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Symbols in the Late Mesolithic

Ornaments on bone and antler from Strandvägen, Motala, in Central Sweden

Larsson, Lars; Molin, Fredrik

Published in:
From Hunter-Gatherers to Farmers

2017

Document Version:
Publisher's PDF, also known as Version of record

Link to publication

Citation for published version (APA):
Larsson, L., & Molin, F. (2017). Symbols in the Late Mesolithic: Ornaments on bone and antler from Strandvägen, Motala, in Central Sweden. In M. Mărgărit, & A. Boronean (Eds.), *From Hunter-Gatherers to Farmers: Human adaptations at the end of the Pleistocene and the first part of the Holocene* (pp. 397-408). Editura Cetatea de Scaun.

Total number of authors:
2

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FROM HUNTER-GATHERERS TO FARMERS

HUMAN ADAPTATIONS AT THE END OF THE PLEISTOCENE AND THE FIRST PART OF THE HOLOCENE

Edited by Monica Mărgărit & Adina Boroneanț

EDITURA CETATEA DE SCAUN

FROM HUNTER-GATHERERS TO FARMERS

Human adaptations at the end of the Pleistocene and the first part of the Holocene

Papers in Honour of Clive Bonsall

Edited by
Monica Mărgărit and Adina Boroneanț

EDITURA CETATEA DE SCAUN

Cover: Dan Iulian Mărgărit
Photo cover: The Danube at Cazanele Mici (the Smaller Cauldrons) in the Iron Gates (photo Adina Boroneanț).

Descrierea CIP a Bibliotecii Naționale a României
From hunter-gatherers to farmers : human adaptations at the end of Pleistocene and the first part of the Holocene : Papers in Honour of Clive Bonsall / ed. by Monica Mărgărit, Adina Boroneanț. - Târgoviște : Cetatea de Scaun, 2017
Conține bibliografie
ISBN 978-606-537-386-0
I. Mărgărit, Monica (ed.)
II. Boroneanț, Adina (ed.)

902

This book was edited with the financial suport of the grant offered by the Romanian National Authority for Scientific Research and Innovation, CNCS – UEFISCDI, project number PN-II-RU-TE-2014-4-0519.

Editura Cetatea de Scaun, Targoviște, 2017
ISBN 978-606-537-386-0
editura@cetateadescaun.ro, www.cetateadescaun.ro
Printed in Romania

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PROFESSOR CLIVE BONSALL

EDITORIAL

It is difficult to capture one's life in a few words, a few photographs or even a book. The papers in the present volume will hopefully reflect a part of Clive Bonsall's scientific interests during a career that has started some 45 years ago. Their diversity is impressive: from radiocarbon dating, environmental changes, human–environment interactions, funerary behaviour, to paleogenetics and stable isotopes, reconstruction of ancient diets and obsidian sourcing, most of them in close connection to the hunter-gatherer and first farmer communities of Europe. His studies stretched over a large geographical area, focusing recently mainly around the Balkans and the neighbouring regions. He has conducted fieldwork in Britain, Scotland, Romania and Slovenia, edited 9 books and published over 160 papers, book-chapters, notes, as well as book and paper reviews. His main publications include: "The Mesolithic in Europe" (1989), "The Human Use of Caves" (1997), "The Iron Gates in Prehistory" (2008), "Submerged Prehistory" (2011) and "Not Just for Show: The Archaeology of Beads, Beadwork and Personal Ornaments" (2017).

His substantial work in southeastern Europe is reflected by his long-standing collaboration and friendship with many Romanian and Bulgarian archaeologists, and has received due recognition: Clive Bonsall is an Honorary Member of both the "Vasile Pârvan" Institute of Archaeology in Bucharest and the National Institute of Archaeology with Museum in Sofia. His contribution to the archaeology of the Iron Gates has earned him the recognition of the Serbian archaeologists working in the area. His many other research interests and personal collaborations are also reflected in the present volume.

We are grateful to all our contributors: colleagues and friends, new and old, former students and collaborators whose archaeological interests met Clive's if only briefly. We were happy to see that so many of us were able to mobilize in such a short time. We would like to thank all those who answered our call and at a time when every minute of our professional lives is carefully planned in advance, helped us put together this volume in less than a year. They have endured and complied with our constant deadline reminders and requests, checked and re-checked their manuscripts in record times, gracefully complying with the comments and suggestions from the reviewers, and were most patient with our editorial work.

Each paper was submitted to a double reviewing. We would like to also thank our colleagues from various disciplines who accepted to anonymously review the contributions. Their hard and serious work significantly improved the overall content of the volume.

The outcome has exceeded our most optimistic expectation: a volume that geographically covers almost the entire European continent, from Britain to Russia and Greece and touches on most important issues of hunter-gather adaptions through time. A volume brought together by chronological landmarks (the end of the Pleistocene and the beginning of the Holocene) and geographical areas but also by common approaches to issues such as human-animal interactions, exploitation and use of raw materials, and subsistence strategies.

We chose to organize the papers on three main sections, while within the respective theme they follow in chronological succession. The archaeology of the Iron Gates opens the volume, given Clive Bonsall's substantial contribution to the local early prehistory. The eight contributions cover a large range of subjects, from physical anthropology (Andrei Soficaru), re-interpretation of earlier excavations and the subsequent collections (Adina Boroneanț), stone artefacts (Dragana Antonović, Vidan Dimić, Andrej Starović and Dušan Borić) to the study of faunal remains and subsequent paleo-dietary issues (Adrian Bălășescu, Adina Boroneanț and Valentin Radu; Dragana Filipović, Jelena

Jovanović and Dragana Rančić; Ivana Živaljević, Vesna Dimitrijević and Sofija Stefanović), and osseous industries (Monica Mărgărit and Adina Boroneanț; Selena Vitezović). These studies illustrate the still immense research potential of the Iron Gates region despite the fact that most of the sites have been flooded many decades ago.

During the editing of the volume it became obvious that while some of the contributions focused on the evidence from a certain site, others were more of a regional synthesis. This latter section begins with a most interesting paper bringing together world history and underwater archaeology (Jonathan Benjamin and Geoff Bailey). The following nine articles deal with subjects such as social inequalities seen through the study of burial practices (Judith M. Grünberg), lifeways, adaptations and subsistence strategies of the early prehistoric communities (Agathe Reingruber; Mihael Budja; Annie Brown and Haskel Greenfield; Kenneth Ritchie), raw materials acquisition and exploitation (Tomasz Płonka, Maria Gurova, Eva David), exploitation, management and trade of „exotic" goods (Vassil Nikolov).

The nine papers focusing on individual sites present case studies that illustrate the nature of the current research, the rich opportunities offered by the growing range of scientific techniques and their applications to existing collections. This series of papers starts at Zemunica Cave on the coast of the Eastern Adriatic (Siniša Radović and Ankica Oros Sršen), explores the Mesolithic occupations at Malga Rondenetto (Paolo Biagi, Elisabetta Starnini and Renato Nisbet) and Grotta dell'Edera (Barbara Voytek) in Italy, the Mesolithic ornamented weapons of Motala in Sweden (Lars Larsson and Fredrik Molin), ending this Mesolithic journey among the shell middens on the western coast of Scotland (Catriona Pickard). The transition to the Neolithic happens among the beaver tools at Zamojste 2 in Russia (Olga Lozovskaya, Charlotte Leduc and Louis Chaix). The Neolithic Age finds us further south into Bulgaria, exploring the pitfields of Sarnevo (Krum Bacvarov and John Gorczyk) and the gold of Varna (Tanya Dzhanfezova), while during the Bronze Age roe deer hunting is resurrected at Paks–Gyapa in Hungary (László Bartosiewicz and Erika Gál).

The volume presents altogether new results in recent research and new information resulted from the study of old collections. We also hope it points out directions for future research.

It is with great joy that we present Clive Bonsall this volume, as a token of both our appreciation and friendship, for his contributions to the Early Prehistory of Europe in general, and of Southeastern Europe in special.

The Editors

CLIVE BONSALL – SOME YEARS AFTER

When Clive Bonsall came to Romania in 1991, I was taking an undergraduate degree in computers and wasn't even considering becoming an archaeologist. Together with my mother and brother, I used to accompany my father Vasile Boroneanț every year on his summer digs at Schela Cladovei. It was just over a year after the fall of the communist regime in Romania, and everybody at the site was waiting impatiently the arrival of a team of archaeologists from Great Britain, who were coming to visit the site and perhaps start a joint research project. It must have been past mid-night of the expected day when my father woke us up – because the "English" had arrived…. Four very tired people (Clive Bonsall, Kathleen McSweeney, Sue Stalibrass and Mark Macklin – and not all "English") in a Land Rover but still managing to smile… They had spent 10 hours at the border between Hungary and Romania and their first encounter with Romanian cuisine had been carp-head soup (the only thing available on the menu) in Arad…. I believe Clive still remembers the fish-heads sticking out of the large bowl (obviously a reminder of the Lepenski Vir sculpted boulders…).

The visit at the site went well and the next year the research project commenced, but not unventfully. It must have been sheer passion for archaeology and keen interest for the Iron Gates Mesolithic that made Clive come back the second year, after having (during the previous first year) the minibus tyres slashed several times by the curious and mischievous Schela Cladovei lads, bits of the flotation equipment vanishing into thin air and two pairs of his new Levis jeans (a rarity in Romania in those days) mysteriously disappearing from his room at the youth camp in Gura Văii…..Not to mention the breaking down of the minibus in a country where there were no spare parts for western cars.

Still, here he is, working in Romania, 26 years later…

And following the first four years of the Schela Cladovei project I had switched to a degree in archaeology (and Clive bears much of the blame…). And we are still excavating at Schela Cladovei…and at least Clive looks unchanged… It is his dedication to the archaeology of the area that has made this second research project possible, project going on successfully for over ten years now.

As it was with me, Clive has influenced the lives of many (older and younger) archaeologists and perhaps future archaeologists. He is an inspiration to our students from the Schela Cladovei excavation and a respected professional among Romanian archaeologists. He has always been ready to help my fellow colleagues, whether it was field work, collecting samples, editing or mere professional advice, although such work had rarely anything to do with the archaeology of the Iron Gates. But during his entire activity in this area, he acted as a "human bridge" between Romanian, Bulgarian and Serbian archaeologies, facilitating professional exchanges, easing the access to modern technologies, information and publications.

Clive Bonsall was/is equally interested in other geographical areas and research topics of European (and not only…) archaeology, and the number of people contributing to this volume testify to the impact he had on individuals and archaeologies elsewhere outside Romania.

This may not be the typical introduction to a Festschrift volume… but then, Clive is not a typical person. Rather cynical but warm hearted underneath, with a wonderful (and at times very dry) sense of humour, and great charm (when he wants it…) he makes a great project co-director and fellow-worker.

I can only but hope that our collaboration would go on for many years from now and that we'll get to see the end of the Schela Cladovei trench we started before we both retire!

Bucharest, September 2017 *Adina Boroneanț*

PUBLICATIONS OF CLIVE BONSALL

Books

- Bar-Yosef Mayer, D.A., Choyke, A. & **Bonsall, C.** (eds). 2017. *Not Just for Show: The Archaeology of Beads, Beadwork and Personal Ornaments*. Oxford, Oxbow Books.

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SYMBOLS IN THE LATE MESOLITHIC. ORNAMENTS ON BONE AND ANTLER FROM STRANDVÄGEN, MOTALA, IN CENTRAL SWEDEN

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Abstract: There are two different approaches to ornaments in Scandinavia. In the north there are the carvings of animals and humans on rock faces. In the south, geometrical motifs were engraved on portable objects of bone and antler. In the area in between, there are few objects of bone and antler because organic material does not preserve well in the acid soil. However, recent excavations at the Late Mesolithic site Strandvägen in Motala, south-central Sweden, have changed the state of research and revealed a large number of bone and antler tools, some of them ornamented. The site is located on the eastern shore of Lake Vättern, the second largest lake in the south of Sweden, at the only major outlet of the lake. The site was used during several centuries, with a concentration of the settlement around 7500–7000 cal BP. The location of the site was exceptional as it was easily accessible through communication routes from south and north, as well as east and west. This is well manifested in the archaeological assemblage. Leister points and harpoons are the largest groups of tools, with a total of 460 items. Several leister points were ornamented more or less systematically with small notches on the barbs, as well as with cross-hatched motifs. Ornaments also occured on the broad sides of the points. Among other groups of tools, but comprising a small number of objects (the majority ornamented), are the antler tools with shaft-holes and the slotted daggers. The size of their ornamented areas is variable. In comparison with southern Sweden and Denmark, the similarities are obvious, both in the choice of motifs and the variety of their execution. The only other areas in the Baltic regions with any significant number of ornamented objects are the eastern Baltic and western Russia. For example, there are leister points similar to those from Strandvägen among the finds from Lake Lubāna in eastern Latvia. Their chronological relationship is however uncertain. The finds from Strandvägen may suggest contacts with both southern Scandinavia and the Baltic area.

Keywords: Northern Europe, central Sweden, Mesolithic, ornamented bone and antler objects.

Introduction

The Mesolithic period in Scandinavia has two completely different traditions of pictorial representations. One tradition, consisting of carvings on rock faces, is found in northern Scandinavia and is dominated by animal depictions and motifs associated with these, such as footprints (Hallström 1960; Helskog 1988; Fuglestvedt 2010; Lødøen 2015). We also find human representations in various situations, for example, hunting and fishing, along with motifs related to these activities, such as boats. The other tradition comprises southern Scandinavia, where ornaments appear on portable antler and bone objects, but also on objects made of minerogenic materials. In this case, geometrical motifs are entirely predominant. Anthropomorphous and zoomorphous depictions are rare and can in most cases be linked to geometrical motifs (Larsson 2017).

The northern representations often show events and activities which even a person living nowadays can interpret with relative

ease, whereas the southern motifs very rarely allow a direct interpretation. The fact that the same motifs occur rather frequently and over a relatively large area outside southern Scandinavia suggests that they could have been understood by the Mesolithic people, who were able to "read" certain ideas in them, perhaps some special abstractions of the world of hunting, fishing and gathering that surrounded them.

Despite the widespread distribution of these abstract motifs in north-western Europe, it is in southern Scandinavia that the majority of the objects recovered from settlements, as well as the isolated finds from wetlands, have been discovered. Attempts were made to find differences in this ornamentation, both geographically and chronologically. Płonka (2003. map 31) divides Scandinavia and the neighbouring areas into a central Scandinavian and a north-western area, the former comprising the central and northern Scandinavia and the latter, the southern Scandinavia and the north-western continental Europe. A possible third area in the north overlaps present-day Finland, the Baltic states and western Russia.

Nash (1998), who confines his study to the Danish material, discerns differences between Jutland and the Danish islands in the east, with certain special motifs during the Early, Middle and Late Mesolithic.

A significant problem concerning the organic material specifically, refers to the fact that most of Scandinavia has soils where such materials (bone and antler) were not preserved. Because of the plentiful supply of wood in the north, there has been little peat cutting. Very few finds occured in central and northern Sweden and Finland, and the number of finds is also limited in southern Norway (Bergsvik and David 2014). Płonka (2003) considers that the ornamented objects reflect certain contacts between the north and south, east and west, but the extremely uneven distribution does not permit detailed comparisons.

The site of Strandvägen

The data is therefore extremely limited in central Sweden, where only a few objects were found in the wetlands. But the situation has changed following the excavations at Strandvägen in the town of Motala, south-central Sweden. The site is located on the north-eastern shore of Lake Vättern, the second largest lake in southern Sweden, at its only outlet to the Baltic Sea – the river Motala Ström – which at the time of the occupation of the prehistoric settlement was located about 30 km to the east of the present day town (Fig. 1).

Vättern as a lake was isolated from the Yoldia Sea at about 10,800 cal BP. Through several changes, the main outlet on the Motala Ström river first formed at c. 9200 cal BP, triggering a first lowering of the lake level by a couple of metres, followed by a second one and its stabilization at c. 7800 cal BP. There were traces of settlement occupation on the outlet area as early as c. 9000 cal BP, but life at the settlement on a larger scale did not begin until c. 7800 cal BP. The settlement occupation was the most intensive between c. 7500 and 7000 cal BP. The most recent remains date to c. 6500 cal BP (Carlsson 2008; Molin *et al.* 2014).

Because of the rerouting of the local railway tracks, the site was excavated at different stages (Carlsson 2008; Molin *et al.* 2014). A considerable part of the site has been excavated, including the refuse area below the present shoreline; the lower slope of a ridge, with the remains of the settlement proper; and the top of the ridge, with the cemetery (Fig. 6). Only the higher part of the site and probably the eastern part of the cemetery were not accessible for excavation. Such extensive excavations of the various parts of a site, containing remnants of different activity areas, is exceptional in Scandinavia.

As the present shoreline is the same today as during prehistoric times, by building an enclosure around the part of the area beyond the present shore and pumping away the

existing water, it was possible to uncover a large number of organic finds belonging to the refuse area of the site, including a considerable number of osseous tools (Gummesson and Molin. in press). This has considerably changed the state of our data. The Strandvägen settlement is the only one in the central part of Scandinavia with such a large number of finds of bone and antler. If we look at the contemporary tool and decoration types present in the northernmost part of southern Scandinavia, Strandvägen stands out as a highly important site.

The combination of ecological conditions that existed around the site was extraordinary, with excellent fishing conditions at the outflow of the river as well as on the large lake, and with hunting as well as gathering possible in the fertile forests surrounding the site. The location of the site was exceptional, as it was easily accessible to the south and north, as well as to the east and west by rivers, lakes and the sea (Carlsson 2008). Raw materials, including flint of different types, and slate tools testify to western contacts from c. 100 km away, almost 200 km to the north-east and more than 350 km to the south (Carlsson 2008; Knutsson *et al.* 2015).

It is very likely that special social structures existed at the outflow of Motala Ström, compared to other parts of the region. A bigger and denser social unit requires clearer rules for the interactions of the participants, which may reflect in expressions of symbolic nature and various traces of rituals, ornamented objects in the former case, and votive deposits and graves for the latter. The cemetery with several graves (Gummesson and Molin 2016), post-built dwellings and fishing platforms constructed just off the shore indicate that the place served several purposes, a fact also suggested by the occurrence of lithic finds, which are unusually abundant for the region.

Decorated bone and antler objects

Our special interest focuses on the ornamented bone and antler objects. The term ornamentation covers all intentional carvings that have no relation to the manufacturing and use of the object. It includes a variety of carvings, from a few lines to complicated motifs. It is of special interest that the finds in this particular assemblage were intensively examined, and even the smallest fragments of the ornamented objects have been identified. It is the only major corpus of material, as far as we know, that has been so well scrutinized. Very few objects are intact, the most being in a very fragmentary state. Fig. 2 shows the fragmentary state of the material.

Altogether, 75 finds show ornamentation. Linear traces from scraping or whittling are common in the assemblage, and were produced during the manufacture of the objects. A sharp edge held against a hard surface of bone or antler can slip and leave repeated changes on the surface (e.g. chatter marks), and may easily give the erroneous impression of deliberately repeated incisions. During the use of the object as well, traces can arise which may occasionally look like ornaments. An example are certain marks and striations on the leister points. In a publication of fish hooks from Zamostje 2 in western Russia, some striations were identified as being the traces of various teeth of pike and perch (Lozowski *et al.* 2013).

Because of the fragmentary condition of the material there are a number of uncertain aspects. The first relates to the number of objects they belong to. Based upon the size of the fragments, they possibly belong to a small number of items. However, the largest number of ornamented pieces within one and the same group is 35, and they belong to leister points and harpoons. Most of these fragments have at least two or three barbs preserved. Had they appeared on smaller fragments, their ornaments being so similar, they could have been interpreted as originating from a much smaller number of tools.

The ornamented objects might, in the same way as graves, reflect the significance of the intensity of the symbolic and ritual practices at a site, indicating its importance. As no other site in the region can be used as basis for comparison, we have to look at the finds from certain sites in southern Scandinavia. Only for a small number of sites, if any at all, have the finds been so carefully scrutinized for ornamentation. However, when seeking large sites with graves from the Late Mesolithic, the submerged site of Tybrind Vig on western Funen, being a recent modern excavation, may be taken into consideration (Andersen 2014). It is somewhat later chronologically than Strandvägen. Of the 233 bone and antler objects, 7 were ornamented, i.e. 3%.

At Strandvägen, 75 items out of 1021 bone and antler tools (identified from a functional point of view out of the total of 1468 fragments) (Gummesson and Molin in press) are ornamented (7%). Despite a number of sources of error, these calculations indicate that the necessity or desire to express some kind of abstract behaviour was greater at Strandvägen than at most other Mesolithic sites.

Ornamented leister points and harpoons

Leister points and harpoons constitute the largest group of tools, comprising 460 items, almost all in a fragmentary state. Thirty-five of them have some kind of ornamentation. The most common are cuts/indentations on the barbs. In some cases there is one marked notch on the barb, although two notches on the same barb have also been recorded (Fig. 3/4). On some larger leister point fragments, all surviving barbs were notched, but examples with notches on every second barb also appear. Another ornament consists of finer cuts, or small notches, on the barbs that have broad frontal parts. In most cases they appear in pairs or at intervals along both edges of the barb (Fig. 3/5–6). Harpoons are found as fragmented tips and bases, and in a few instances small cuts or notches have been identified. Unfortunately, there are no intact leister or harpoon points with ornaments that would have made possible to determine whether the variations on the back edge of the tool or on the barb were repeated along the whole tool.

Another group of ornaments on the leister points are the motifs on the edge (back) opposite to the barbed edge or on the lateral sides. A small number have small cuts like the ones described above on the edge opposite to the barbs (back edge). Others have zigzag engravings, cross-hatchings or groups of transverse lines (Fig. 5/5–9).

A comparative study is not made any easier by the fact that along the eastern coast of the Baltic Sea there are very few contemporary locations with identified finds where objects of organic material were preserved. The same applies to the west coast of Sweden (Nordquist 1997). Here the carvings on perforated stone objects are numerically better represented than those on bone and antler (Hernek 2009).

Towards the south, it is over 300 km to the nearest site rich in organic material, namely, Norje Sunnansund in the south-east (Boethius 2017). Towards the north, there are no sites with finds whatsoever. In present-day Finland the archaeological material is extremely limited (Mannermaa 2016). In the Baltic area, by contrast, there are extensive such assemblages in Estonia and Latvia (Vankina 1999).

Ornaments on leister points and harpoons are rare in Scandinavia. A couple of finds with zigzag engravings are the Danish leister points, probably dating to the early part of the Mesolithic (Płonka 2003. Fig. 55:1). Just a couple of finds from the Late Mesolithic have certain parallels in southern Scandinavia (Fig. 4). One is a harpoon from Grave 4 at Skateholm II in southern Scania. The barbs are decorated with crosshatchings and fine cuts on both sides of the barb (Larsson 1988. 138; Płonka 2003. Fig. 196:1). Another find, from Bredasten, in southern Scania, has also fine cuts on both sides of the barb (Larsson 1988; Płonka 2003. Fig. 196:2).

Although there are few tools made of bone or antler from eastern and northern Sweden, some of them are ornamented. A piece from Stora Djulö, Södermanland, is decorated with angled bands and groups of lines of various orientations, located at the base of the artefact (Płonka 2003. Fig. 58:1), indicating that this kind of ornament might have been more common in central Sweden than in southern Scandinavia.

In the Baltic and the western Russia ornamented leister points and harpoons do appear. One area is Lake Lubāna in eastern Latvia. Small cuts and lines on barbs are known, as well as notches on barbs (Vankina 1999. Fig. IV: 1–2, Fig. XIX: 4, Fig. XXII: 1–5). The problem is that so far, none of these finds has been radiocarbon-dated. Most of them can be included in the Kunda type, belonging to the Early Mesolithic. Leister points with partly similar ornaments are known from other sites in western Russia (Žilin 2006. Abb. 28; Oshibkina 2017. Рис. 14–16). Despite the dating problems, it seems that ornamented leister points and harpoons were a more common phenomenon in the eastern part of northern Europe.

Another type is represented by the flat points (only a couple of finds), probably fragments of spearheads (Gummesson and Molin in press), displaying a narrow shoulder cut into each edge. In addition there is a notch running down each edge. This form has certain similarities to the leister points and harpoons described above. There are objects that have been cut to a shape whose function, with either a decorative or practical significance, must be described as uncertain. This type also has distinct parallels in the Baltic area (Zagorska 1974. Fig. 4/7).

Indications of contacts with the Baltic area can be supplemented by some other undecorated objects from Strandvägen. Arrowheads with bone tangs and a clear triangular cross-section, present in the assemblage, are a well-attested form in the Baltic lands (Vankina 1999. Fig. LXIX). This is also true for some socketed/shafted antler tools with pointed edges. There are parallels to them in the neighbouring area of south-central Sweden, in the form of some isolated finds from Lake Tåkern (Browall 1999. Fig. 3), but they also occur on the other side of the Baltic Sea (Vankina 1999. XCIX).

These might be indications of contacts across the Baltic Sea during the Late Mesolithic. One route is via the island of Gotland, colonized around 9200 cal BP (Apel *et al.* 2017). Another route might have been across the archipelago between the present-day central Sweden and south-western Finland.

Objects with a shaft-hole and slotted daggers

Most of the different kinds of tools found at Strandvägen are well known in southern Sweden and Denmark both from settlements and as isolated finds (Nash 1998; Płonka 2003). One group with several examples consists of antler objects with a shaft-hole (Płonka 2003). Some have been used as axes or adzes, and even as handles/sockets (Broadbent 1978), but several items have a shape that makes a practical function most unlikely. A considerable number of such objects are ornamented. These are the largest ornamented objects and therefore this group of artefacts is likely to be under-represented at Strandvägen because of the fragmentary state of the material. But several ornamented fragments probably represent this type of tools.

One object is intact. It has a simple ornament consisting of rows of lines and an area covered with crosshatchings. Two other items, broken at the shaft-hole, were also ornamented. One displays a wide band of oblique strokes and crosshatchings (Fig. 3/2). Another ornamented area consists of parallel bands of transverse lines. Other surfaces display an angled band and rows of cross-strokes. The other example, which consists of several refitted fragments, has an ornament in

the form of rows of long and narrow crosshatched triangles (Fig. 3/1).

A large antler fragment may have been a similarly decorated object, with parallel bands running lengthwise and filled with simple oblique lines or bands (Fig. 5/1). There are variations in the filling of the parallel lengthwise bands and in the slanting angle. Three different areas of such bands can be discerned, and the lengthwise bands in one of these ends in the triangles, most closely resembling points.

The ornaments can be compared to well-known motifs, such as the rows of hatched triangles and parallel bands on items from southern Scandinavia (Nash 1998; Płonka 2003).

Another tool usually decorated is the slotted dagger. At least three examples with decorations were found at Strandvägen. One has the blade fully preserved and is decorated on both sides (Fig. 5/2). The same as on slotted daggers from southern Scandinavia, the ornamentation is more regular on the upper, somewhat concave side of the blade (Larsson 2005a, 2005b). In this case the slots in the dagger are fitted with microblades made of mylonitic quartz – recrystallized quartz with flint-like qualities – while the cutting blades on other slotted objects were made of ordinary quartz flakes or flint. The quartz-edged object was originally longer, as indicated by the fracture running straight through the ornament. The object had a handle and thus had the form of a dagger (Larsson 2005b). The function of the resin coating on this tool is uncertain, as nothing similar has been found on other slotted bone daggers in Scandinavia. One possibility is that the handle was broken and that the blade was given a new function as a spearhead, or that a new grip of the dagger was moved further up the blade. The ornament was not always significant throughout the object's period of use, as indicated by the fact that the quartz-edged dagger has traces of resin that now cover small parts of the ornament on the dorsal side but initially may very likely have covered larger areas and rendered the majority of the ornaments invisible.

Two other fragments were ornamented. A tip fragment shows transverse hatched bands and rows of impressions running lengthwise at a slightly oblique angle (Fig. 5/4). Another fragment belongs to the area between the blade and the handle of a slotted dagger, which is marked by two transversal ridges (Fig. 5/3).

Among other undecorated fragments of daggers, a small number was made of thick bones, with one or two slots for lithic inserts. This type does not occur in southern Scandinavia but is well represented in the Baltic area and western Russia (Vankina 1999. Fig. XXIX; Žilin 2006. Abb 21: 14–15).

Ornaments in a social perspective

The incised ornaments on the majority of the objects were designed to be visible to the observer from a distance of a metre or less. It has been debated whether the ornaments might have been more visible had they been filled with soot or a resin mixed with soot, creating a contrast against the light coloured surface of the bone or antler. One such object is known from the Mesolithic (Malmer and Magnusson 1955). The observation under magnification of the ornaments on the Motala objects has not revealed any traces of material of this kind, not even in the deepest cuts. The intention was probably that the ornament should not be visible to anyone other than the close observer. Another example can be cited from the studies on tooth beads found with individuals buried in the Zvejnieki cemetery from the Mesolithic and Neolithic in northern Latvia and interpreted as body decoration (Larsson 2006). It is clear that special rules governed the combinations of decorations. Only from a very close proximity could these combinations be visible to anyone else but the bearer of the ornaments. It was more important to follow the combination rules of the tooth beads and of their place, than it was to make these combinations visible to other

members of the community, who did not normally come into such close contact with the bearer.

The fragmentation of the decorated objects is also a circumstance that must be considered. Is it a result of post depositional processes, or could it be that the inhabitants deliberately destroyed these objects?

It is, however, highly uncertain whether the decorated shaft-hole objects were deliberately fragmented in connection with their deposition. In only one case is there reason to suspect such an act. It is a thick antler fragment with a row of hatched triangles along one of the longer sides (Fig. 3/3). This particular ornament was part of a slightly larger decorated area. The left side bears clear fracture marks. On the right side, which is much thinner, there are two hollow, negative flake scars, located on the lower area, suggesting that this side was thinned by knapping.

One may also wonder whether the decorated objects have a distribution that differs from that of the other bone and antler tools. Mapping the distribution of the decorated objects we find that the majority were found within a relatively restricted area of the site. Decorated leister points, for example, are distributed in the water along the shore in the centre of the settlement. But this distribution can be seen in relation to the most intensively used part of the site judging by the material found on land. The first observation may suggest deliberate destruction, while the second corroborates to the general pattern of refuse deposition on the settlement.

What is obvious, however, is the distribution of the decorated fragments in relation to the documented dwellings on the site. Six dwellings built on posts were excavated, all of them showing occasional or minor concentrations of damaged decorated objects adjacent to floor areas or in the immediate activity area around the houses (Fig. 6).

Yet another interesting association was noted between the decorated fragments and scattered human bones at the settlement. Judging by the distribution of the artefacts, it is clear that the ornamented objects had nothing to do with the traditional burials. Only one fragment was found in a secondary position in the infill of a grave. On the other hand, there are obvious associations between the ornamented tools and the isolated deposits of human bones along the shore of the Motala Ström river. Several groups of objects and human bones can be observed. In some cases these human bones were deliberately manipulated. This is a strong indication that decorated objects were used to support the symbolic and ritual activities at the site (Molin *et al.* 2014).

Extent of the ornaments

Even though the number of decorated leisters and harpoons is 35 and thus by far the largest number in northern Europe, this should be viewed in relation to the total number of finds, which is 460 items (Gummesson and Molin in press). The decorated items thus account for only c. 8% of this find category.

This can also be viewed in relation to the slotted points, for example, of which 43 items have been found but only one of them is ornamented. Of the eight finds of larger slotted tools, three are ornamented, and only these three are of the relatively flat and broad blade type which identifies them with certainty as daggers (Larsson 2005b). The others are slotted tools but with a form suggesting they may have been used in some way other than the typical daggers.

The notches and lines that occur on the barbed points can be perceived as decoration but may also conceivably have had a practical function, such as marking the number of successful leister catches. They are often symmetrically located and would therefore probably been started with the idea that the subsequent notches would follow a special system. Another explanation could be that the notches marked the owner of a particular leister. One may then wonder why only a

limited number of leisters were given this kind of owner's mark.

Execution of the ornaments

Ornaments were made with different tools. In most cases probably the cutting edge of a flint tool was used. The flint usually cut straight into the surface of the bone or antler. But it is also possible that the edge was used to cut from two opposing diagonal directions, as with the notches on the barbs of the leister points. On a few objects there are also short bottom rounded or oval depressions. It is still unclear how they were made. Perhaps an animal tooth was used as a cutting tool, such as the incisor of a beaver.

On the mostly decorated object, a fragment of red deer antler, are different traces that indicate the use of several tools with different morphologies. They can be divided into three groups (Fig. 5/1). One of these consists of a cutting edge, the second is a narrow groove made with a narrow burin-like edge, and the third is a broader groove made with a broader burin edge. The repetitive elongated areas, parallel and hatched, are very similar but with a possible variation of the hatching direction. A detailed study of the ornamentation shows that differently ornamented areas were made with the edges described above, but which edge was used for which task varies. In what the edge-types are concerned, several could have been used to decorate the same item, so it might have been just one person making the ornaments. But since there are relatively similar areas which might have been carved with different edge-types, it is difficult to identify a certain pattern in the use of the different edges.

Contacts with southern Scandinavia and eastern Europe

It is difficult to demonstrate any clear divisions of the geometrical motifs that occur during the Mesolithic in northern Europe. The geometrical motifs were probably created during the Late Palaeolithic/Early Mesolithic and spread to become almost pan-European. On the other hand, there is an interesting distribution as regards the objects on which ornaments occur. As already stated, ornaments are found on tools with a clear practical function, such as leister points and harpoons in the Baltic area and present-day western Russia (Płonka 2003. Map 7). In southern Scandinavia there is a distinct concentration of shaft-hole objects in both the Early and the Late Mesolithic (Płonka 2002. Map 3, Map 16). The same also applies to the double-edged bone daggers with a shaft (Płonka 2003. Map 22). The shaft-hole objects and the double-edge daggers have been interpreted as mainly having been intended for ritual or symbolic acts (Nash 1998). This seems to have meant that ornaments had different functions in the south-west and the east. At Strandvägen both forms of ornamented objects appear. Influences from southern Scandinavia and north-east Europe seem to combine at this site. The contact routes from the south are evidenced through various types of flint, for instance. But this contact was selective, as the arrowheads that are so common in the south, for example, are almost entirely absent here (Carlsson 2008).

When exactly these influences from the east reached central Sweden, is uncertain. Here we may get a clue from the changes in flint technology. During the later part of the Early Mesolithic, the method of producing microblades spread from northern Asia to eastern Europe and out towards the west and south (Knutsson *et al.* 2015). It is conceivable that it was through these channels that eastern European notions reached central Sweden as to which objects should be decorated and with which motifs.

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Figure 1. Location of the Strandvägen site. The relation between land and sea reflects the situation during the Late Mesolithic.

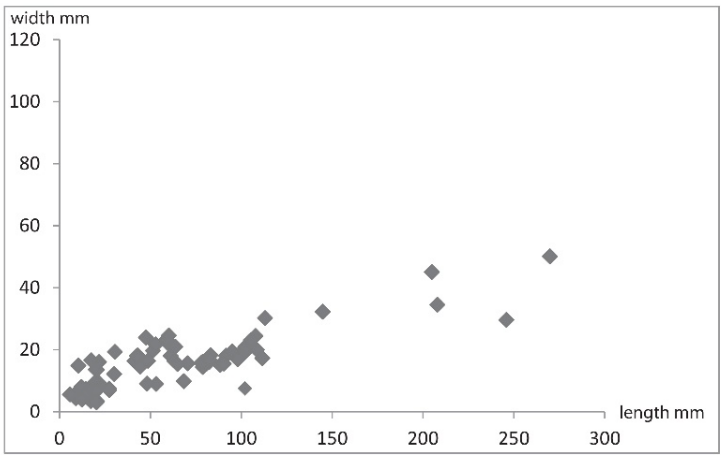

Figure 2. The length and width values indicate that the majority of the ornamented objects made of bone and antler are in a highly fragmentary state.

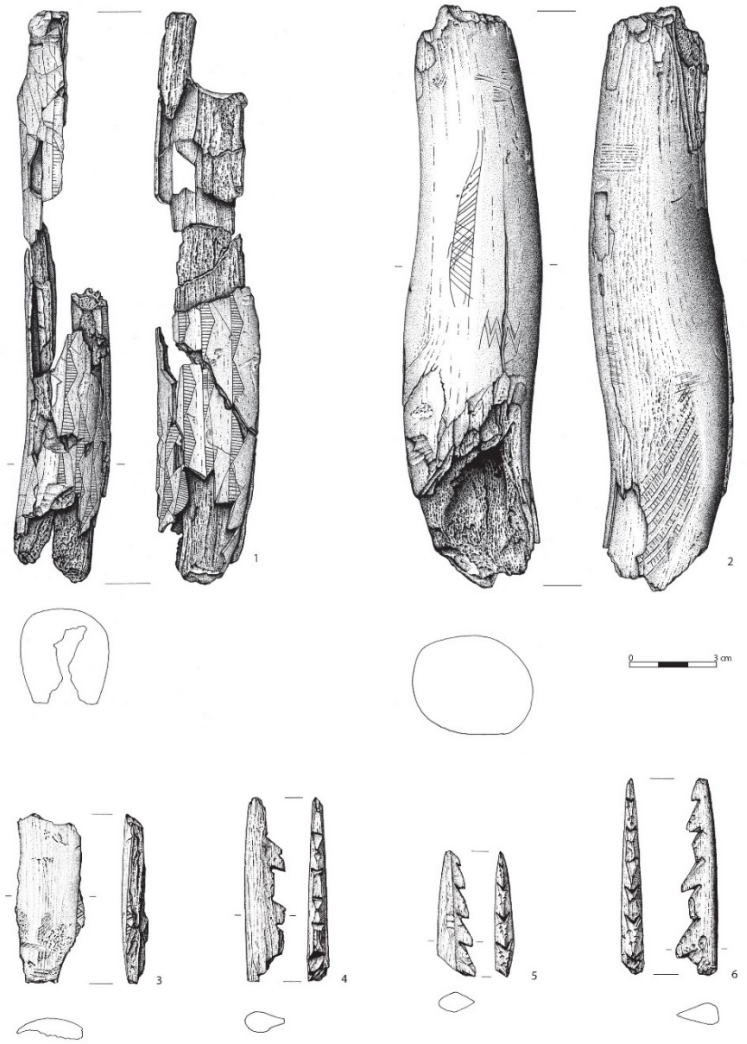

Figure 3. Ornamented objects from Strandvägen, Motala. 1–2: ornamented antler object broken at the shaft-hole; 3: fragment of ornamented object; 4: leister point with notches on the barbs; 5–6: leister points with small notches on the front of the barbs (drawings by Björn Wallebom).

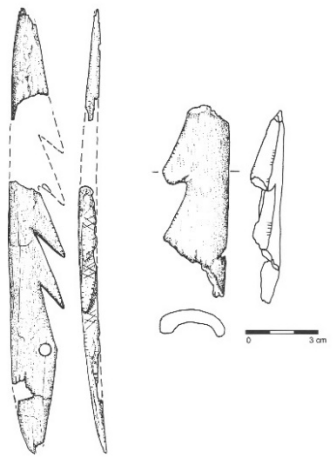

Figure 4. Ornamented harpoons from Grave 4, Skateholm II, southern Sweden (left) and Bredasten, southern Sweden, (right) (After Płonka 2003).

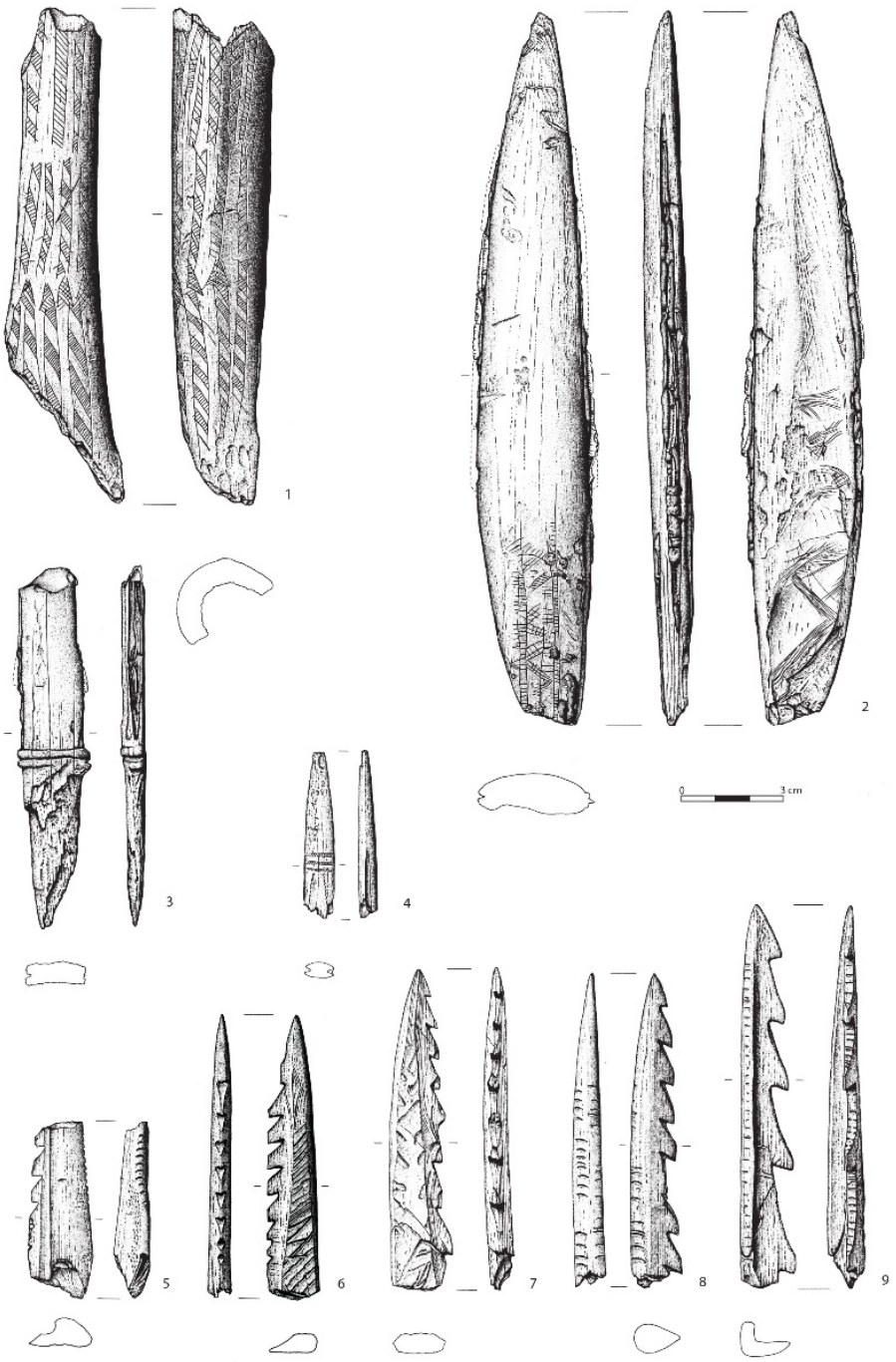

Figure 5. Ornamented objects from Strandvägen, Motala. 1: fragment of an ornamented antler object; 2: slotted dagger; 3: fragments of slotted dagger; 4: tip of a slotted dagger; 5–9: leister points with ornaments on both the barbed edge and the opposite (back) edge (drawings by Björn Wallebom).

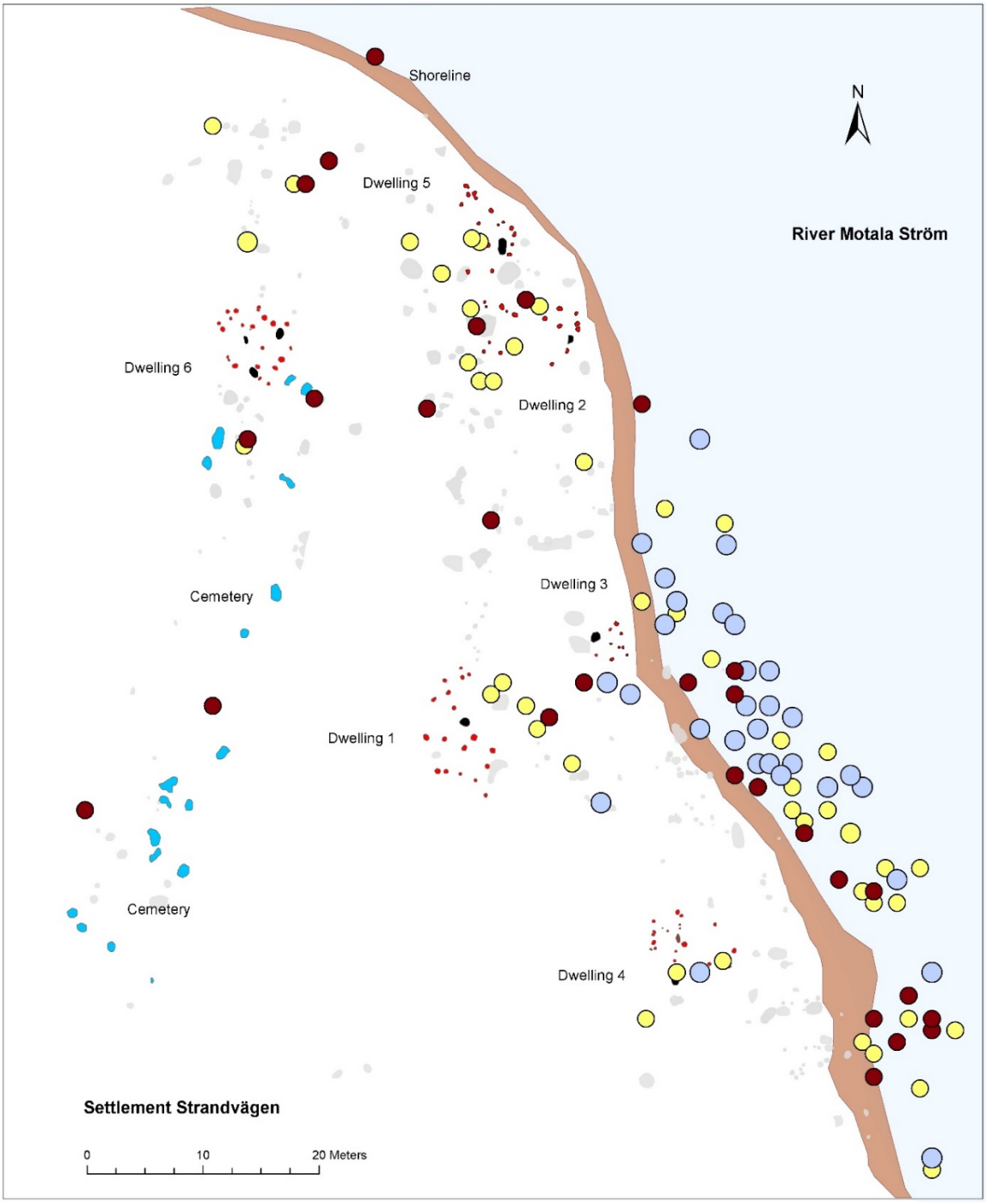

Figure 6. Site plan of the Strandvägen settlement with the location of the Mesolithic cemetery and the documented dwellings marked along the shore of the Motala Ström river. Blue dots = ornamented leister points. Yellow dots = ornamented bone and antler objects. Brown dots = deposited "loose" human bones (graphics by Fredrik Molin).