicate a strategy of placing the monuments close to central places on the island. The fact that the monuments were still preserved in the 17th century – and not immediately destroyed after the funeral – also indicates that the dead man and his retinue were actually based on this site. Instead of being a result of a casual visit, the memorial can be put into another context, with a chieftain based at a harbour on the west coast of Öland.

The inscription and the man

The inscription consists of nine rows of runes and two partly damaged lines of Roman script (Figure 2), all placed vertically on the stone, and alternately read up and down, in a *boustrophedon* fashion. The runic text is divided into two parts, one skaldic verse in six lines to the left, and one prose text in three lines to the right. Both parts begin at the same spot, marked out by two crosses at the bottom of two lines. The two lines of Latin text are placed on the back of the stone, in relation to the runic text. One line is marked by a cross, whereas the other is marked by a small T-shaped symbol (Söderberg 1900:14ff). Apart from the Roman script, the layout of the inscription has good parallels in Danish rune-stones from the second half of the 10th century, such as the monuments Sønder Vinge 2, Bjerregrav 2 and Skivum (Jacobsen and Moltke 1941–42:119f, 134f, 170f). The rune-stone has been dated to the late 10th century or about the year 1,000, due to the language and the use of the younger Danish futhark, in which the R-rune was no longer used (Söderberg 1900:28; Jacobsen and Moltke 1941–42: 473f).

The short but partly damaged prose text reads "This stone is placed after Sibbe the good [or: the goði Sibbe], Foldar's son, and his retinue placed the stone on …" (Palm 2004: 279ff). The man who is commemorated in this text bears the common Scandinavian name Sibbe or Sæbbi, short for Sigbjörn. The same personal name is known from the famous rune-stone at Rök in Östergötland as well as from two rune-stones at Øster Marie on Bornholm (Jacobsen and Moltke 1941–42:449ff). The name is also present in several place-names, such as Sibbarp, Sibberup, and Sebberup, known from southern and western Scandinavia (Skåne, Halland, Västergötland, Sjælland, and Jutland). On Öland, the longer form Sigbjörn is present in the place-name Seberneby in the far south of the island (Hallberg 1985:46). In contrast to Sibbe, his father's name Foldar is totally unknown in Scandinavia. However, it has been pointed out that the name is similar to German/Saxon Foldger and Anglo-Saxon Fulder (Söderberg 1900:34; Jacobsen and Moltke 1941–42:650). Due to the historical context of the late 10th century, an Anglo-Saxon name is most probable, which means that Sibbe Foldarsson could have had an Anglo-Scandinavian background. His origin thus resembles that of many of the first moneyers in Denmark in the late 10th and early 11th centuries, having Anglo-Saxon, Scandi-

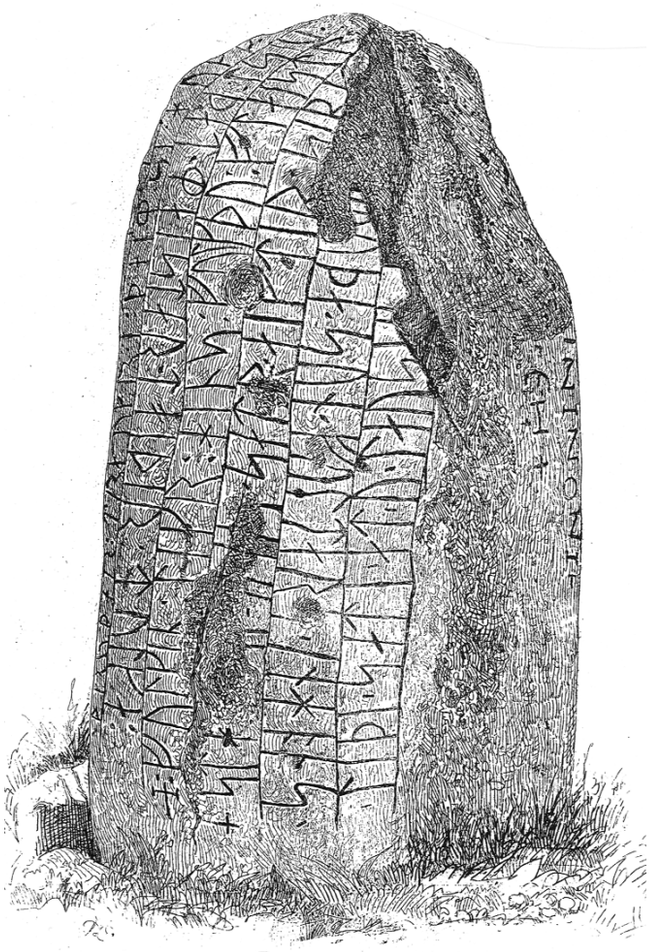

FIGURE 2. Runes and Latin letters on the rune-stone at Karlevi (after Söderberg 1900:24–25).

navian or Anglo-Scandinavian names (cf. Jacobsen and Moltke 1941–42:557ff).

The word "good/goði" is disputed. It could either be the epithet "good" known from several rune-stones in the 10th and 11th centuries, and designating the honourable and respectable qualities of a lord (cf. Herschend 1998). Or it could be the title *goði*, meaning a person connected to a god, originally signifying a pagan priest. In Iceland the title was also used for chieftains. In the case of Karlevi both interpretations are possible, although the small crosses and the Latin text speak in favour of the epithet "good" (cf. Jacobsen and Moltke 1941–42:475), making Sibbe Foldarsson into a respectable lord.

The longer runic text is the oldest securely dated poem written in the skaldic verse form *dróttkvætt*. This skaldic metre probably originated from the courts of Norwegian rulers, and was later used by Icelandic skalds as well. However, word-forms in the text at Karlevi indicate that the skald was from southern Scandinavia. The *dróttkvætt* was highly complex, with alliterations, internal rhymes, and several levels of metaphors (kennings). A literal translation of the poem reads: "*The tree of the Thrúdr of hostilities* [The warrior], whom the greatest deeds accompanied – most knew that – lies hidden in this mound. A battle-strong, more unharmful *Vidurr of the chariot of the huge ground of Endill* [sea warrior] will not rule over land in Denmark" (Whaley *et al.* 2002:104f).

The beginning of the poems, which contains a clear reference to the former mound behind the rune-stone, has two good Danish parallels. At Gunderup in northern Jutland a rune-stone from the second half of the 10th century was placed in front of a mound, and the runic text mentions that the dead couple was buried in the barrow. At Tryggevælde in Sjælland the text on the rune-stone states that the widow made a ship in honour of her dead husband, *i.e.* a ship-shaped stone-setting. In both cases there are close relations between text and monument, as at Karlevi. In all three cases the rune-stones were not only memorials, but actually marked the graves of the commemorated persons. Similar close relations between rune-stone and grave are also known from famous Danish sites such as Jelling, Bække and Glavendrup (Jacobsen and Moltke 1941–42:66f, 54f, 248f).

The meaning of the term "Denmark" on the Karlevi stone is not totally clear-cut. From a handful of references to Denmark, the Danish realm, Danes, North-Danes and South-Danes, Niels Lund has recently studied the meaning of the concept in the 9th and 10th centuries (Lund 1991). He argues that the Danish area in principle was divided in two parts by the Store Bælt. The western part, including Jutland, and possibly Funen and the small islands in between, was connected to the North-Danes and the expression "the Danish realm". The eastern part was related to the South-Danes and the concept of Denmark, meaning "the border land of the Danes". This region included at least Halland, Skåne, Sjælland, and the islands south of Sjælland. Lund's interpretation can be further strengthened by the expression *Danmarkar auka* (Denmark's increase), used by the skald Bragi Boddason in the 9th century, when he referred to the myth of Gefjon, and how she carved out Sjælland from lake Mälaren with a plough and four oxen (Snorri Sturluson 1987:7). The general interpretation of Niels Lund is also convincing, since a similar division of the structure of royal Danish power is clearly visible much later in the Cadastre of King Valdemar from about 1230 (cf. Andrén 1983). However, he has difficulties in explaining the occurrence of "Denmark" on the Karlevi stone and on a rune-stone in central Jutland. This indicates that the concept was more fluid than his basic division provides for. A possible solution is that "Denmark" was not a strict geographical region at that time, but instead designated where South-Danes ruled. Only later, in the 11th and 12th centuries, did the concept become a general term for the Christian Danish realm, and thus become a more stable geographical term. Consequently, "land in Denmark" where Sibbe Foldarsson ruled in the late 10th century could have included Öland or parts of the island.

The Latin inscription on the back of the stone at Karlevi has resisted any convincing interpretation, since it is too

damaged. However, most scholars regard the inscription as contemporary with the runic text, due to the letter forms, the similar cut marks and the cross and T-shaped symbol at the bottom of the two lines (Söderberg 1900:36f; Jacobsen and Moltke 1941–42:474, 476). In respect to these two symbols both lines should be read from bottom up, as a parallel to the runic texts beginning with two crosses. In that case the two lines read "HE …" and "INONIN …". The second line could possibly be interpreted as an abbreviated and partly misunderstood start of a Christian prayer in Latin "I[N] NOMIN[E] …" ("In the name of …"). Similar misspellings are known from early medieval inscriptions in Denmark, such as INNIOMMH DII and INOMNEDM (cf. Carelli 2001:446). If this interpretation is correct, the Latin inscription at Karlevi is the oldest existing Christian prayer in Scandinavia, indicating the presence of a priest, who may have dictated the Latin text to the rune carver. Thus the rune-stone at Karlevi can be regarded as a memorial where Old Norse and Christian expressions were used side by side.

The investigation of the monument and its texts clearly show that the rune-stone at Karlevi can be put into many different contexts. Together with two mounds, it was placed close to a small harbour and two villages recalling earlier central functions. The stone itself came from about 80 kilometres north of the site, whereas the layout of the place with a rune-stone in front of a mound had clear parallels among aristocratic – and even royal – monuments in the Danish area in the 10th century. The woman buried together with the chieftain – or in the nearby mound – could have come from anywhere in the Northern world, whereas the skald might have been from southern Scandinavia and the priest certainly had a non-Scandinavian origin. The dead man himself had probably an Anglo-Scandinavian background, but ruled as a "sea-warrior" over "land in Denmark". The question is how this cultural patchwork on Öland in the late 10th century can be interpreted.

Sibbe Foldarsson, Öland and Denmark

The presence of Sibbe Foldarsson on Öland in the late 10th century can be interpreted as an expression of Danish expansion in the Baltic. He may have been connected with the Danish royal family, establishing some kind of Danish power in the strait of Kalmar and on the island. The expression "land in Denmark" speaks in favour of a link to the Jelling dynasty, since these words are otherwise only known from royal rune-stones or from rune-stones with royal titles such as "landman" (cf. Lund 1991). A royal connection is also indicated by the character of the monument, with parallels in Jelling and Bække, and by his possible Anglo-Scandinavian background, being similar to the royal moneyers in Denmark. Thus Sibbe Foldarsson can be interpreted as chieftain controlling the strait of Kalmar in alliance with the Jelling dynasty. He may have established his power after conquering the island/parts of the island, or after negotiating with the islanders, offering protection against other possible enemies.

This Danish presence on Öland in the late 10th century can be put into a larger context, by looking at the history of the island in longer-term perspectives. Öland clearly stands out as a distinct region in the period 200–650, with its unique ring-forts, dense agrarian settlements and spectacular gold hoards (*e.g.* Herschend 1980; Näsman 1981; Fallgren 2006). The island most probably was an independent political unit during that time. However, Öland must have been a contested province, since it was situated by the main sailing route along the east coast of the Scandinavian peninsula. Parts of the island could have been conquered to control the strait of Kalmar, or the islanders could have been allied with other regions in order to create a balance of power.

Öland is mentioned for the first time around 870 in the description of the Baltic voyage of Wulfstan (Lund 1984:22 ff). He writes that *Gotland* as well as *Eowland* (Öland), *Meore* (Möre), and *Blecingæg* (Blekinge) belonged to the *Sweon* (Svear) at that time. However, this rule of the Svear does not seem to have been particularly old. Studies of animal art and female brooches indicate how alliances and political affiliations changed back and forth in the region from the 5th to the 8th centuries (Andrén 1991; Høilund Nielsen 1991). Die links between identical gold bracteates indicate close aristocratic contacts between Skåne and Öland in the 5th and early 6th centuries (Andrén 1991). Female brooches from the second part of the 6th century instead underline alliances between Öland and the Svear in central Sweden. However, female fibulas from the 7th and first half of the 8th centuries indicate renewed close ties between the island and southern Scandinavia (Høilund Nielsen 1991).

A spectacular boat grave at Nabberör, at the northern tip of the island, points once again towards central Sweden and the Svear in the early 8th century (Fallgren 2001:33ff). Unfortunately, the regional character of the female dress disappeared in the 8th and 9th centuries, making it difficult to trace alliances during that period (Høilund Nielsen 1991). However, the boat grave in the far north of Öland may have marked the starting point of Svear domination of the island, which was later expressed as a political "belonging" in Wulfstan's account around 870.

The presence of Sibbe Foldarsson on the west coast of Öland in the late 10th century may consequently be regarded as the start a new period of Danish influence on the island. The character and duration of this dominance is difficult to specify, but there are indications that it did not stop with the death of Sibbe Foldarsson. Only some 7 kilometres south of the Karlevi stone, the first stone church on Öland was built at Resmo around 1080–1100 (Boström 1999). The church was erected at a very central place on the island, with vast burial grounds, and close to Gynge, later the site of the general assembly of Öland (Andrén 2002). Although the island is full of suitable limestone for mason-

ry, the church was partly built of imported tufa stone from Denmark. Besides, the exterior of the apse and the doorways have good parallels in contemporary stone churches on Sjælland (Boström 1999). This indicates a strong Danish presence at a very central place on the island still in the late 11th century.

Maybe this presence can be connected with the obscure concept "eydanir" (island-Danes) which was used in the 11th century. Arnórr jarlaskáld described the Norwegian king Haraldr Harðráði (1047–1066) as "Eydana"-injurer in a memorial poem from about 1067 (Snorri Sturluson 1987: 144). According to *Knytlinga saga* the concept can be also related to Ásbjörn "Eydanajarl" who was politically active in Denmark from the middle of the 1070s until his death in 1086. In a skaldic verse by Markús Skeggjason the Danish king Erik Ejegod (1096–1103) is furthermore mentioned as an "Eydana" ruler (Guðnason 1982:139ff, 307). The concept is usually regarded as a reference to the many islands in present-day Denmark. However, it may be related to the basic division that Snorri Sturluson draws between Reiðgotaland and Eygotaland. According to him Reiðgotaland was Jutland and the Scandinavian peninsula, whereas Eygotaland was all the Baltic islands belonging to either the Danish or the Swedish realms (Snorri Sturluson 1987:151). Therefore "eydanar" could refer to those Danes who came from Öland (Eyland), in accordance with the rune-stone at Karlevi, stating that Sibbe Foldarsson ruled over "land in Denmark". If this interpretation is correct, Danish rule over Öland was established in the late 10th century and lasted until at least around 1100.

It is difficult to establish precisely when Öland became a part of the Swedish realm, but the island was not included in the first survey of Swedish provinces from about 1120, the so-called Florence list. In a recent study of the region in the 12th century, Nils Blomkvist (2005:301ff) argues that the lacuna can be explained by the fact that Öland was ruled by West-Slavonic Vends in the 1120s, possibly in an alliance with the Polish and Danish royal families. In 1123 the Norwegian king Sigurd Jórsalafari launched the Kalmar *ledung* against the region around the strait of Kalmar, probably in an alliance with the Duke of Schleswig and the King of Novgorod. Blomkvist regards the Kalmar *ledung* as the end of the mixed rule on Öland (Blomkvist 2005:301ff).

Unfortunately, the political history of Öland is obscure in the following decades, due to lack of sources. The first positive signs that the island actually was a part of the Swedish realm appear only in 1178 (Blomkvist 2005:335ff). However, as late as in 1170 a Danish raid was launched against Öland, demonstrating prevailing Danish interests in the island. At that raid the Danes also encountered "Estonian pirates" operating from the island. Blomkvist argues that a consequence of these attacks and the unclear political situation was that the old ring-fort of Eketorp was re-established as a Swedish military garrison in the south of Öland during the period *c*. 1170–1220 (Blomkvist 2005:335ff; cf. Borg 2000). Jan-Henrik Fallgren, on the other hand, maintains that it was only in the 1170s that Öland became a Swedish province, as a result of a direct conquest (Fallgren 2006:181).

No further attempts were made by the Danes to reconquer Öland, but Danish influences on the island continued. At Hulterstad a three-aisled basilica was erected in the early 1170s, clearly modelled on Danish churches (Boström 1999). Blomkvist goes as far as to interpret the church as a memorial of the Danish raid in 1170. At the re-used ring-fort of Gråborg a church was built in the late 12th century, with the royal Danish saint Canute as its patron (Blomkvist 2005:335ff). And still around 1230 the Danish royal family owned property on the island. The village of Istad in central Öland is listed as "Sigridlef" (Danish royal property in Sweden) in the Cadastre of King Valdemar (Aakjær 1926–45; Axelsson *et al*. 1996:77f). An echo of the Danish interests on Öland is also present in the mythological narratives of Saxo Grammaticus in his *Gesta Danorum* from the early 13th century. He writes about a king of Öland being allied with Danish kings, and later how the island was made tributary land to Danish kings and how it was raided by Danish kings (Saxo Grammaticus 2005).

Öland was clearly a distinct province with its own identity, but it was also a contested region for many centuries. The long and narrow island was situated at a key position along the sailing route between northern and southern Scandinavia. There was therefore an ongoing struggle for external control of the island and the shores of the strait of Kalmar. With respect to this history of conflicts, the famous rune-stone at Karlevi can no longer be regarded as a "casual monument", but must be interpreted as a small, but significant, thread in the early history of Öland.

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JÖRN STAECKER

Decoding Viking art

The Christian iconography of the Bamberg Shrine

IN THE FAMOUS painting from 1882 by Carl Gustaf Hellquist showing the sacking of the Hanseatic town of Visby by the Danish King Valdemar in 1361, there is an intriguing detail in the lower middle section. Behind the central scene with a desperate and angry-looking couple, we can see a woman who is uncovering a square-shaped object meant to be delivered to the king as a tribute. Hellquist worked in Munich from 1877 and he is especially known for his historical paintings, integrating objects of different origins in his paintings. The item being uncovered by the woman is obviously a shrine and it is very possible that we can identify it as the Bamberg Shrine, an object decorated in Viking Age animal style (Figure 1). The shrine was acquired in 1860 by the Bavarian National Museum in Munich and it is this object which inspired Hellquist to put it in a historical context which had nothing to do with the real past.

FIGURE 1. The Bamberg Shrine (after Kristjánsson 1992: fig. 5).

We cannot blame Hellquist for his way of mixing up archaeological objects with historical events. But the strange thing is that we actually know very little about the Bamberg Shrine, an object produced during the Viking Age. The object is also called the "Kunigunde Shrine" because of the supposed connection with Queen Kunigunde, wife of the German Emperor Heinrich II (973–1024). According to the legend, the shrine was taken to Bamberg Cathedral after the death of the queen. The name has given rise to further speculations, such as that it could be connected with the Danish princess Gunhild who married the German King Heinrich III in 1036 but died soon after 1038. Another theory connected the shrine with the German bishop Otto I of Bamberg, who was active in the mission to Pomerania in the early 12th century. None of these legends and theories can be proven, and it is still a miracle how a Viking Age animal-style decorated shrine came into possession of a Bavarian church. Unfortunately, the written sources are not of much help in this case. As Arnold Muhl demonstrated, it is most likely that the shrine was originally deposited in the St. Stephan's Church in Bamberg and not in the cathedral. Several objects of the former church treasure were sold in 1805, among them the shrine (Muhl 1990:244ff). The collector Josef Martin von Reider bought the shrine and sold it in 1860 to the authorities.

This background does not help us to understand what the original function of the shrine was. The almost square shape, the motifs on the top and on each of the four sides with strange animal illustrations gave researchers reason to interpret the shrine as a piece of Viking art without further meaning. In fact, the combination of different animals and human beings with a human mask, two birds, one single beast and two animals on the top makes no obvious sense. It is even more difficult to see a pattern on the side panels where different animals and birds intermingle with single masks at the top of the frame. In his brilliant description of the different decorated panels with animal style A. Muhl comes to the conclusion that "there is no proof either for a Christian or for a Norse mythological meaning"; the object was used "in a secular context" (Muhl 1990:290).

We may, however, be able to develop a different perspective by focussing on the cultural context and the iconography of the object. Let us start with the context: As Muhl has demonstrated in his research on the Bamberg Shrine, the object was probably made by Scandinavian craftsmen.[1] The animal style is a classic example of the Mammen Style which provides an absolute date in the second half of the 10th century (Muhl 1990:292f). Most cases of decoration in this Viking Age animal style have been found in Denmark,

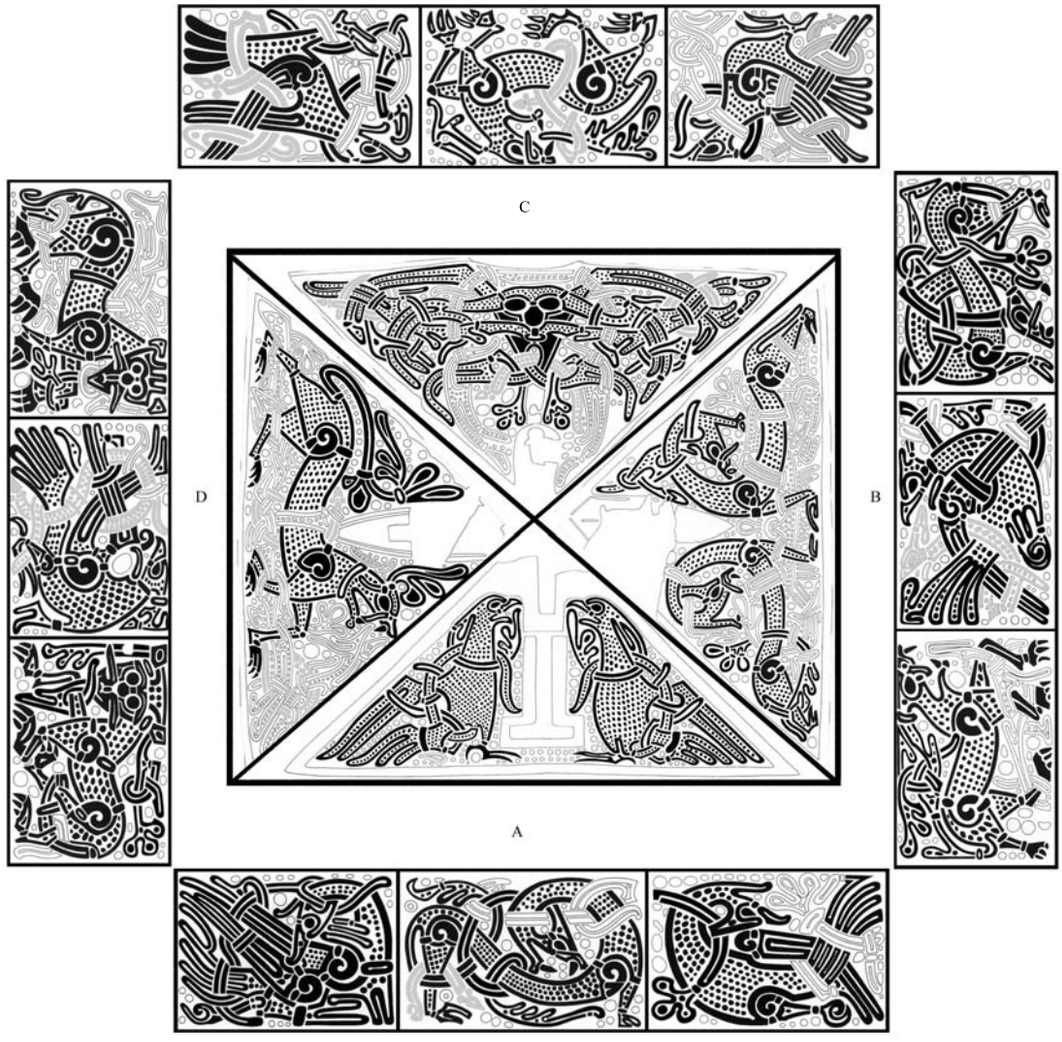

FIGURE 2. Drawing of the decorated panels on the top and the four sides of the Bamberg Shrine (after Muhl 1990: tab. 28–36 with additions).

and production in or close to the Danish homeland is quite possible (Wrangel 1917–21:296; Capelle 1976:29). The dating of the shrine links it to an important event in history: the establishment of Scandinavian kingdoms. From the second half of the 10th century until the early 11th century, kings succeeded in gaining power and structuring society in a completely new way. With kings in place, towns were founded, houses built of stone, trade and craft subjected to control, a new economic system was introduced and a change of religion decided upon (Staecker 1999:393ff). Between 965 and 1005 the Scandinavian kings in Denmark, Norway and Sweden adopted the Christian faith, and by doing so radically changed the religious landscape. Churches became the new centres in towns and villages, and burials were located around these buildings. The concepts of a hereafter and the way to heaven or hell were essential within the world of the living, and it was therefore important to take care of the soul of the dead.

The creation of *memoria* was important for the newly converted Scandinavian society. The large number of runestones and grave monuments marked the endeavour to create an everlasting memory (Nilsson 1996:374; Staecker forthcoming). Proceeding from the history of German kings in the medieval period, Gerd Althoff, Karl Schmid and Otto Gerhard Oexle have demonstrated that it was in particular the nobility that was interested in the creation of *memoria*, legitimizing their descent and power (Althoff 1984; Schmid 1984; Oexle 1999:312ff). The Salian emperor Heinrich III did not only invest in the building of churches, he also looked after the tombs of his ancestors and donated magnificent liturgical manuscripts to various churches. Another example is the Danish king Canute the Great, who tried to establish his power by intensive memorial donations which were not limited to Denmark and England, but extended to France and Rome (Gerchow 1992).

Given the date of the Bamberg Shrine, it is not unreasonable to assume a similar original function of the shrine. The first Christian rulers in Denmark, such as Harald Bluetooth and his son Sven Forkbeard, may have had the same intention as their Danish successor and the German emper-

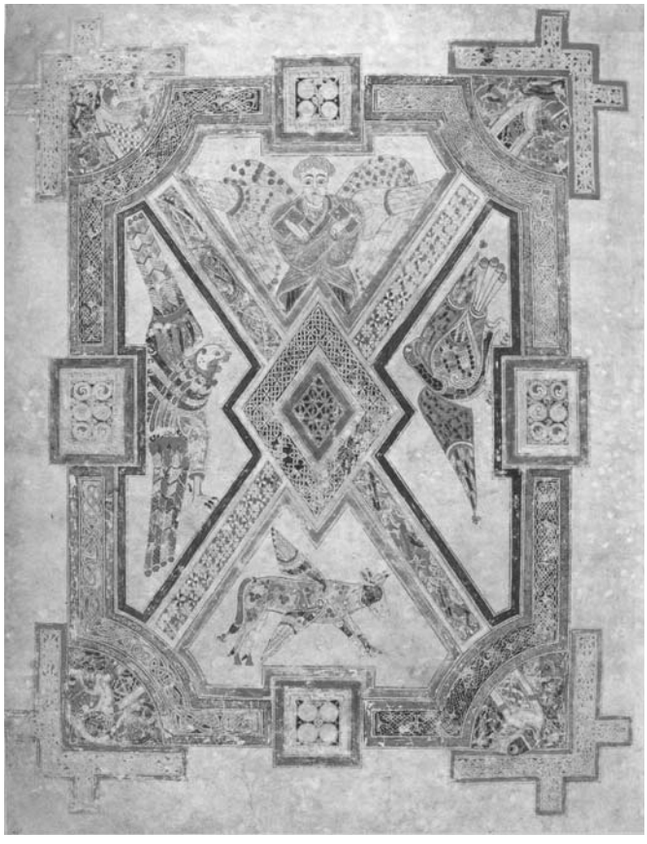

FIGURE 3. Book of Kells, fol. 290 v (after Meehan 1983: fig. p. 46).

or: the creation of *memoria* during their lifetime by building churches, arranging burial places (for Denmark, Roskilde) and donating various objects to the church and to important members of the Christian community in Europe. The shrine may have been the container for a liturgical manuscript or for relics. In this case, there should be a Christian message on the shrine making it possible for us to read and understand the meaning. At the same time, we have to bear in mind that the early Christian iconography in Viking Age art is far from easy to understand; traditional elements of the pagan religion are mixed up with Christian iconography. This is clearly demonstrated by 11th-century rune-stones where the old mythology meets the Christian message. The rune-stone from Ledberg in Östergötland (Ög 181), for example, has two sides with scenes taken from Ragnarök while the third side is decorated with a cross (Williams 1999). This demonstrates impressively the Viking perception of the Christian world, integrating traditional elements and myths with the new Christian faith and iconography.

Besides trying to understand a complex and sometimes very complicated language from the Viking Age, we have to struggle with our own perception of the Viking past (Staecker 2005). The myth of a pagan revival in late 10th-century Scandinavian society is still alive and sometimes makes it very difficult to discuss phenomena of a cultural and religious phase of transition. Instead of trying to understand how people one thousand years ago formed their own imagination and symbolic language, some researchers still want to make the Vikings more pagan than they had ever been. Written sources like Adam of Bremen's history of the Hamburg-Bremen diocese have to be interpreted cautiously; the so-called "civil war" between the newly converted Harald Bluetooth and his son Sven Forkbeard, the supporter of the pagan fraction, is in reality a struggle for control between the German and the English church (Staecker 1999:358f).

In the case of the Bamberg Shrine we may interpret the animal motifs as a unique expression of Viking art mixed with Christian iconography (Figure 2). The images of a human mask, a lion, two birds and two quadrupeds on the top of the shrine may symbolize the four evangelists, with the birds as John (top panel A), the quadrupeds as Luke (top panel B), the mask as Matthew (top panel C) and the lion as Mark (top panel D). Several cases from Ireland suggest that this interpretation is not far-fetched. On the reliquary from Soiscél Molaise, produced around AD 800 and repaired around 1025 AD, the images of the evangelists combine Christian elements, such as their wings and the characteristic attributes of the symbolic animals, with elements of Insular art (Ó Floinn 1983: fig. p. 60). A distinction between the evangelists is almost impossible, there being no great difference between the images of the eagle, the lion and the bull: the animal style dominates the shape and the individual characters. In a similar way, the Book of Armagh, fol. 32 v, made in AD 807, provides another good example of the connection of Christian iconography with local art (Meehan 1983: fig. p. 54). Here it is rather difficult to see any difference between the images of the bull and the lion; both animals look almost identical. The bull has no characteristic horns and the lion looks – with the exception of the tail – quite harmless. There is only one important difference between the two: the bull has hooves and the lion paws.

Another example is the Book of Kells, from around AD 800. On three pages, fol. 27 v, fol. 129 v and fol. 290 v, the four evangelists are illustrated (Meehan 1983: figs. p. 10, p. 11, p. 46). Once again it is difficult to distinguish between the bull and the lion, only the hooves and paws give clear indications. Of special interest here is fol. 290 v where the lion is shown similar to the bird, both opening their wings to fill the entire space of their respective lozenge fields (Figure 3). This folio is important in another respect: the rectangular page is divided by diagonal lines into triangular areas. This is a concept which we do not see on the other pages or in the above-mentioned books: there the pages are divided by horizontal and vertical lines, creating rectangular areas. The triangular shape provides a link to the Bamberg Shrine and indicates that there are different ways of illustrating the four evangelists. Moreover, a comparison between the five different images of the evangelists shows

that there are no fixed rules concerning the arrangement of the individual figures. Usually we find the following order clockwise: Matthew – Mark – John – Luke. But on fol. 290 v in the Book of Kells there is a different order: Matthew – John – Luke – Mark. And if we accept the top of the Bamberg Shrine as an illustration of the evangelists, we have the following order: Matthew – Luke – John – Mark.

Let us now turn back to the Bamberg Shrine and take a closer look at the various motifs. We start with the top panel A, the illustration of two birds facing each other. Both birds look almost identical. The species is difficult to determine; the talons suggest birds of prey, but it is difficult to say whether they are eagles or falcons (Muhl 1990:286f). If this were the image of an eagle and thus an illustration of John, we would expect only one bird as is usual in Christian art. There is, however, one exception to this rule: the screen in Gondorf church in Germany has an image of John with the Holy Book in his hand. On his shoulders two birds are perched left and right, with their beaks towards the top of his head (Päffgen and Ristow 1996:412 fig. 326). The screen dates to the 7th century, showing that a variation of the bird motif was used in the early medieval period by combining Germanic and Christian art.

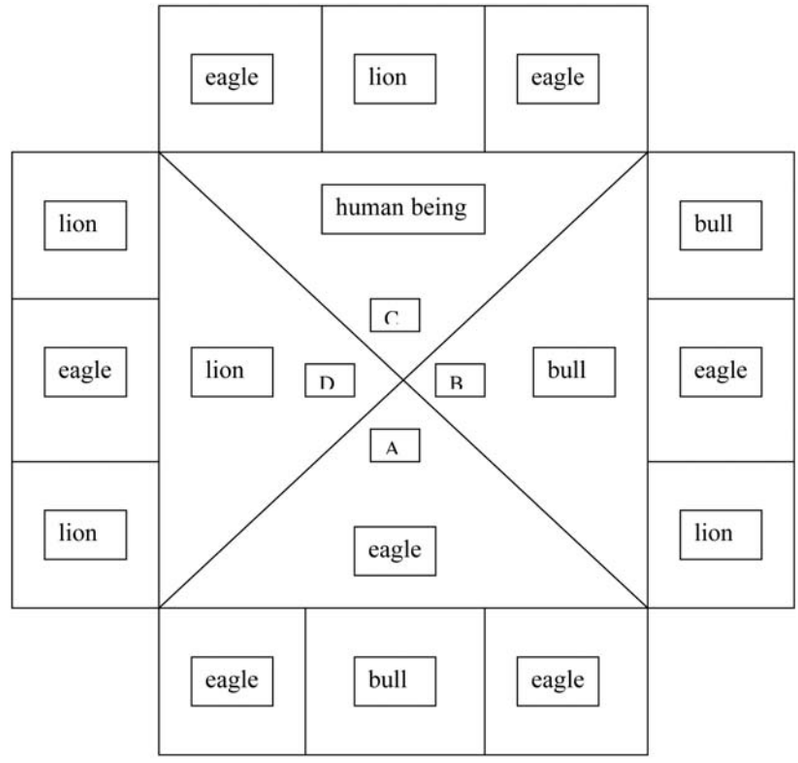

FIGURE 4. Model of the iconographic programme on the Bamberg Shrine.

With this interpretation of top panel A, it becomes easier to understand top panel B, the illustration of two quadrupeds facing each other. Traditionally these animals have been regarded as dragons or as the symbols of "a world of demons and ghosts" (Capelle 1986:175), or as simple pieces of art without further meaning (Graham-Campbell 1982:22). It would therefore be bold to suggest that we see here two bulls illustrating Luke, because there are no diagnostic signs to determine the species. But there is one hint: the feet of the animals. Closer inspection of this detail shows that there is a difference from the feet in top panel D. The feet of these animals are formed like hooves while the feet of the animal on top panel D look like paws. This detail can be seen in Insular 9th-century manuscripts where they illustrate the difference between Luke and Mark. Obviously it was not necessary for the reader to be provided with further details.

Concerning top panel C, there can be no doubt that the mask represents a human being. Three small snakes are woven in the figure's beard and hair; this could be seen as a struggle between good and evil. Masks are sometimes connected with pagan mythology, as on the soapstone from Snaptun, Denmark, illustrating the god Loki (Muhl 1990:288). But it would be wrong to link all masks to a pagan world; comparable illustrations are often used on rune-stones in non-religious, Christian and pagan contexts (Staecker forthcoming). There is no definitive link to the one or the other religion, the mask simply illustrates divine and human beings. A clear Christian connection is given in Codex 51, a late 8th-century manuscript from St. Gallen, Switzerland (Zimmermann 1916: tab. 190). The origin of this manuscript is insular, and on page 78 we find the illustration of Mark with a face similar to the Scandinavian masks. Whether the mask on the Bamberg Shrine illustrates the evangelist Matthew cannot be proven, but the iconographic programme of three animals and one human being on the top is that of Christian art.

Finally, there is top panel D with the illustration of a single quadruped. There is very little doubt that this type of animal has to be a lion; this has been shown by Signe Horn Fuglesang (1980:221). The illustration of a lion was a popular motif in European Christian art and widespread in Viking art. In this case, the identification as a lion is mainly based on the paws of the animal. The lion could be the fourth evangelist Mark, represented here in an almost heraldic way.

Now we have still to solve the question how the side panels relate to the motif on the top. There are four side panels (A–D), each with three figures of animals (Figure 2). At the top of the central section on all four side panels, there is the image of a human mask. This way of placing the human masks in a cross-shaped arrangement is very similar to the cover of the Lindau Gospel where four busts of

human beings together form a cross within the illustrated cross (Bierbrauer 1988: fig. 229). The busts symbolize Our Lord; this is confirmed by the central inscription IHS XPS DNS NOS (Jesus Christus, Dominus Noster). It is tempting to interpret the twelve illustrations of different animals as the twelve apostles, but there is no evidence of an image of the apostles in the shape of animals. Once again, we have to take a closer look at the various animals. Several animals are fighting with smaller and larger snakes, but there is never a doubt about the central theme of the illustration.

Starting with side panel A, we can identify on the left an eagle, in the centre a bull, and on the right an eagle. On side panel B we see on the left a lion, in the centre an eagle, and on the right a bull. On side panel C we see on the left an eagle, in the centre a lion and on the right an eagle. Finally, there is side panel D with a lion on the left, an eagle in the centre and a lion on the right. This means that three side panels (A, C, D) create a kind of frame where the animals on the left and the right are facing the central animal. The placing of two identical animals facing each other cannot be accidental; it stresses the importance of the central animal. Strangely enough – or rather intentionally – the central animal on the side panels with the bull (A), the lion (C) and the bird (D) is not placed under the matching piece on the top, but instead there is a clockwise displacement. This might explain why there appears to be a mistake in the arrangement of side panel B, where three different animals are shown and not – as expected – two lions to each side and a human mask in the centre. If the clockwise displacement is done on purpose, it is the figure of the mask on the top which should have been transferred to the side panel. Instead the single mask at the top of frame B, together with the three animals on side panel B, now repeats the theme on the top, the four evangelists.

There is, thus, a riddle within the riddle of the Bamberg Shrine (Figure 4). First we have to understand the general programme of the images on top of the shrine, then we can continue the decoding by rotating clockwise the images of the top panels. This creation of a riddle is not at all unique in Viking art. The carvers of rune-stones regarded themselves as experts in creating riddles by combining text and image into one unit, which only the initiated could understand. This is demonstrated by a rune-stone from Hillersjö, Sweden (U 29), with the inscription "solve" in the eye of the snake, and by the carvings of Asmund Kareson on the rune-stone from Järsta, Sweden (Gä 11) where he tells proudly: "And Osmund Kareson carved the right runes" (Andrén 2000:10ff, fig. 3). In other words: some Viking artists were proud of their knowledge and their capacity to create unique monuments and objects which were difficult to understand for ordinary people. The animal style was a perfect tool for this task, combining myth and reality to create one story. The meeting of pagan and Christian religions gave the artists the possibility to create something extraordinary which was only possible during the phase of transition.

For the Bamberg Shrine this could mean that a workshop with excellent craftsmen produced the object on behalf of the Danish, Swedish or Norwegian king or a Scandinavian noble family. Perhaps the shrine originally contained a gospel book or some other liturgical manuscript; the dimensions make this possible. Gifts of liturgical manuscripts were an important part in the establishment of contacts between European and Scandinavian rulers. On his journey by sea to Birka, the monk Ansgar took with him 40 books, all of which got lost in a pirate attack (*Vita Anskari*: 10). This highlights the importance of such objects, and we can be sure that special manuscripts made in prominent German or English monasteries were of great interest to the Scandinavian nobility. The Bamberg Shrine may have been a container for one of these desired manuscripts, made for the purpose of safekeeping the item whilst in the possession of the family or as a prestigious container for a manuscript to be donated to a church.

Note

1 There is a second object with similar motifs in the Mammen style, the Cammin Shrine (Muhl 1990). This shrine will not be treated here, as there is no room for discussion.

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