New Perspectives on the Bronze Age

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edited by

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Preface

I wish to express my sincere gratitude to all who participated in the 13th Nordic Bronze Age symposium. Thank you for attending the conference, for presenting excellent papers and for asking stimulating questions and sharing a wealth of specialist knowledge, all of which led to a successful, and memorable, conference. I am especially grateful to the session organisers for leading interesting sessions with lively discussions. I am also grateful to Johan Ling for organising the excursion to Tanum on the last day, and to Anna Wessman for leading the excursion to the so-called Bronze Age Strait. In addition, heartfelt thanks must also go to GAST, the student society, and to the student helpers who volunteered during the symposium.

A further round of thanks must go to the contributors to this volume, both for taking the time to write and revise the articles, and for having patience with the numerous small questions that always arise in finalising an edited volume. I would also like to thank my co-editor, Anna Wessman, who assisted until the start of her maternity leave in April 2016. Thanks are also due to Kristin Bornholdt Collins for assisting with matters of language and in the task of adopting the style guidelines of the publisher, and to Rich Potter for setting the volume. I am also grateful to Archaeopress for showing interest when I approached them about publishing the volume.

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Finally, I wish to thank my colleagues at the Department of Historical Studies at the University of Gothenburg for their support, from conference planning to production of this volume. Particular thanks go to Johan Ling, Peter Skoglund and Kristian Kristiansen for their input along the way. I hope that the authors are pleased with the final result, and that many will find the diverse collection of articles an interesting and inspiring read.

Gothenburg, March 2017

Sophie Bergerbrant

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Christopher Prescott and Lene Melheim

Abstract

The Skrivarhelleren site demonstrates the comprehensive range of activities associated with Late Neolithic and Bronze Age settlements, in this case at a seasonal, upland rock shelter site in an area commonly deemed as geographically and environmentally peripheral to the Nordic region — but from c. 2400 BC clearly integrated into the North European World. This peripherally located site offers a fascinating set of data concerning early agro-pastoral practices, hunting and fishing — demonstrated by a rich assemblage of non-durable materials like plant remains, bone, antler, resins and shells — and early metallurgy. Located in the rich upland hunting grounds of Sogn in western Norway, the shelter provides access to seasonal pastures as well as a range of other outfield resources. This article examines new evidence pointing to wool or textile production. Using the exploitation strategies of later periods in this remote region as analogy, we argue that production was not limited to the household, but geared towards a market. The implication of this line of reasoning is that there was a focus on exchange-oriented wool-production and that, in a yet wider context, wool-production could be one of the comparative advantages of the Scandinavian uplands.

Key words: Late Neolithic–Bronze Age, highlands of Norway, rock shelter site, agro-pastoral practices, outfield resources, textile production, wool.

The Skrivarhelleren site and its material culture

The Skrivarhelleren rock shelter site embodies the variation inherent to the Bronze Age. Located in a mountain valley 800m a.s.l. in Sogn, western Norway, it is geographically peripheral to both northern and southern Scandinavian Bronze Age traditions (Figure 1). The cultural expression is however strongly related to the Nordic Bronze Age (1700–500 BC) and wider European trade networks (Prescott 1991a, 1995a:137–138; Melheim 2015:85–92, 182–185). At the same time, the shelter offers a well-dated sequence concerning the transition from non-asbestos Late Neolithic pottery to Bronze Age asbestos-tempered Risvik ceramics. The latter demonstrates the continued integration throughout the Bronze Age into the western Scandinavian zone of interaction — a field of interaction that arises with the transition to the Nordic Late Neolithic (2350–1700 BC) (Prescott *et al.* in press). Situated in the uplands of the Scandinavian interior, the rock shelter lies along E–W thoroughfares, and is also readily accessed by maritime routes through Sognefjorden. In many ways, this context offers surprising insights, and among these are the indications — along with other mountain sites in southern Norway (Odner 1969, 1972; Indrelid 1986; Bjørgo *et al.* 1992; Prescott 1995a, 1995b) — of a relatively intensive use of upland pastures as of the beginning of the Late Neolithic.

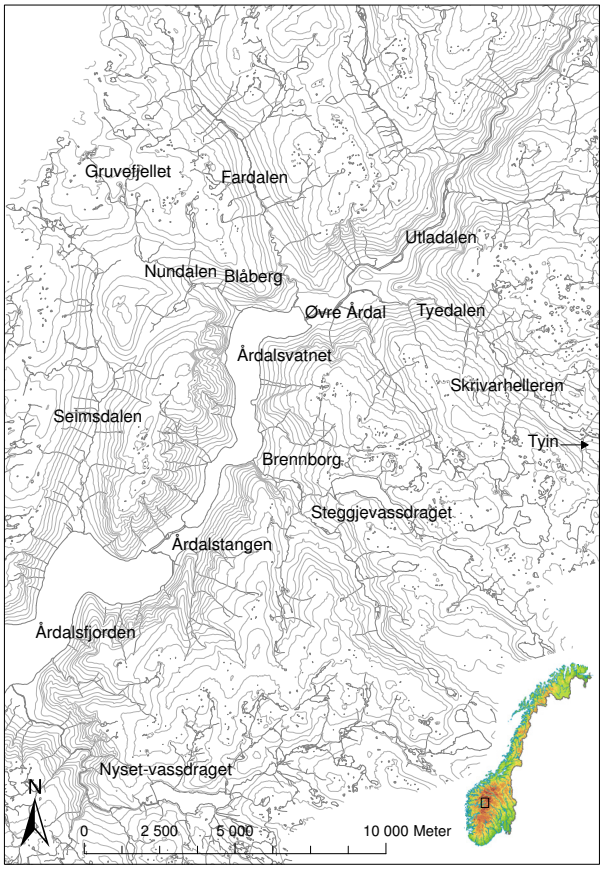

FIGURE 1. MAP OF THE REGION OF SOGN, WESTERN NORWAY, WITH THE SKRIVARHELLEREN LOCATION INDICATED. FROM PRESCOTT 2006. © ANNE ENGESVEEN AND CHRISTOPHER PRESCOTT.

Figure 2. The Skrivarhelleren rock shelter and its immediate surroundings. Photo: © Anne Lene Melheim.

Due to excellent conditions of preservation in the shelter, the cultural layers (mid-3rd millennium BC up to AD 800) have produced a rich assemblage of archaeological, osteological and botanical data (Prescott 1991a, 1995b). The bone material demonstrates a strategy of hunting (for food, pelts, furs and antler), but also includes one of the oldest assemblages of domesticated animal species in Norway — as well as cereals dating to the Late Neolithic and Bronze Age. Though in the mountains, marine species (sea mammals, fish, shellfish, and seaweed) are a significant element. Lithic tools (largely struck non-flint materials but also ground and polished basaltic, slate and struck flint objects) are the most readily identified archaeological elements, but the site has also yielded ceramics and numerous objects made out of bone, antler and seashells. These include tools (piercers, points, spatulas, needles and picks), pins, beads and pendants. Interestingly, there is a handful of bronze fragments, mould fragments and microscopic traces of copper alloys that represents the, to date, oldest *in situ* evidence of casting in Norway (Prescott 1991a; Melheim 2012).

Agropastoral production and wool

Many aspects of the various usages of the Skrivarhelleren shelter (Figure 2), and the characterisation of the inhabitants as a section of the farming population based in the lower-lying areas by the fjord, but seasonally utilising the uplands, have been discussed through the years. These discussions have often focused on craft activities spurred by the availability of particular resources in this area (e.g. Prescott 1991a, 1991b, 1995a, 1995b, 2006; Melheim 2015; Melheim and Prescott 2016). Impelling new excavations and new finds in 2013 and 2015, additional emphases have come into focus, stressing both a range of production activities in and around the rock shelter, and also the broader social relations that drove them. The identification of an as yet limited but still striking assemblage of objects arguably related to textiles and textile working invites a renewed discussion about pre-Iron Age wool production in the uplands and mountains of the Scandinavian Peninsula.

With the transition to the Late Neolithic an intensified agro-pastoral production — centred on a developed

farming institution — became established throughout northern Europe (Prescott and Glørstad 2012). This transition can also be registered in the uplands and mountains of southerly Norway (Mikkelsen 1989; Indrelid 1994; Prescott 1995a). The evidence for systematic seasonal exploitation of the uplands in the Late Neolithic and Bronze Age not only for hunting and foraging, but also exploitation of pastures for the grazing of sheep, goats and cattle is indirectly demonstrated by pollen diagrams, settlements and settlement locations, as well as by faunal and macro-botanical evidence.

The upland finds demonstrate frequent movements from lowlands to high mountain altitudes. A range of activities was carried out and various resources exploited. This pattern of exploitation practices, moving from lowland farms into the uplands as spring and summer pastures become available, and moving down again in the late summer, may well be understood as practices analogous to the historical use of shielings or summer farming (Prescott 1995a, 1995b). This particular form of transhumance was practised in the Nordic region already in the Iron Age to Medieval period (Magnus 1983, 1986; Myhre 2002: 148–149), but can be studied in detail in the historical epoch through ethnographic studies, both on a general scale (Solheim 1952; Reinton 1955; 1961) and in local histories of communities (e.g. in Sogn: Ve 1930; Bjørkum 1958; Ohnstad 1962, 1988; Sagen 1971). However, the studies from the historical epoch are from a period of state control and market economy. In this context production was aimed at specialised surplus agro-pastoral production for trade in a market system, as well as community subsistence. The study of post-reformation summer farming is generally from an epoch of high demographic pressure that induced practices of optimised agro-pastoral production strategies — even in very marginal environments (e.g. Ohnstad 1988). So, though the practices in the landscape of more recent history offer models for understanding prehistoric practices, the structural pressures leading to the relatively intensive use of the uplands in the Late Neolithic and Bronze Age were probably driven by somewhat different economic, social and political forces.

In terms of the intensified systematic exploitation of upland pastures, the question that arises from the western Norwegian material is why such large tracts were drawn into seasonal pastoral production. The likely relatively low demographic pressure and the lack of extensive markets and market infrastructure, or so we think, make the socio-economic context very different from the context of seasonal farms of the historical epoch. However, in light of the significant number of imported flint daggers (Apel 2001)[1] and imported metal (Engedal 2010) that entered coastal Norway and the uplands alike in the Late Neolithic and Bronze Age, we need to ask what kind of products were traded from the Scandinavian Peninsula in return. The prevalent theory is that outfield products like pelts, fur, feathers, antler and soapstone allowed the northerners to enter into the trade networks of the northern European region (Johansen 1981:133–139; Prescott 1995a:137–139; Engedal 2010: 233–238; Earle *et al.* 2015). Given the history of wool as a trade commodity, and the evidence of sheep husbandry in upland Norway (Prescott 1995b), the possibility of wool production in the peripheral parts of the Scandinavian Peninsula targeted for exchange is worth exploring further.

Since the third millennium, wool has been an important product, used for numerous practical purposes — blankets and other covers, clothes, sails, and linings- but also woven into luxurious high-prestige textile. As it is durable and moderately transportable, it is well suited for trade in the form of bales of fibres, thread and yarn, bolts of textile or final products (e.g. Braudel 1982), historically, wool has been an important trade commodity in northern Europe. Wool probably enters into more common use in Europe in the 3rd millennium (Barber 1991), and wool production is documented in Hungary at least from 2200 BC (Vretemark 2010). No doubt both textiles and raw wool were traded in the Bronze Age of the Old World. While trade in wool and textiles is most generously documented in the Near East (Barber 1991), there are reasons to assume that the situation was similar in Bronze Age Europe, e.g. through evidence from Hallstatt *c*. 1500–1150 BC of imported wools or textiles (Rast-Eicher and Bender Jørgensen 2013:1234, and refs.).

Textiles, whether of wool, flax or other fibres are vulnerable to decay, and, although only rarely preserved in archaeological contexts (i.e. the Alpine lake-dwellings, Hallstatt salt mines, Scandinavian oak-log coffins, and extraordinary contexts like Must Farm) do seem to increase in frequency in the Bronze Age (Barber 1991). The advent of wool production is traced to documented changes in husbandry, e.g. in shifts in sheep demography in the Near East during the Chalcolithic — with an increase in adult ewes — probably relating to a management strategy aimed at producing milk and wool (Bender Jørgensen and Rast-Eicher 2016:71; cf. Sherratt, 1981, Greenfield 1988). The oldest wool known north of the Alps is the handle lining of the Wiepenkathen type 1 flint dagger and sheath found in a bog near Hannover in Germany and dated to the Late Neolithic I (Cassau 1935; Stokar 1938; Bender Jørgensen and Rast-Eicher 2015:67–68; also Barber 1991; Lomborg 1973: 33). The

[1] About 10% of known Late Neolithic type 1b flint daggers reported throughout the Nordic region, but produced in Denmark, are found in western Norway.

dagger's sheath was made out of cured sheep skin. The handle grip was reported to have been lined with woven plant fibres, while the weft was a right z-spun mixture of sheep's wool and hair of sheep, goat, oxen and horse (Cassau 1935: 199–200).

Wool is from time to time mentioned as one of Scandinavia's export products and a comparative advantage in European exchange networks (see e.g. Kristiansen 1978). This is most explicitly argued by Randsborg (2011), who maintains that woollen textiles were among the major exports from Scandinavia. Wool as well as ready-made textiles, he believes, came from northerly parts of Scandinavia, and were traded via Denmark and further south to northern Germany. Two recent works applying scientific analysis to textile remains from the Nordic Early Bronze Age shed some light on Scandinavia's potential role in such networks. Analysis of the well-preserved garments of the Egtved burial (see Bergerbrant 2007:54–55, and refs.) using isotope tracers seems to point toward the import of sheep wool *to* southern Scandinavia (Frei *et al.* 2015). It is argued that most of the woollen textiles and the oxhide in this log-burial, were non-local to Denmark. One piece, a wool cord from the accompanying child's cremation burial, did however show a profile coherent with a local origin. The Egtved girl's blouse, skirt, bundle, belt and foot wrappers were produced through careful selection and processing. Frei and co-authors (2015) suggest that the garments originated in south-western Germany (Black Forest). This might be a hasty conclusion, as a study that compares fibre quality between Norwegian and Swedish woollen textiles and Hallstatt/central European textiles seems to suggest that high-quality wool was in fact produced in Scandinavia (Rast-Eicher and Bender Jørgensen 2013). This study shows a qualitative difference in wool interpreted as coming from different sheep breeds. The Scandinavian textiles are characterised by shorter and thinner fibres, made of very fine wool selected from hairy sheep, and very likely deriving from lamb's wool or plucked wool (Rast-Eicher and Bender Jørgensen 2013: 1233). Two sites with textile finds dated to the Early Bronze Age II in Rogaland in south-western Norway — Blodheia and Jåsund — were included in this study. The Blodheia textiles appear as sized or glued/oiled (Rast-Eicher and Bender Jørgensen 2013:1233). This very fine quality wool with 85% of the fibres below 20 microns, found in both the Blodheia and Jåsund textiles, dominates in Scandinavia (Bender Jørgensen and Rast-Eicher 2016:73, fig. 4). Fossøy (2012:77) points out that the textiles found in Rogaland were made in a technique very similar to Danish Bronze Age textiles, and that the know-how is likely to have spread within a community of craftswomen (cf. Bergerbrant 2008).

The conclusions drawn regarding the provenance of the Egtved girl's textiles and high mobility are based on a combined approach to a broad set of archaeological and biological data, including isotopes of human tissue from the girl and the cremated child. Two areas that could have produced similarly wide ranges of values are proposed; parts of the UK and southern Sweden (Frei *et al.* 2015: fig. 1). Isotopic analyses of wool in conjunction with Pre-Roman bog bodies in Denmark indicate both local and non-local sources (Frei 2014:4), while the analysis from the Pre-Roman Huldremose II body's textiles indicate wool from three sources, one local, the other two from sheep associated with soils originating from Pre-Cambrian rocks, i.e. consistent with an origin from Sweden or perhaps Norway (Frei *et al*. 2009).

Bronze Age period I represents the oldest occurrence of actual wool textile *finds* in Scandinavia, with a few examples from Jutland and Schleswig-Holstein (Bender Jørgensen 1986). However, these finds, and the oak-log burials like Egtved represent fortuitous finds — points in time in the history of wool. This is underscored by the fact that the majority of Scandinavian Bronze Age textile finds come from these extremely well-preserved Early Bronze Age burial contexts, while fewer textiles are reported from the Late Bronze Age (Broholm and Hald 1940:103; Fossøy 2012:69; Mannering *et al.* 2010). However, figurines and other representations demonstrate clearly that the same woollen clothing was still in fashion. The oak-log burials demonstrate that as of 1500 BC woollen textiles and wool technology was fully integrated into the Nordic societies (Broholm and Hald 1940) and arguably, that there was a lively northern European trade in textiles. The earliest evidence for woven wool in the Nordic region is represented by the previously mentioned Wiepenkathen dagger, which dates to the Late Neolithic I (approx. 2350–1950 BC). Circumstantial indications of Late Neolithic woollen textiles have been noted in a find from western Norway, the Mjeltehaugen barrow at the island of Giske, Møre and Romsdal, with potential representations of woven textiles on the stone chamber walls similar to those found on stelae and slabs at Le Petit Chasseur (Switzerland), Göhlitzsch (Germany), Insua (Spain) and possibly Steine (Trøndelag, Norway) (Sand-Eriksen 2015; this volume).

Wool would be admirably suited for living in the cool and damp Scandinavian climate, and is even today the preferred outdoors material. Its flexibility allows movement, its structure and natural oils have water-repelling qualities (especially when new), it is warm even when wet and it is durable and dependable (Bender Jørgensen 1992:116). Despite limited variations in hues and textures compared to other areas, the Nordic woollen Bronze Age textiles may reasonably be argued to have served as regional identity markers (Hägg 1996; Kristiansen 2013). The dominance of undyed woollen textiles in northern Europe would clearly demarcate a

person from this region from the often linen-dressed people of e.g. central and southern Europe (Bender Jørgensen 1992; Bergerbrant 2007:48, 2008; Fossøy 2012; Rast-Eicher and Bender Jørgensen 2013).

A belt with tassels is a remarkable aspect of the Egtved burial find and similar belts are present in a number of other female burial finds, some of them demonstrating high-quality tablet weaving (Fossøy 2012:42–44, fig. 35). From Norway, textile fragments are preserved only in the two previously mentioned burial finds, at Jåsund in Sola and Blodheia at Karmøy in south-western Norway (Nordenborg Myhre 1998:209).[2] The Kyrkje-Eide stele from Stryn, Sogn and Fjordane is another find from western Norway indicative of woollen textiles, or perhaps even textile production? This enigmatic imagery dating to *c*. 1500–1300 BC was reinterpreted by Engedal as the rare representation in stone of a female costume: a corded skirt with belt-plate and tassels, a comb, dagger, sickle and some other less easily identifiable objects — presumably tools (Engedal 2010:112, 299).

Proxy indications of potential wool-use, apart from evidence of the sheep themselves, are found in the widespread equipment — bone and metal pins —for keeping woven textiles like capes in place. Such pins are particularly prevalent as of the Late Neolithic, to an extent that they are a characteristic inventory of graves (Forssander 1936; Hjärthner-Holdar 1978). Such pins are also, to set them in cultural context, an integral element in Bell Beaker and Bronze Age graves. Other evidence to be expected from wool production includes spinning whorls, loom weights, shuttles and looms or other parts of weaving equipment. Apart from whorls and loom weights — presumably produced in stone and ceramics — such equipment would have conceivably been made out of organic materials, and are therefore generally not present in the archaeological record. Indeed, though we have some analogies from other areas (e.g. Gleba 2009) and later periods (Petersen 1951; Andersson 1999, 2003; Kristoffersen 2000), we do not have a lot of material. The richly equipped Viking Age Oseberg burial from Vestfold in Norway is an example of an extremely well-preserved context with a number of different textile tools represented (Grieg 1928; Christensen and Nockert 2006). Spindle whorls are quite common in Iron Age finds, as well as weaving equipment like loom weights, shuttles and wool combs, but are rare in Bronze Age contexts. In Rogaland, Norway we have one report of finds of loom weights and spindle whorls from the Late Neolithic/Early Bronze Age (Fyllingen 2015:104) and one from the Late Bronze Age (Hemdorff 1993). Other isolated examples come from Late Neolithic/Early Bronze Age Denmark and Sweden; of particular interest is a Period I find from Egehøj in Jutland of several loom weights in small 'weaving pits' at a settlement site (Bergerbrant 2007:49, and refs.). Since few textile tools have been identified at all in Bronze Age Scandinavia, less specialised tools like horn and later bronze combs have been discussed as potential wool-related tools (Rast-Eicher and Bender Jørgensen 2013:1238). However, the lack of preserved or identified tools is not taken to imply that woollen textiles were not made locally; rather it seems to be a question of how representative the archaeological record is.

The few finds of weaving equipment from the Late Neolithic and the only scanty or indirect evidence of the textiles themselves, could lead to the conclusion that weaving and woollen materials were not present or extremely rare in everyday life in prehistory — or that wool and processing equipment are not often preserved, and the record therefore limited. Though finds are patchy, based on the material we do have, wool seems to be common and arguably ubiquitous as of the Late Neolithic. At some point, but probably before Period II of the Early Bronze Age, a lively exchange of wool and textiles within the Nordic region was established from Norway to northern Germany, and there was a sophisticated level of textile production (Broholm and Hald 1940), exploiting variable quality traits of wools and producing equally sophisticated clothes. From these initial premises, we re-examined artefacts excavated at Skrivarhelleren (Prescott 1991a, 1991b), and present some material excavated 2013 and 2015 (as yet not published).

Presentation of Skrivarhelleren and environmental evidence

The Skrivarhelleren site is a rock shelter site 790m a.s.l. in the uplands of Årdal, Sogn and Fjordane. Located in what would have originally been an upland forest belt, it is situated a few hours walk from the Sognefjord, and just below the higher altitude open uplands. There is thus access to lowland resources (like cereals and sea animals), intermediate resources (fowl, small carnivores, hare and deer), freshwater resources (trout) and upland resources (reindeer) — as well as pastures for sheep, goat and cattle seasonally available at all altitudes. This is demonstrated in the bone material recovered from the site (Prescott 1995b). As already described, the site is interpreted as part of an exploitation practice analogous to summer farming or shieling practices from the Iron Age and historical periods.

The area inside the shelter is protected from the elements. The roof stops direct precipitation, the shade (created by the roof and the knoll in front of the shelter) and a cool draft from the underlying scree keeps temperatures low. Skrivarhelleren was initially

[2] Note, however, a now lost find from Fredrikstad in Østfold (Melheim 2006: App. 4; Johansen 1981:49).

sampled with a shovel test pit in 1965, and interpreted as a small hunting station (Bakka n.d.; Ve 1971: 507–508). Sampling and excavations 1987–1989 (Prescott 1991a) demonstrated that there are extensive deposits both in and outside the shelter, stretching over an area of potentially 200m2. From 1997 to 2015 an area of approximately 18m2 was excavated. Deposits in the shelter are up to nearly 2m in depth and date from the early Late Neolithic I (around 2350 BC) up to the present. Excavations demonstrate both vertical and horizontal stratigraphy, with predominantly Late Neolithic and Bronze Age deposits in the north-west, Iron Age deposits in the south-east and an early medieval structure outside the shelter. The above conditions were favourable for the preservation of organic materials like bone, antler, seashells and some plant materials, and less disturbance and intrusion from later activities than is common in sites like this. Organic refuse, equipment, personal objects, along with ceramic, lithics, metals and other durable materials provide insights into the multifaceted set of activities and exploited resources (Melheim 2015; Prescott 1991a, 1995a, 1995b). Though in the uplands of a region previously conceived as marginal, the materials — metals, moulds, daggers, points, pins, ceramics and beads — demonstrate integration into the prevalent Late Neolithic and Bronze Age cultures.

Excavations in Skrivarhelleren were initiated after previous excavations of open air sites in the surrounding mountains, but apart from a single sheep bone from the Late Bronze Age/Early Pre-Roman site Urutlekråi 47, there was only proxy data concerning summer farming on sites from the Late Neolithic and Bronze Age (Bjørgo *et al.* 1992; Prescott 1995a). Acidic soil and heavy precipitation in Norway entails that most bone that is not burnt, is seldom preserved. Rock shelters in Norway are one of the few contexts where such bone can be found, however such contexts are often characterised by complicated stratigraphy due to intrusions, trampling and rock falls.

Importantly in the current discussion, cattle, goats, sheep and sheep/goat bones were present from the Late Neolithic I level and throughout the deposit (Prescott 1991a, 1991b: Tab. 19). Of course, with the data available now it cannot be confirmed that these sheep were wool-bearing — however, given the close interaction with the rest of Europe at this time, demonstrated by the artefact material and the metallurgical activities- it would seem likely that the people in the shelter also had wool sheep. Studies of bone material from sites in southern Scandinavia suggest that Bronze Age sheep were smaller than in central Europe, and that a higher proportion were kept as adults, however, the numbers are not high enough to indicate production beyond household needs and consumption (Benecke 1994; Vretemark 2010; Sørensen 2010; Rast-Eicher and Bender Jørgensen 2013). It is thus reasonable to assume that sheep kept by the people who used Skrivarhelleren in the summer months were wool-bearing — although it is not certain.

In the near surroundings of Skrivarhelleren, there is substantial evidence of specialised textile production from the Iron Age to medieval summer farm sites in the uplands in the nearby Fossdalen, Vikadalen and Berdalen in Årdal (Bjørgo *et al.* 1992). Textile production along with evidence of crafting of e.g. precious metals and wood working were found at the Late Iron Age site at Ytre Moa in Årdal; situated on a terrace in the valley bottom and only *c*. 10km from the shelter itself. Loom weights were here interpreted as coming from an upright warp-weighted loom (*Opstadvev*) (Bakka 1965, 1971). Similar evidence has been recoverd at the Early Iron Age farm site of Modvo, also in the Inner Sogn region (Bakka *et al.* 1993). While retrospective, this later evidence is still indicative of the particular environmental resources of this area and their potential exploitation in prehistory. In this line of reasoning it is interesting to note that a medieval summer farm house (dated, but not excavated) is located 35m from the main exaction trench, on the knoll immediately in front of the Skrivarhelleren rock shelter (Prescott 1991a:117). This indicates the later use of the immediate surroundings of the shelter for summer pastures.

Indications of the use of woollen clothes in Skrivarhelleren?

As noted above, a characteristic feature of the Late Neolithic, Bronze Age and Iron Age are the variety of bone and metal pins designed to fasten and close textiles (Table 1) – presumably woven wool. In Skrivarhelleren these come in a variety of shapes and sizes (Prescott 1991a, unpublished).

These pins underscore the broader cultural context: mainstream Bell Beaker, Late Neolithic and Nordic Bronze Age connotations, but also indicate the use of textiles by the people who visited throughout the history of the use of the shelter — probably woven textiles of wool.

Tools potentially related to textile working

A number of objects from the rock shelter were classified under ‘uncertain function’. Having explored different hypotheses and explanations, we increasingly ask if they may be related to textile production (Table 2). These bone objects are concentrated to the Late Neolithic (2390 BC, layer VIII) to Early Bronze Age layers (1420–1320, context XV).

Inv. no.*	Description	Context	Age
B14186/23	Polished bone pin with hollow head and slanting hole to fasten thread from the head to the pointed end (Müller 1895; Montelius 1917:40; Forssander 1936:135-36)	51x49y, layer XVII, context VI	LN II
B14186/416	Rounded pin fragment with symmetric hatching in zone	48x50y, layer XII, context V	LN II/EBA I
B14186/420	Bone pin with T-shaped head	48x50y, layer XIV, context V	LN II/EBA I
B14186/235	Bone pin with bulbous head and collar (EBA II/III)	50x50y 12/13, context XV	EBA II/III
B17490/2	Rough pin (in two parts)	47x51y, layer XI	(E)BA
B17490/2	Bronze fastener needle from a fibula	48x51y, layer VII	BA

Table 1. Bone pin and copper alloy fibula fragments from Late Neolithic and Bronze Age contexts. *In addition to the Late Neolithic and Bronze Age pins/fibula, a Migration Period caterpillar brooch and a Viking Age pin for a ring brooch were recovered.

Inv. No.	Description	Context	Age
B17490/16	Bone textile tool, with holes and narrow, notched ends; a distance equipment for band loom? (Figure 3). Broken in two, with altogether six perforations, one end well-preserved and notched, the other broken-off, 11 cm long, 1.7 cm broad, 0.5 cm thick	52x 48y B Layer XXXV, 6-8	LN II
B17490/13	Miniature bone needle with perforation (Figure 4). Broken off at distal end, 1.4 cm long, 0.5 cm broad, eye diam. 0.3 cm	52x 48y A, Layer XXII, 14	BA
B14186:423	Knife-shaped bone tool; weaver's shuttle or baton? (Figure 5a)	48x50y, layer XVIII, context VIII	LNI or II
B14186:218	Notched bone plate; weavers shuttle? (Figure 5b)	50x49y, layer XII, context V	LNII/EBAI
B14186/199-202/203/210-12/223-4/235/238/255/257	Needle pins and/or textile pins. Rounded bone pin fragments (body or tip)	Contexts VII, VI, V, XV, IV	LN to LBA

Table 2. Possible textile tools of bone from Late Neolithic and Bronze Age contexts.

In the 1991 site publication, a number of the above objects were described, but in terms of function simply listed as unknown. However, as indicated in the table, we tentatively suggest here that they might be related to textile working and weaving. Some form of stitching is indicated by the small perforated needle head made out of bone (Figure 4, B17490/13). Whether the thread was with animal sinew, wool or plant fibre yarn is, however, impossible to say. However, the most interesting pieces are two fragments from the same object, the fragmentary bone stave with a hooked ending and holes (Figure 3, B17490/16). Similar-looking artefacts found in other rock shelters, e.g. Skipshelleren, have been interpreted as tools for making or mending fishing nets (e.g. Matland 1991: fig. 49, cf. Müller 1888: fig. 191). These tools are, however, mainly without perforations, or with only one hole. Similar-looking tools of wood or bone/antler, some of them very similar to the piece from Skrivarhelleren, occur in the collections of the Norwegian Folk Museum, where they are registered as 'weaver's shuttles'.[3] While some of these have a hole at one end (for fastening the thread), the six perforations of the Skrivarhelleren piece, placed in a row, seem useless for this purpose. An alternative interpretation, therefore, is that it is a thread separator, or distance-equipment for a tablet loom (cf. Gleba 2009: fig. 6). Tablet weaving equipment is known from the prestigious Viking Age female burial of the Oseberg find (Grieg 1928:192–195, 207, fig. 126; Christensen and Nockert 2006: 143–147, figs. 2.2–2.3), and occur in other Iron Age contexts in Norway as well (Petersen 1951: 285–348). However, the identification of a tablet weave in upland Sogn would be quite sensational, as tablet-woven belts are in fact quite rare among the preserved Bronze Age textiles (arguably identified in only two finds from Denmark: a Period II oak-log coffin find at Bredhøj and an Early Bronze Age find from Bøvl, cf. Fossøy 2012: fig. 35, cf. Broholm and Hald 1940). Another possibility, which is more plausible

[3] See: http://digitaltmuseum.no/info/owners/NF.

Figure 3. Bone textile tool, with perforations and notched ends, interpreted as a distance equipment for a band loom. Photo: © Christopher Prescott.

Figure 4. Miniature bone needle with perforation. Photo: © Christopher Prescott.

Figure 5. Knife-shaped bone tool (a) and notched bone plate (b), interpreted as shuttles for weaving, the latter alternatively as a scutching knife. Photo: © Christopher Prescott.

in light of the lack of evidence of the tablets themselves, is that it belongs to a simpler form of band loom. Most of the preserved belts in Scandinavia have been made with the help of simple band looms (Fossøy 2012: 42–44). Loom weights would have further strengthened this theory, but no such finds were made in the shelter.

A knife-shaped tool made of bone (Figure 5a, B14186:423), *c*. 12cm long, is without obvious parallels among Late Neolithic finds. The shape is reminiscent of a weaver's shuttle of the type that occurred from the Iron Age into historical times, made of various materials: iron, bone or wood. Examples with profiled ridges like the Skrivarhelleren piece do occur (Petersen 1951: fig. 158[4]). Also, the flat bone plate (Figure 5b, B14186:218) could have been fastened to yarn and used as a shuttle. Alternatively, it may represent a scutching knife, used for dressing flax (cf. Andersson 2003: fig. 63A). While the lack of loom weight finds may seem

[4] A weaver's shuttle of whale bone from Nordland dated to the Merovingian period.

to contradict the presence of a full upright loom, it is a fact that shuttles are employed also for tablet or band loom weaving. Sprang is another possibility; an even less demanding Bronze Age plaiting technique (made with or without a loom) that was used for making e.g. hairnets (Bender Jørgensen 1986: 291).

In addition to the abovementioned diagnostic jewellery pins, a substantial number of needle fragments and pointed objects were recovered (Table 2; more examples in Prescott 1991a: figs. 24/203, 25/194, 28/8, 29/9 and 30/231), which may possibly relate to textile production. Seams are documented on several Bronze Age textiles, showing a huge variety in yarn quality and thickness (Fossøy 2012: 46–47). At Viking Age Birka and Hedeby, bone needles with large eye diameters were interpreted as being used for sewing coarse textiles (Andersson 2003:83–87, 127–130, figs. 38–42, 64). An alternative interpretation is that some of these needles were used for knotless knitting (*nålebinding*). Such needles tend to be flat or flat-headed (e.g. Franzén 1963). Knotless knitting is well-known from medieval and Viking contexts, but is likely to go further back in time. The possibility that sewing or knotless knitting may account for some of the bone needles in Skrivarhelleren must be explored further in future analyses.

A striking aspect of the Skrivarhelleren shelter is that it is not a specialised upland activity site, in the sense that it was geared towards a limited activity repertoire with a restricted range of social actors, for example summer pastures, reindeer hunting or riverine fishing. There are indications of lowland connections (cereal farming and marine species), as well as indications of pastoralism, hunting, collecting, metalworking, lithic retooling, production or use of tar, cooking etc. In relation to the use of the shelter it has previously been argued (Prescott 1991a:118) that it was centrally positioned along the East–West route and diverse resources (like pastures and hunting grounds). The shelter offered protection against the elements, so it was cool and shady and therefore well-suited for processing food stuffs, especially dairy products.

The enigmatic bone objects recovered from Skrivarhelleren, especially the item here interpreted as a thread separator for a band loom, are conceivably related to wool processing. The summer farm context and the broader cultural context suggest that the sheep kept in and around the shelter could have been wool-bearing sheep. The conditions in the shelter, along with the fact that a multitude of activities were located here, render it well-suited for wool processing and the production of textiles. The Late Neolithic and Bronze Age pins suggest the inhabitants were wearing textiles, presumably of wool. The objects indicate knowledge of textile working, and potentially weaving with band looms, as well as sewing or knotless knitting. In sum, the circumstantial evidence suggests that the Late Neolithic and Bronze Age inhabitants who used Skrivarhelleren as a summer settlement produced, processed and wore wool. The scale and scope of this activity is, however, not yet known. Textile production, and especially weaving, is in many contexts a ritual and symbolically-laden activity (Kristoffersen 2000:137–143; Brandt 2003). Apart from the basic need to produce textile, carrying out this activity in this particular location as a ritual would perhaps also make sense, when so many other activities (also offering) were carried out in conjunction with the seasonal settlement. However, there can be little doubt that the shelter was an arena for craft activites. Though not systematically studied in terms of production and wear, based on the catalogue (Prescott 1991a:41–43) fragments of worked bone/antler, and broken and worn bone objects have been recovered, indicating that there was both production and use of the bone and antler tools.

In a broader perspective

The Skrivarhelleren site is fascinating. Along with the longhouse farm settlements characteristic of the lowlands, the 'open' summer sites of the uplands and mountains and the evolving ice patch finds of the highest altitudes (e.g. Callanan 2014), a rich picture of prehistoric material culture and activities is emerging. With the transition to the Late Neolithic, new patterns of exploitation emerge in the Norwegian highlands. It also demonstrates how cultural developments in the Nordic region penetrated all geographies and environments — and how areas we perceive as 'centre' and 'periphery' seem to be integrated not only culturally, but in an economic system based, among other things, on transhumance (cf. Holst *et al.* 2013).

The exploitation of the uplands encompasses both wild and domesticated species that were exploited in an economic system that fed into broader Scandinavian trade systems. A standing debate in Nordic archaeology is what was given in return for the imported metals. Traditional answers have, as already mentioned, focused on mineral resources like steatite (for moulds), pelts, fur and antler. Little or no — reasonably enough — wilderness products are recovered in for example Norway. The marten, beaver, fox, bear, reindeer, and fowl bones in Skrivarhelleren can conceivably represent the fortuitous recovery of the production side of this equation. But could there be other products that could represent tradable commodities?

Not only does the transition to the Late Neolithic represent new practices — intensified and finely tuned exploitation of seasonal resources comparable to historical summer farms — it represents the initiation

of intensified expansion into the uplands. Starting in the Late Neolithic, both archaeological and ecological data indicate increasing exploitation until the mid-Pre-Roman Iron Age, though with a probable break in the latter part of the Early Bronze Age (Prescott 1995a:132, 139).

And here the analogy with historic summer farms is both right and mistaken. In terms of the historical goals of dedicating as much land as possible to cultivation and fodder harvest, and getting stock away from the lowland fields, it is hard to see that lowland resource pressure would necessitate using the vast upland regions. However, the summer farm system also had an economic side, maximising production (stock, dairy products and wool) for market trade. Here, we can imagine that the development of the upland system was partially geared towards covering local subsistence, conceivably small-scale regional trade between farms (e.g. cereals for dairy?) and very likely also production for markets. In the historical epoch, and probably Iron Age, the seasonal exploitation of uplands was important for generating surpluses of a type that could be used to participate in markets.

Looking beyond the inland 'peripheries', and contextualising products in a larger political and economic geography, along the Norwegian coast there are centres of power and affluence (e.g. Austvoll 2014). These centres are usually associated with agricultural potential. However, they also have a strategic locational advantage: they are by straits and bottlenecks where they could control the all-important maritime traffic (Prescott *et al.* in press). Though socially and politically important, this traffic was certainly linked to trade — a trade extending to the other centres of southern Scandinavia. These centres generated wealth and political power.

Conclusion

Returning to the circumstantial discussion of transformations with the Late Neolithic transition, long-term expansion into the Scandinavian uplands, the rise of coastal power centres as of the Late Neolithic and the embeddedness in Late Neolothic/Bronze Age networks, the question arises: was focused wool production one of the driving forces in the upland expansions of Scandinavia? Were wool and woollen textiles trade commodities in the interaction between the Scandinavian Peninsula's peripheries and Nordic centres? Like the durable metals and lithics, and the visible technologies and cultural traits, non-durable and little visible wool may have been among the products that bound the Nordic sphere of interaction — from northern Germany to the Arctic Circle — together.

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