



NATIONALMUSEET

# The Border of Farming Shetland and Scandinavia

*Neolithic and Bronze Age Farming*



NORDLIGE  
VERDENER

**Papers from the symposium in Copenhagen  
September 19<sup>th</sup> to the 21<sup>st</sup> 2012**

**Edited by Ditlev L. Mahler  
Northern Worlds  
The National Museum of Denmark**



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– Shetland and Scandinavia  
Neolithic and Bronze Age Farming**

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Front cover:

Barley field, Scousburgh, South Mainland, Shetland. Photo by Ditlev L. Mahler September 2011



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# Northern Worlds

## The interdisciplinary research initiative of the National Museum

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The National Museum of Denmark initiated its most comprehensive interdisciplinary research venture so far: *Northern Worlds*. Between 2009 and 2013, the programme produced and communicated new knowledge on the relationship between people and environment over the last 15,000 years in ways relevant to the present, with its notable climatic changes.

*Northern Worlds* had over 20 different sub-projects, which were led by researchers from the various research departments at the National Museum. The projects were organized within three main research areas defined to create sufficiently broad, dynamic and interdisciplinary research environments for the following topics:

### **Climate changes and society:**

#### **When climatic boundaries move**

The focus of *Climate changes and society* concerned selected periods within the last 15,000 years, during which time climate changed radically affected the lives of northern prehistoric and historic peoples. This put the influence of present-day climate changes into perspective.

### **Farming on the edge:**

#### **Cultural landscapes of the North**

The expansion of agriculture into the temperate and sub-arctic zones of the planet represents a more than 6,000 year long narrative, characterized by repeated advances followed by stagnation. *Farming on the edge* focused on periods and areas with large potential



for the creation of new knowledge on agricultural advances and their associated social structures and ideologies. The ultimate boundaries of farming communities in different parts of Scandinavia and the North Atlantic were explored. The project *Shetland – the Border of Farming 4000-3000 BC* and *Farming on the Edge – the Scandinavian Expansion* were parts of this initiative.

### **Networks in the North: Communication, trade and cultural markers**

The 'marginal' northern peoples have always been organized in cultural and trade-based networks that connect them with the wider world. Through studies

of material culture, *Networks in the North* allowed the unique expertise of the National Museum to map and explore the geographical extent of these northern networks.

In economical terms, *Northern Worlds* is the National Museum's greatest research initiative ever. The Augustinus Foundation is the main funder of *Northern Worlds*. It is with pleasure that it is possible to present the report from the symposium held at the National Museum, September 19<sup>th</sup> -21<sup>st</sup> 2012 as a joined venture between *Shetland – the Border of Farming 4000-3000 BC* and *Farming on the Edge – the Scandinavian Expansion*.

Sunset near Alstahaug, Helgeland, Nordland.  
Photo F. Kaul.



Klick mill,  
The Croft Mu-  
seum, South  
Voe, Shetland.  
D.L. Mahler  
photo 2011.



# The Border of Farming – Shetland and Scandinavia

The two research projects *The Border of Farming – Shetland 4000-3000 BC* and *Farming on the Edge – the Scandinavian Expansion* lasted for three years, from 2010 to 2012. Together the two projects consisted of fieldwork and surveying on Shetland and Norway, arranging and partaking in six conferences and the editing and publishing of four books including the present publication. Another important aim for the two projects was to establish a network of scholars, researchers and PHD students from Norway, Denmark, Sweden, Scotland, Ireland and Shetland to meet once a year. During the four network meetings we made tremendous progress in our understanding of the development of the farming societies in Scandinavia and the Neolithic on Shetland.

The introduction of the two projects shall be seen in the light of the most comprehensive interdisciplinary research venture, *Northern Worlds*, which lasted from 2009 to 2013 and was heavily supported by a donation from the Augustinus Foundation. The research initi-

ative *Northern Worlds* combined and coordinated the expertise of the National Museum within the disciplines of archaeology, history, ethnography, conservation and science (environmental history). The research initiative had over 20 different sub-projects, which were led by researchers from the various research departments at the museum. The projects were organized within three main research areas, one of them called *Farming on the edge: Cultural landscapes of the North*, where both *The Border of Farming – Shetland 4000-3000 BC* and *Farming on the Edge – the Scandinavian Expansion* belonged.

During September 2012 the two projects joined forces in a symposium held at the National Museum with researchers from Scandinavia and the British Isles. The symposium lasted for three days, and this publication mirrors the papers given at the symposium.

**Flemming Kaul & Ditlev L. Mahler**

*April 2013, Copenhagen*

# Stanydale Hall – a gathering site or just a large Neolithic House on Shetland?

*Ditlev L. Mahler*

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The Shetland research project lasted for three years, from 2010 to 2012, and consisted of fieldwork for the three seasons, partaking in six conferences and editing and publishing three books including the present collection of papers (Mahler & Andersen eds., 2011; Mahler ed. 2012).

## **The Shetland project**

The object of the Shetland research project was to gather, analyse and document the Shetland Island's Neolithic material in order to deepen our understanding of the Neolithic process and the social impact on the societies within the period 4000-3000 BC, not at least as Shetland was at that time the northernmost area in Europe with a Neolithic population. What was considered important was the comparison with the Neolithic societies in South Scandinavia in order to see if the same elements as

megaliths, the use of the ard, ornamented pottery, polished stone axes and ritualistic behavior as depositing artifacts in wetlands, or even ritual gathering sites just to mention some of the elements, could also be found on Shetland besides the obvious presence of livestock and cereals. The reason the Shetland Islands were the northern boundary for an agrarian expansion could possibly be due to a maritime technological development, but unfortunately we have no evidence of the vessels used during the expansion. Newer research suggests that the Shetland Islands became Neolithic by several steps over a period of time around 3700 BC, and may be seen as a secondary expansion of a Neolithic population from the south west (Sheridan 2012: 6f.). The expansion is almost contemporary with the dates from Orkney (Ashmore 2000: 303f.). (fig. 1)



Fig. 1: The inside of the hall seen from the west. Remark the different orientations of the two traces of roof bearing posts and the entrance. D. L. Mahler 2012.

Why, when the islands are surrounded by exceptional marine resources, does the population hold on to a Neolithic way of life with, amongst other phenomena, the cultivation of barley and with domesticated animals? One of the determining elements which the research project has taken into consideration is the importance of an ideological character. Perhaps the desire to be a member

of an economic-ideological community where the consumption of bread/porridge, beer (?) and, on special occasions, domesticated meat, was of central importance to a feeling of communal, cultural identity (Dinely 2004; Hayden 2009: 597f.; Braidwood 1953: 515). The skeletal

material from Sumburgh Airport – a burial with some 18 individuals dated to ca. 3.500 BC and onwards – gives us an interesting information: Seven of the skeletons show an average delta  $^{13}\text{C}$  ‰ of -19.5 indicating a very terrestrial way of life (Walsh, Knüsel and Melton 2012: Table 1; cf. Schulting and Richards 2002:147f.). The sample size is very small, and the Sumburgh area constitutes the most important agrarian area on Shetland. Unfortunately we have no  $^{13}\text{C}$  evidence from human skeletons from e. g. West Mainland, which maybe would show us a more complex picture.

With the arrival of Neolithic settlers one gets the impression that the larger islands soon became colonized with a rapidly growing population creating a specific cultural landscape (compare Ingold 2000, Bender 2000: 23f.). Not alone West Mainland is rich on sites, but also much of the east and the island of Whalsey (Calder 1964: 37 f.). The excavations on Scord of Brouster on West Mainland are the most comprehensive excavations, and quite recently a new type of sites have been surveyed, namely Pinhoulland and Trollygarth (Whittle et al.1986; Mahler 2012: 38). There have been no excavations yet, but the best preserved site, Pinhoulland, indicate a dating to the Neolithic and with a cluster of seven house structures probably dating to the Late Neolithic and the older Bronze Age, like the nearest

parallel on Orkney, Skara Brae. The most secure  $^{14}\text{C}$  dating of Neolithic structures fall within Late Neolithic period or Beaker period like Ness of Gruting, and it is suggested that the  $^{14}\text{C}$  dating from Scord of Brouster should be reevaluated (Whittle et. al. 1986; Sheridan 2012: 18). The existing  $^{14}\text{C}$  dating suggests, as mentioned, the time around 3700 BC as the Neolithic Landnám period (Sheridan 2012: 9).

The absence of  $^{14}\text{C}$  from the megaliths except from the stone cist from Sumburgh is very regretful. But besides the obvious Bronze Age cairns there are around 50 chambered cairns on the islands, which is quite dense compared with other areas on the British Isles (Henshall 1963: 135f). I have previously commented on the northernmost chambered cairns on Unst at Caldback, which is the northernmost chambered cairn of Europe, still in existence (Mahler 2012: 38).

One of the characteristic elements of the Neolithic period and especially the first half of it, is the ritual behavior among other things ritual deposition of long unused axes of different stone material but often made with great skill and great care (Mahler 2002: 4f.). A very clear parallel to this phenomenon on Shetland is the felsite axes (see also Ballin this volume). Some of them are up to 35 cm long, totally polished, without any traces of use or hafting. Until recent-

ly none had been excavated archaeologically, so the only knowledge we have is the information from stray finds telling us that they often come from wetlands. This information also supports that these axes were deposited as part of a ritual act.

In relation to the few excavations undertaken on Neolithic Shetland we should not be surprised over the relative lack of knowledge about the Neolithic pottery and its ornamentation. Quite to the opposite of what we should expect no Orkney Unstan Ware is known from Shetland. The shards from Scord of Brouster are all very fragmented, and here and there one can observe some ornamentation (Whittle 1986: 60f.). One of the characteristic of the Neolithic both on Orkney and the British Isles and the Continent is the repetition of the ornaments. This we find on some of the vessels from Ness of Gruting among other on a Beaker, and the connections point to western coastal domestic sites (Henshall in Calder 1956: 383). (Fig. 2) Further excavations in the future will without doubt bring much more information about Neolithic ceramics.

The last element of “the Neolithic parcel” is the assemblage sites, and one such site will be in focus on the following pages. Assemblage sites not at least on the continent are not that rare, and in South Scandinavia these sites are known

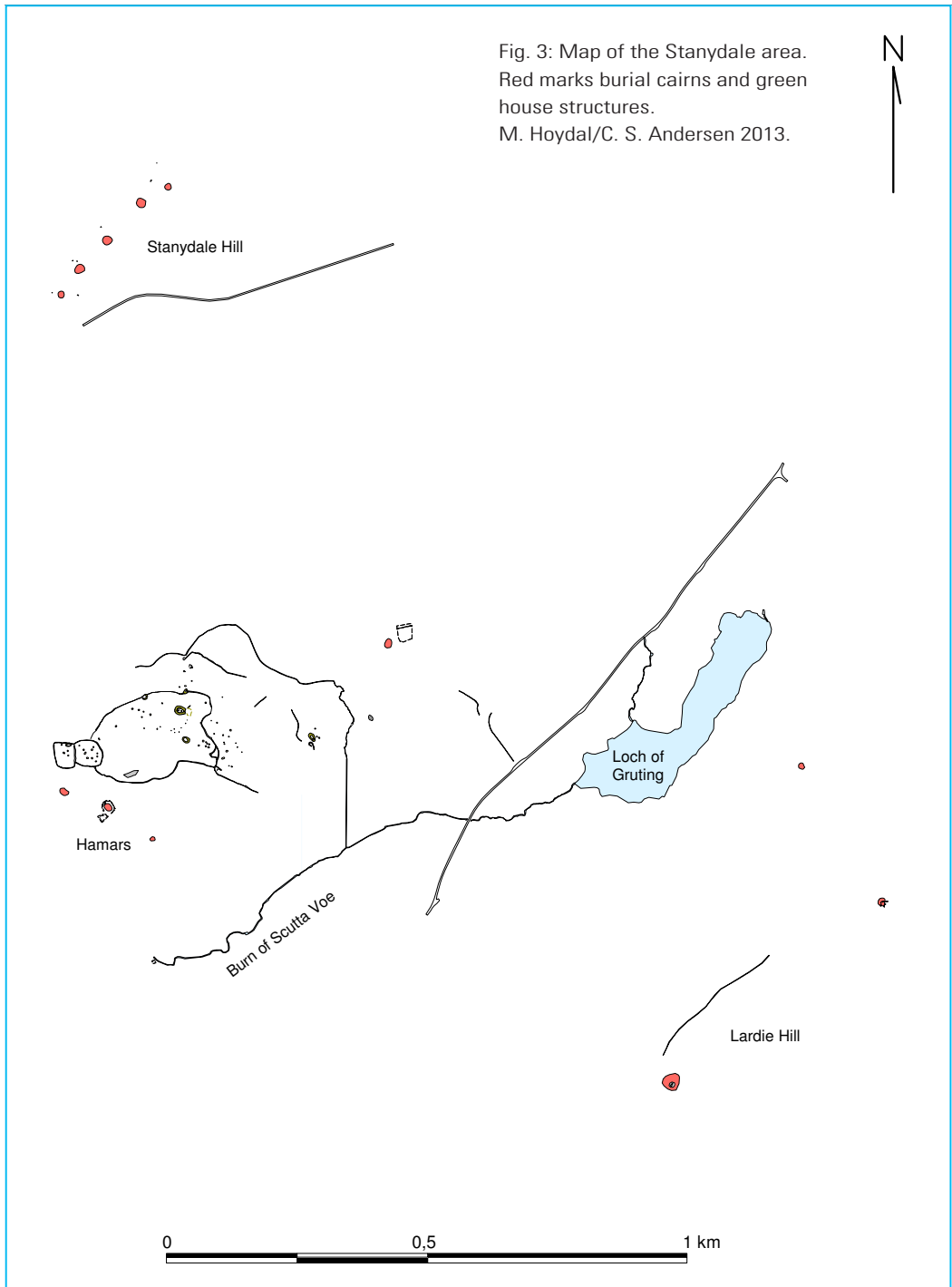


Fig. 2: Shard of a small ornamented Beaker from Ness of Gruting excavated by C.S.T. Calder (1956). The shard is in the keep of National Museums Scotland. D. L. Mahler.

as *Sarup Sites*, as one of the first such sites was excavated here dating to around 3400 BC (Andersen 1997). The gathering sites are part of the ritual behavior in the Neolithic period, and are thus an interesting phenomenon.

### Stanydale

The site has been known for a long time and is marked on the O.S. map as a “cuml”, but although rather damaged at



the inventory during 1931 it became clear that it had parallels to the early domestic sites elsewhere on the islands (Royal Commission on the Ancient and Historic Monuments of Scotland 1946: 102). The archaeologist Charles S. T. Calder was aware of the peculiar site, and during 1949 got the opportunity to conduct an excavation and further surveys of the surroundings, which he published in 1951 (185-204) (fig. 3). Calder was convinced that the excavated site was a temple, and he saw clear parallels to Mediterranean sites among others to Taxien on Malta (Pessina & Vella 2005: 39). The reason for this assumption was the size of the building measuring roughly 6-9 x 13 m internally, with 3 m thick walls, two huge traces of roof bearing posts and the heel shaped façade, he also knew from the chambered cairns on the islands. In the following the building will be referred to as the hall. Many scientists and archaeologists recognize that the area and the building is something special, all though it has never yet been proven (Clarke 2009; Fojut 2006: 24f.). The whole Stanydale area – 2 km<sup>2</sup> – was mapped during the field work in 2011, and this gives us a possibility to see new lines in the landscape. We have no <sup>14</sup>C dating from the hall, but fragments of a Beaker vessel suggest a Late Neolithic date, and Calder thought that other potsherds indicated a Bronze Age date (Calder 1951: 196). There are also fragments

of one or more Shetland Knives, and with reference to the Modesty find, this points to a Neolithic date, but as the fragments are not depicted, it leaves us unsure on this. From the Modesty find we have a <sup>14</sup>C dating made in 2012 saying 2280-2000 BC cal at 2σ (Sheridan 2012:18). It is worth stressing that both Modesty and the hall at Stanydale must be considered as open, accumulated finds!

It is clear that the Stanydale hall is surrounded by burial cairns, watercourses and other interesting elements such as dykes. It is also very clear that the picture we have is not synchronous but must represent a relatively long span of time. Just above the hall, on the hill of Hamers there are the remains of three cairns, all much destroyed as the result of 19<sup>th</sup> Century activity. The same goes for the possible lonely cairn to the North East, where almost all the stones have been used to build a now abandoned 19<sup>th</sup> century farm, so today we may only assume the former presence of the cairn. Above Stanydale village on Stanydale Hill there are five large cairns fairly well preserved and only one has been reused to build a krobb or kale nursery. To the North of at least three of the cairns there are large stones, which could be fallen ortholiths (fig. 4). On Lardie Hill there are three cairns; the largest of them with a nice cist, and below the cairn there is some 200 m of a dyke, probably a border



Fig. 4: Two of the cairns on Stanydale Hill. D. L. Mahler.

dyke separating the land of the dead from the world of the living. The nearest parallel has been surveyed in 2011 on the small island of Vementry. Below the chambered cairn, there is likewise a border dyke separating the farmstead to the south east from the tomb.

At Stanydale there are at least four house structures besides the hall which are likely to be older than the hall (fig. 5). One is a lonely structure not far to the West of the hall here called structure 2. It shows itself as a shallow depression measuring 7,5 x 5,5 m and with a wall thickness of 1,5-2 m. To the North there are two structures, where structure 4 probably is the ruins of a house measuring 7,2 x 4,5 m internal and with a wall thickness of around 2 m. Structure 5 is a concentration of large stones, which could be the dilapidated remains

of a house structure. It is bound together with house 4 by a dyke, which can be followed at the surface or felt as stones beneath the turf. The dyke runs all the way round the hall without connecting it, and the south east corner of the dyke is somewhat modified indicating several phases. To the west and at a figure of eight dyke we have structure 3, which is a fairly long structure measuring 8,5 x 4,5 m and with walls around 1,5 m thick.

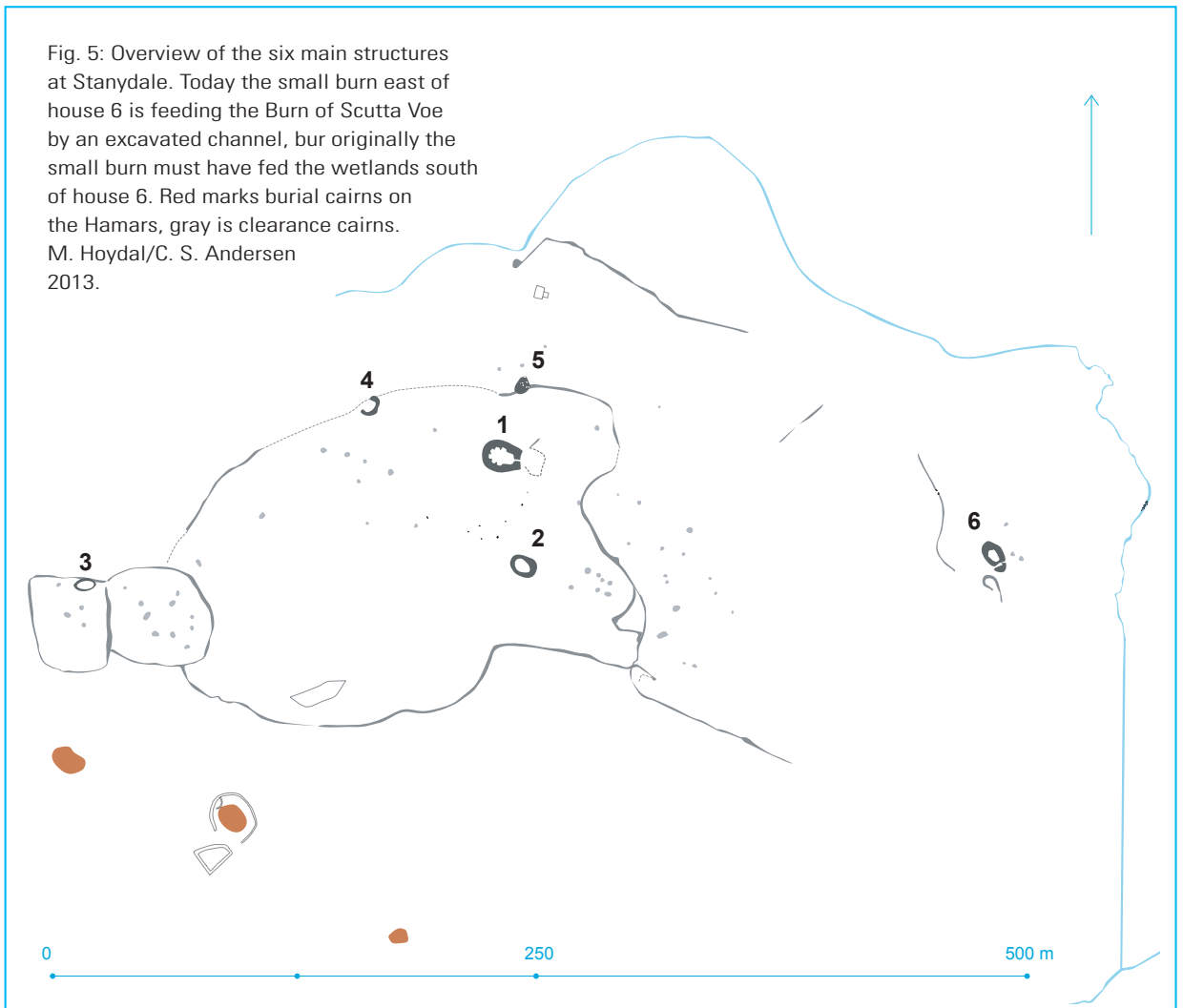
To the East of the small burn, Calder excavated a fairly large house structure – called “6” on the map – and dated it to be at least partly contemporary with the hall, although we need a reevaluation of the structure as well as of the artifacts (Calder 1956:840 f.) (fig. 6a & b). All the houses are surrounded by clearance cairns. Across the mentioned small burn North of House 6 there are clear traces



of a man made stone bridge leading up to two ortholiths placed in a dyke as a kind of entrance stones to the area around the hall. South of the hall there are probably six ortholiths, though these stones are not among the tallest on Shetland and they do not signal any clear pattern.

If we look at the hall itself, we have at least two phases. The axis of the oldest phase must be the one, which runs through the two traces of the roof bearing posts, see fig. 1. Then at a later stage, the house ground form is moderated and the façade is turned at least  $14^\circ$  to the East represented by the mid

Fig. 5: Overview of the six main structures at Stanydale. Today the small burn east of house 6 is feeding the Burn of Scutta Voe by an excavated channel, but originally the small burn must have fed the wetlands south of house 6. Red marks burial cairns on the Hamars, gray is clearance cairns. M. Hoydal/C. S. Andersen 2013.





axis of the present day entrance way. In connection with this change in orientation the heel shaped façade was probably added, but unfortunately Calder's paper gives no indication of any changes in the stratigraphy, and we must remember that most of the lay-out of the hall is

a result of Calder's reconstructions. I shall return to this change in orientation later. Concerning the function of the hall, no finds point to a special sacral function; on the contrary most of the finds reflect what you would expect from refuse layers at a settlement site.

Fig. 6a, left: The two entrance stones northwest of house 6 seen from north east. D. L. Mahler.

Fig. 6b, below: The stone "bridge" across the small burn east of house 6. All the stones seem placed by human hands, and the burn must have run here for a considerable span of time judged by the surrounding landscape. D. L. Mahler.

A model of the relative chronology of the Stanydale area for the houses could be that the lonely lying House 2 would be the oldest followed by the houses bound together by dykes, but whether House 3, 4 and 5 are contemporary or followed each other is impossible to say.





Fig. 7: House 2 seen from the West. In the background Lardie Hill and the small knoll on top of Lardie hill is the largest of the three burial cairns on the hill dated to the Bronze Age. House 2 is lying alone without any connection to the dykes and could very well be the oldest structure in the area. D. L. Mahler.

The single house structure and the three bound together by dykes – and two round field systems – are interesting parallels to the suggested relative chronology at Pinhoulland (Mahler 2012: 44). In both cases only excavation may solve the relative chronology (fig. 7)

If we return to the younger phase of the hall, the new axis, which passes through the middle of the doorway, goes right between the two entrance stones or ortholiths and over the mentioned stone “bridge”, and this could be a procession road leading up to the hall (fig. 8). This could indicate a ritual landscape which

is supported by the size of the hall, all the standing stones and the many cairns, and we could probably be facing a kind of gathering site or central site for the fairly densely populated West Mainland (compare Clarke 2009). There are still elements in the landscape which are inexplicable such as the circular traces of ditches on the small peninsula in the Loch of Gruting. They certainly look man made, but we have no educated guess of their function.

In search of parallels on Shetland, the valley at Burwick, North West of Scalloy on Mainland, was surveyed, as a large building of prehistoric origins has been registered there. The valley is thickly covered in heather which makes field surveying very difficult, and unfortunately

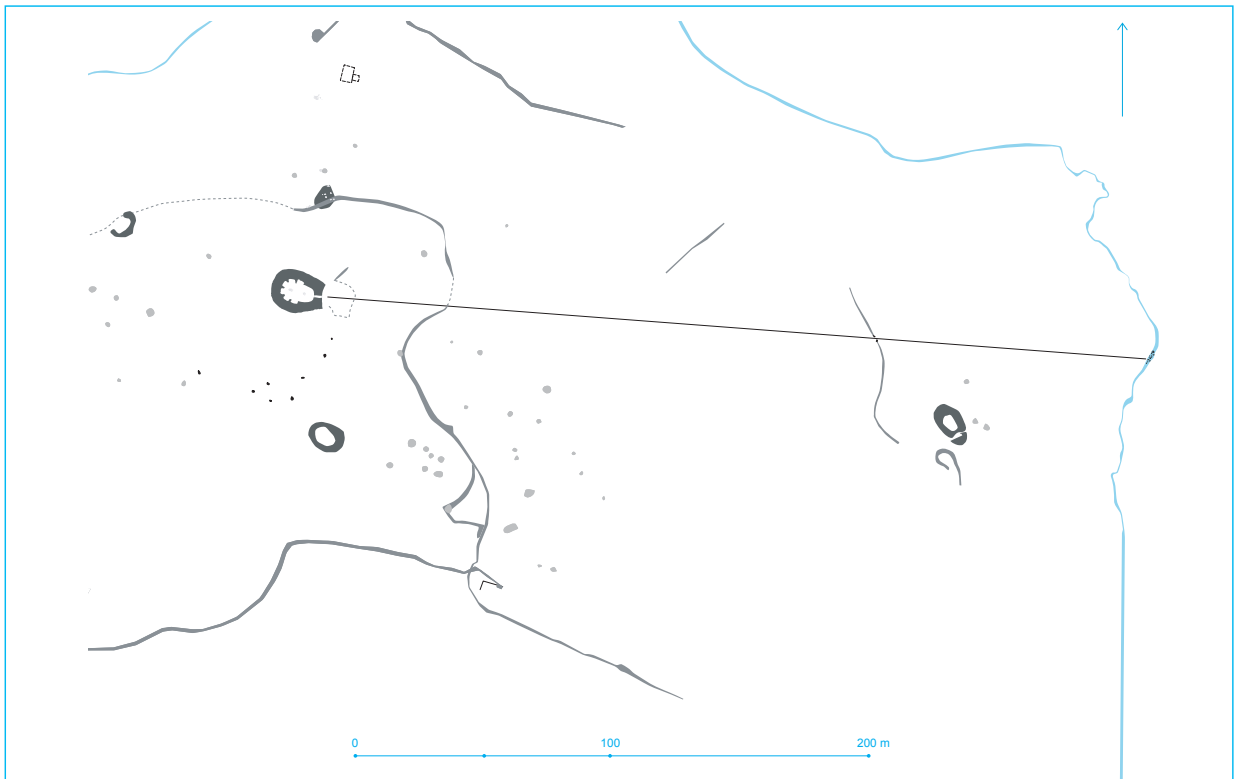
two 19<sup>th</sup> Century farmsteads have created a lot of disturbances, so today it is very hard to give an educated guess at the nature of the building.

### Conclusion

In the introduction I mentioned the aspect of detecting the Neolithic elements, among them was the existence of megaliths and thus creating a ritual landscape. James Hunt wrote about his journey around Shetland in 1865 "At the top of nearly every hill, we found distinct traces of stone cairns", and as mentioned there are traces of over 50 cham-

bered cairns on Shetland, which is surprisingly dense (Smith 2011: 31, Henshall 1963: 135ff.). In search of the northernmost chambered cairn or passage grave of Shetland and thus of Europe, I went to Unst, and after surveying several candidates, which probably are of younger age than Neolithic constructions, I found that the chambered cairn of Caldback probably is the northernmost passage grave still in existence in Europe. The

Fig. 8: The axis which comes from the middle of the entrance of the hall runs right between the two entrance stones and across the small stone "bridge". M. Hoydal/C. S. Andersen 2013.



cairn is heavily robbed of stones and illustrates the sad situation that many other cairns and structures have been lost through the centuries.

On Shetland all the Neolithic elements seem present although, unfortunately we cannot say anything about the succession of the elements, and such as ornamented clay vessels are rather late as the beaker shard at Ness of Gruting. Of course we do not have the variety of cereals and livestock as in South Scandinavia, but farming is present like the use of the ard or the primitive plough (Murray 2012: 54). Among the most interesting parallels is the ritual behavior and ritual deposition of axes, the Shetland Knives etc. which is a common feature in the Early Neolithic societies of Western Europe. On Shetland there are indications that even gathering sites are present though the one excavated is of rather late date. On the other hand we can say nothing about the beginning of these gathering sites yet.

Orkney has a rich and varied Neolithic Period, which among other factors is due to the intense interest from antiquarians and archaeologists in Orkney prehistory over a considerable span of time. Shetland on the other hand has lacked the same magnetism seen from a 19<sup>th</sup> and 20<sup>th</sup> Century point of view, which is no criticism of the archaeological investi-

gations on Orkney, but may be more an indication of where the prestige has been focused. The last 15-20 years has changed much both concerning published excavations especially of Iron Age – Viking Age structures (Turner 1998; Fojut 2006). And we must not forget to mention the excellent exhibitions in the new museum at Hay's Dock in Lerwick. Hopefully Shetland shall attract scholars and archaeologist in the future conducting scientific excavations and other investigations.

### **Acknowledgements**

Alison Sheridan is thanked for the inspiring discussions we have had both in Edinburgh, on Shetland and latest in Copenhagen. Jenny Murray has been a great help during the field work and in Lerwick Museum and together with Laurie Goodlad and John Hunter we have had exciting excursions among others to sites Mass Hoydal and I later decided mapping. Val Turner from Amenity Trust has supported the project with much important information. Finally I would like to thank Susan Dall Mahler for reading the proof.

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Part of Jarlshof, South Mainland, Shetland. Photo D. L. Mahler 2012.

# Living off the Land?

*Val Turner*

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This paper summarises some of the results arising from a wider study which used topographical survey, Shape Analysis, GIS, soil survey and micromorphology in order to investigate location, form and function in Shetland's Prehistoric Field Systems, as part of PhD studies at the University of Stirling (Turner 2013). The field systems within the study spanned Late Neolithic/Early Bronze Age period to Viking/Norse times: this paper focuses on the Neolithic/ Bronze Age Multiple Field Systems and Homestead Enclosures.

Three models have been proposed for the use of the Multiple Field Systems in the past:

1. Whittle (1986) proposed on the basis of Scord of Brouster that the Multiple Field Systems had an arable nucleus, extensive grazing and dispersed settlement. In this model barley was cultivated throughout the life of the site, with limited evidence for the husbandry of cattle, sheep and red deer. The balance of arable to grazing altered at different periods and when House 1 (the second house in the sequence) was constructed pastoral activity was dominant. Keith-Lucas (1986) identified two periods of scrub clearance from the pollen evidence,  $4680 \pm 100$  BP and  $4180 \pm 100$  BP, with arable activity between them. This timeframe was associated with "House 2", the earliest house, which had an earlier wooden structure beneath the stone built remains.
2. Fowler (1971) suggested that irregular fields with clearance cairns are "circumstantial evidence" for agriculture and that such areas were not in long term use. This is at variance with the longevity identified at the Scord of Brouster (Whittle 1986; Ashmore 1999). The presence of clearance cairns on the land would have hampered cross ploughing, although not spade cultivation. Bradley (1978) suggested that clearance cairns were not the products of initial phases of agriculture but only became necessary as the result of erosion, caused by either pastoral or arable activities. However excavation demonstrated



that some clearance cairns at Brouster predate some of the boundaries (Whittle, 1986) and boundary analysis identified early clearance cairns at other sites including Pinhoulland (Turner 2013).

3. Edwards and Whittington (1998) proposed a third model for the Multiple Field Systems on the basis of pollen

analysis at Pinhoulland, Ness of Gruting, Troni Shun and Brunnatwatt. They identified only small quantities of “cereal-type” pollen at each of the sites. With the caveat that the pollen in the thin mineral soils (3-4 cm) predated the formation of the blanket peat, Edwards and Whittington drew the conclusion that the field systems were primarily grazings.

Fig. 1a: Multiple Field System at Gallow Hill. Photo Val Turner.

The fields are characterised by terraces and lynchets. Terraces are most likely to be created as areas for growing crops; lynchets may have been either the result of creating terraces or have formed as a by-product of enclosing small areas with boundaries against which soil would build up. Had the fields been used exclusively for grazing, the requirement for these earthwork features would be less obvious. If it were necessary to restrict the movements of stock, small numbers of animals (such as might have grazed one of these fields) could have been tethered. This would have required far less effort than that involved in the creation, and constant maintenance, of boundaries. Tether posts were identified at the Sumburgh Runway House (Downes and Lamb 2000), demonstrating that tethering was practiced in the Bronze Age. (Rope could be made from reeds and grasses available in the area.) It is possible that the small fields served as animal pens when the fields were fallow, thereby helping to manure the field as well as supplementing the amount of available grazing. (To date, there is no evidence that animal dung was either burnt as fuel, or used as daub, either at the Scord of Brouster or any other excavated site in the Northern Isles.)

There are small internal and external height differences within the Multiple Field System boundaries, and these tend

to face into the enclosed areas, rather than outwards. This might suggest the temporary enclosure of animals but equally these might arise from other uses of the site, either during its life or at, or after, the point of abandonment. A lower interior might represent a deliberate attempt to increase the protective height of the boundary, to keep either animals or people in. Conversely, the addition of manure or the amendment of soils inside an enclosure might cause it to become higher than the ground outside: this is the situation inside post-medieval/modern plantiecrubs. If the soils were not amended, regular use would erode them, causing them to lose both volume and height. Waste products, thrown over a boundary, would gradually increase the height of the land outside. This type of waste disposal may have occurred at the Beenie Hoose, Whalsay where the wall was gradually thickened and refaced, incorporating midden material, during the Neolithic period (Calder 1960-61:31; Turner 2008: viii).

Different types of outfield vegetation would benefit from different styles of management. Woodland regeneration and heather are vulnerable to damage in winter when more palatable foods are in short supply (Chapman 2007). Blanket bog is also more vulnerable to erosion through trampling in winter. Managing the outfield would be as important to suc-

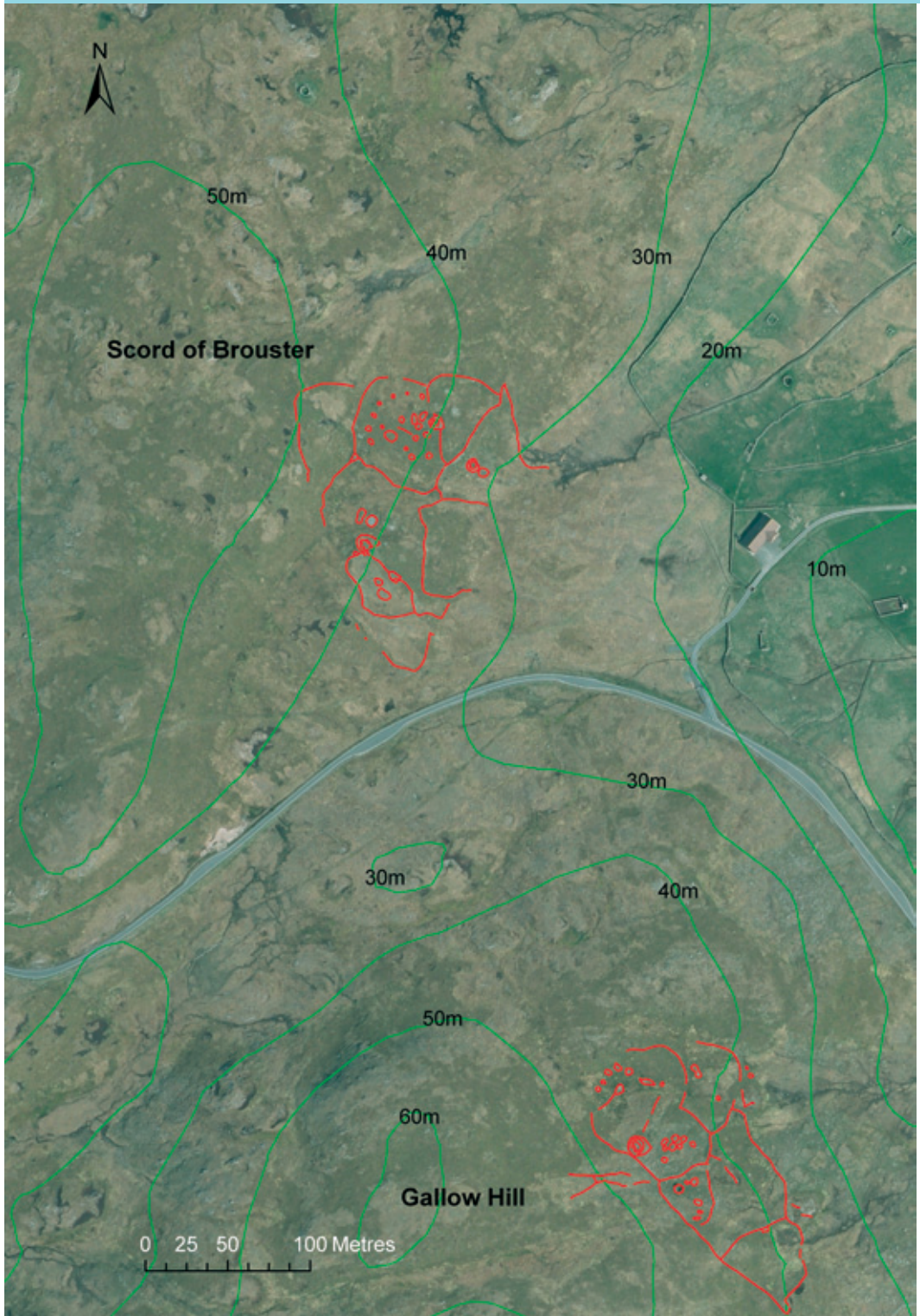


successful farming as managing the infield and protecting the outfield would provide further good reason for containing animals within the arable fields during the winter. The type of animals husbanded might be determined by the character of the land available. Cattle favour quantity over quality, unlike sheep which eat

more selectively. Cattle cause more damage due to trampling but, conversely, cause greater levels of localised nutrient enrichment through their dung (Chapman 2007). Sheep would therefore have been more suited to grazing the Multiple Field Systems, which included fragile boggy areas and steep slopes.

Fig. 1b: Multiple Field System at Gallow Hill. Photo Val Turner.

Fig. 2: Survey of Multiple Field Systems at Scord of Brouster (north) and Gallow Hill (south) overlain on aerial photography. Survey: Val Turner; photography licensed to Historic Scotland for PGA, through Next Perspectives TM.



To advance this argument further, it is necessary to look at the economics of prehistoric Shetland. Fleming (1971) concluded that each adult in Medieval England required the grain from 1.5 acres, with another 0.5 acres required for seed corn. Fojut (1983; 2005) used the figures quoted by Fenton (1978: 336) to calculate that in pre-improvement eighteenth century Orkney the yield per hectare would be approximately 1000 kg/ha for human consumption, having set aside a proportion of the crop as seed corn. He also suggested, perhaps surprisingly that the Iron Age yield in Shetland would have been at least comparable with, if not better than, this. Fojut also quoted the requirement of an individual with a cereal-based diet as approximately 210 kg per year. Thus an arable hectare in early eighteenth century Orkney would have almost been sufficient to feed five people. There are significant differences between the geographies of Shetland and Orkney both in terms of latitude (and therefore climate) as well as in the availability of flat, easily cultivable: land with light sandy soils being prevalent in Orkney but far more scarce in Shetland (concentrated in the South Mainland and the east coast of Unst).

Kemp (2001) calculated that a dairy herd of six cows and a bull, with a maintenance level of immature animals, would supply the daily energy requirement for

9.1 people during lactation. The Scottish Agricultural College Technical Note 586 (Chapman, 2007) advises that today, a suckler cow and calf represent 1 livestock unit (LU). One livestock unit is defined as the quantity of stock which can be supported by one hectare of grazing per annum. Beef cattle over 24 months old are only 0.8 LU and so can be kept at a slightly higher density. Sheep can be kept more intensively still, a ewe being rated at 0.12 LU (0.15 LU with a lamb). The Technical Note also provides guideline annual average stocking rates for a range of "semi-natural" habitats. Of relevance to Shetland are the unimproved upland grassland (e. g. *Nardus*) rated at 0.15-0.25 LU/ha/yr; young heather at 0.2 LU/ha/yr; intermediate heather (20-40 cm) at 0.05 LU/ha/yr; old heather at 0.02 LU/ha/yr and blanket bog at 0.06 LU/ha/yr. The type of light woodland which existed in early prehistoric Shetland would fall within the category of Moderate (woodland) fertility, rated at 0.07 LU/ha/yr. (Figures can vary by 20-40% depending on soil fertility; either under or over grazed sites will reduce the stocking levels, whereas appropriate management could improve them (*ibid*)).

Fleming (1971) argued that woodland browsing was nutritious and that the level of effort required to clear it was not justified if the land was solely grazed. However, the stocking rates rec-

ommended by the Scottish Agricultural College contradict this – even the “High fertility, lowland broadleaves” woodland only has a value of 0.15 LU/ha/yr.

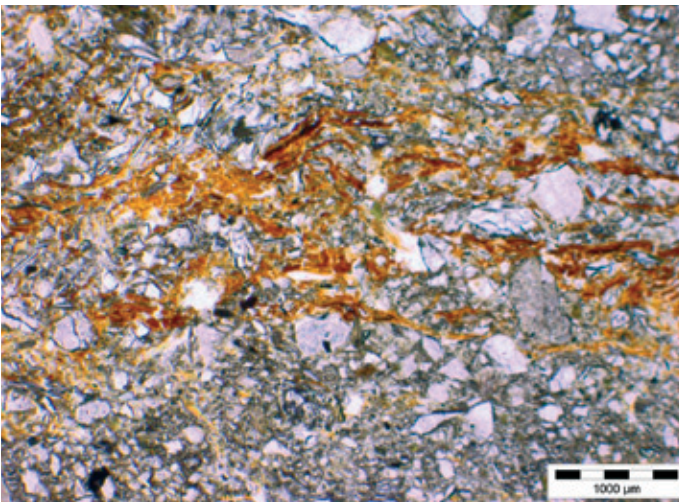
The Turner study has calculated the areas of both the Homestead Enclosures and Multiple Field Systems (Turner 2013). If the Homestead Enclosures were used for agriculture they could either have supported a single ewe and lamb for a year (based on an optimistic assessment of the quality of the grassland) or, based on Fojut’s calculations, grown sufficient grain for between 0.6 and 1.25 people (at South Newing and Croag Lea respectively). These calculations disregard the fact

that part of the area of the Enclosure was actually occupied by the house. In either model, the Enclosures were clearly not the primary supply of food for their occupants. Either people grew crops and kept animals which lived outside the Enclosures, or they lived a more hunter-gatherer lifestyle.

Whilst this may have involved a degree of seasonal movement, perhaps to tend animals and gather wild resources, the size and solidity of the houses suggests that settlement was essentially permanent. None of the Homestead Enclosures are far from the sea and a study of viewsheds indicates the importance of coastal resources: fish (including shellfish), seabirds and their eggs, supplemented by the occasional seal or cetacean, must have formed a significant part of the diet (Turner 2013).

Isotope analysis of human bone has led to the suggestion that by 5400 BP people had abandoned eating marine derived food possibly the result of a taboo (Richards and Hedges 1999: 892; Thomas 2003: 70). The sample size was small – including only three Scottish individuals, from Oronsay – and a more gradual move towards a terrestrial diet has been suggested for Southern Britain and Wales (Milner *et al.* 2003: 12). In a Shetland context such a taboo would be literally suicidal: this study demonstrates that it is only the

Fig. 4: Micro morphology slide taken from Pinhoulland, showing two episodes of soil accumulation and associated cultivation above and below – ie: before and after a period of peat growth, during which time mineral material continued to accrete, resulting from disturbance, possibly cultivation above it. Photo Val Turner.





use of the ubiquitous resources of the sea which made life in the Neolithic/Bronze Age agricultural communities economically viable. Very little early pre-historic skeletal material survives from Shetland, but isotope work is currently being undertaken on remains from the Sumburgh cist (Montgomery, Durham University).

Many individual fields within the Multiple Field Systems are smaller than the Enclosures; for most, their areas are further reduced by clearance cairns. The smaller fields were therefore too small to support a single animal for a year and, even if kept fertile, would supply as little as 14% of the grain required for an individual eating a cereal-based diet for a year.

If the field systems were taken as whole, based on the visible field boundaries, and making the assumption that the fields were kept fertile and in constant use, then four of the Multiple Field systems in the study could have supported a small group of adults eating a cereal-based diet: four adults at each of Clevisgarth and Gallow Hill (1.0271 and 1.0052 ha), six at the Scord of Brouster (1.4912 ha) and eight very comfortably at Pinhoulland (2.1458 ha). Micromorphology carried out at Pinhoulland demonstrated that the fields were cultivated sporadically, interspersed with periods of grazing, indicat-



Fig. 3: Stone tool factory discovered in the hills of the West Side. Photo Val Turner.

ing that the proportion of the diet derived from cereal was relatively low (Turner 2013).

The total areas enclosed by Multiple Field Systems at Sumburgh Head and the Ness of Gruting are far smaller (although, at the Ness of Gruting, the total area in the field system was probably larger than the sum of the fields which could be measured; other boundaries were too fragmentary to estimate the area which they may have enclosed with any degree of certainty). At Sumburgh Head farming appears to have been more difficult: every small terrace or flat area of land was brought in to use. This further indicates that the hillside was

used for arable, since animals could have roamed the hillside without requiring the creation of small terraces.

Based on these calculations therefore, the amount of grain grown in any of the field systems under consideration, or the animals grazed on them, is likely to have contributed only a limited proportion of the diet of the community. Mahler (2007) described domestic animals in Norse Faroe as comprising a “safe food-bank”, which contributed calves, lambs and dairy produce as well as grain, to the community. He observed that while growing small amounts of grain was time consuming, cereals nevertheless played a central role in the economy of Viking/Norse Faroe.

Another facet in understanding the Multiple Field System economy is the relationship between the field systems and the stone dykes which project from them, which can be traced for considerable distances into the hill. These are a feature of the Multiple Field systems of the West Side of Shetland, the projecting boundaries often being aligned with hill top burial cairns and ridges. Examples include a length running southwest from Pinhoulland, a length west of Gallow Hill and a third length northeast of the Scord of Brouster. Fojut suggested that these are territorial boundaries created in response to the expected arrival of

“as many as ten thousand persons”, and that this represents a sophisticated pattern of land organisation (*ibid*).

While these dykes may arise from a sophisticated social phenomenon (Fojut, 1993) they may have been more utilitarian. The importance of the hill land between the settlements may have exceeded that of its value as summer grazing: it provided a managed supply of tools, timber, fuel and wild food resources. The division and ownership of the hill land may have been as important to the inhabitants as were the fields themselves. Quarries for stone tools and working surfaces have been identified during the present study, both above the Sumburgh Head field system and in sub-divided hill land on the West Side: the geology itself was clearly of economic value to the settlements. Rights to the hill may even have determined ownership of coastal resources of the sea: fish, whales, driftwood, seaweed and seabirds, all of which must have contributed to the wellbeing of the community. Interestingly the Multiple Field Systems of the West Side did not share the need of the Homestead Enclosure residents for a view of the sea, perhaps because the ownership of resources was not a matter for dispute.

## Conclusions

The evidence derived from studying the field boundaries of Neolithic/Bronze Age

Shetland field systems, supported by the micromorphological evidence, indicates that Shetland's early farmers were practicing mixed farming, but that this was insufficient to supply all their dietary requirements. Given the paucity of native wild animals in the islands, and the harsh growing environment, together with the view shed evidence, it is clear that marine resources must have comprised a vital component of the diet.

Turning to Norse Faroe, it is clear from the Sheep Letter that keeping sheep in the outfield, held in common by several people, were central to the economy. Rights in the outfield included peat cutting and were linked with rights to the coastline (Mahler 2007). Although the rules and practice for Norse farming were brought into Shetland with the Gulathing law – applied in Norway from before 930 AD and to the North Atlantic as it became colonised – it is possible that similar rules were in existence in Shetland as much as 3,000 years earlier and that the dykes projecting from the field systems are evidence of this.

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# Burnt Mounds: Transforming Space and Place in Bronze Age Shetland

*Lauren Doughton*

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## **A Life on the Edge?**

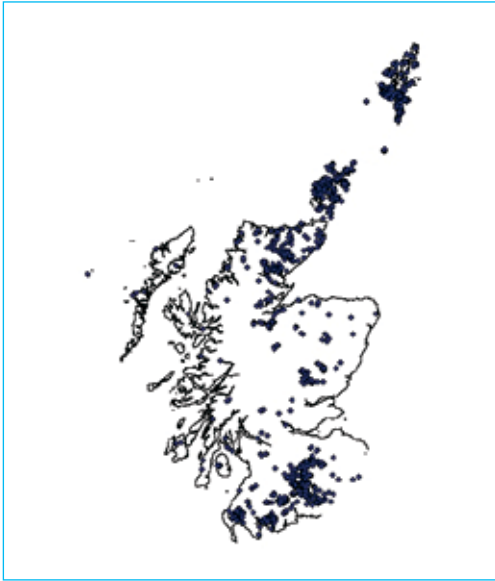
### **The Bronze Age of Shetland**

The Bronze Age in Britain is broadly defined by the arrival of copper and copper alloy materials, and a suite of continental novelties and practises, including individual interments with an increasing appearance of gender and social differentiation, the introduction of Beaker pottery, and other local developments, such as Clava cairns and recumbent stone circles. To the uninitiated the Bronze Age of Shetland can appear under developed. As Kaul notes, 'there was a rich Neolithic 'full package culture in Shetland' but 'no Bronze-Age' (2011: 47). Most obvious is the almost total lack of Bronzes, or the accompanying elaborate burial traditions that characterise the period elsewhere in Europe.

There is evidence for contact with the outside world, in the form of a local variation of all over corded beaker from Stanydale, and the existence of Shet-

land Steatite cinerary urns in Orkney (Ritchie 1995: 92), coupled with the adoption of cremation and cist burials although a version of this practise has been present in Shetland from the early Neolithic, which hints at an awareness of trends elsewhere (Hedges & Parry 1980). The presence of an unfinished miniature battle axe at Ness of Gruting (Calder 1956: 392), along with the finished example from Sumburgh also suggests awareness of some of the expressions of prestige that were in use elsewhere in Britain (Downes & Lamb 2000: 67; see Sheridan 2012 for a full discussion). However, these expressions remain for the large part fragmentary. Although the Bronze Age of Shetland remains recognisably British, there is a distinct impression that Shetland followed its own trajectory during this period, which, coupled with a continued use of stone tools and a Neolithic lifestyle gives the impression of stagnation and isolation.

Fig. 1: Distribution of burnt mound sites in Scotland.



Land use analysis suggests that during this period there was an increase in peat cover, leading to greater pressure on the available agricultural land (Butler 1998, Turner 2011, Whittle 1989). Evidence from the South Nesting Paleolandscape project suggests that Shetland's Bronze Age inhabitants were forced to make use of shrinking patches of land on close to the shore as hill land was gradually lost to peat encroachment (Dockrill et al. 1998); a picture which is echoed across the islands, such as at Scord of Brouster on the West Side (Whittle et al. 1986). There is no indication that Shetland was part of the 'Wessex Culture' which has come to characterise much of prehistoric Britain, and which is so prevalent on nearby Orkney. Given the above is it hardly surprising that others have been

lead to characterise Bronze Age Shetland as a period of regression, where the inhabitants of the island struggled on against adverse conditions, and can be imagine "waiting for a ship to arrive, to carry them away from these islands of depleted and overgrazed soils at the margins of agriculture" (Kaul 2011: 48). However, this does not acknowledge the use of burnt mound sites as a characteristic of the Shetland Bronze Age, and as a wider phenomenon within the period.

**Burnt mounds: "Among the most boring sites with which a field archaeologist must deal"?**

Burnt mounds are heaps of heat-cracked stones found throughout the British Isles and some parts of continental Europe. The sites themselves are predominantly dated to the Middle Bronze Age, although examples are known from the Neolithic right through to the Middle Ages (Cambell-Antony 2003: 64). Fig.1. In Scotland they are among the most numerous Bronze Age sites recorded, with over 1900 individual records currently held within the National Monuments Record, and no doubt a great many more besides residing within local Historic Environment Records. Traditionally they have been interpreted as cooking sites, following the work of Irish archaeologist Michael O'Kelly (1954) who drew heavily on the works of 18<sup>th</sup> Century Irish writer Geof-

frey Keating. In the 1980's a counter argument was offered, fuelled in part by the discovery of sites in Orkney that cast doubt on their status as temporary hunting camps (Hedges 1975), suggesting that they might represent something similar to a sauna or sweat lodge (Barfield & Hodder 1987). While these discoveries led to a temporary revival of interest in burnt mounds, the subject remains divided between these two leading interpretations (see Barfield & Hodder 1987, O'Drisceoil 1988 and papers within Buckley 1990 and Hodder & Barfield 1991 for an illustration of this). Other uses, such as fulling, dying, brewing, skin working, brine evaporation, boat building and metalworking have all been suggested as possible alternatives but the discipline has yet to fully engage with the multiplicity of possibilities that surround the construction and use of burnt mound sites.

Despite their commonplace nature, the use of burnt mounds has, until recently been particularly overlooked by academics researching the Bronze Age. Their enigmatic character and lack of diagnostic finds has led many scholars to come to the conclusion that these sites have little to offer in relation to our understanding of prehistoric life beyond a basic indication of population distribution (Barber & Russel-White, 1991). This failure to engage with burnt

mounds within a wider Bronze Age context has had a number of repercussions. Given the current focus on the dynamic social relationships between people, places and things in the past, burnt mound studies can be seen to lag behind in its continued focus on technologies as a primarily adaptive tool. The danger of this kind of approach becomes immediately apparent when applied to an area such as Shetland, where burnt mounds comprise the greater body of evidence for Bronze Age activity in the islands. Fig. 2



Fig. 2: Distribution of burnt mound site in Shetland.

Fig. 3: Stones roasting in the fire at the replica burnt mound site in Bressay, Shetland.





There are currently over 346 burnt mounds recorded in the Shetland Sites and Monuments Record, including over 30 to be found on the small island of Fair Isle alone. Radiocarbon and Thermoluminescence dates from a number of excavated sites demonstrate a predominantly Bronze Age date, although many of them have long and complex histories of construction, use and reconstruction and may even date from the Neolithic onwards. Excavated examples have repeatedly revealed complex internal structures that defy traditional interpretation and suggest a more complex set of practises than has otherwise previously been perceived. This raises the question, how might Bronze Age Shetland look if these practises were full integrated into our understanding of life during the period? In order to appreciate this, a revision of the way in which we understand the role of burnt mound sites is required.

### **Burnt Mounds and wider Bronze Age Cosmologies**

In reassessing these sites it is necessary to move away from the preoccupation with function, and instead take a few moments to consider how people, places and things interact to create meaning. If we accept that our understanding of objects and materials stems from our everyday embodied engagements with them, then it becomes necessary to explore in what these engage-

ments might be, and how they might relate to other activities. By abandoning the idea of a definitive function and examining some of the fundamental characteristics of burnt mound we can begin to reveal a lexicon of practises which are particularly resonant with other aspects of Bronze Age activities.

In analysing the term burnt mound itself and its implications two aspects immediately become obvious (fig. 3). The first is the act of burning, or more specifically the use of fire, and the second is the construction of mounds. While cremation was already well established as a form of mortuary ritual during the Neolithic, it gains particular significance and popularity during the Bronze Age. In his analysis of cremation practises, Kaliff recognises that that one of the most important factors in cremation is the destruction of the body, and it's breaking into subsidiary parts. Symbolically it can be seen as the transformation of the body into the substances from which it first came. Fire can be seen as 'a medium for transformation and communication... "a common symbol of life, of metamorphoses and communication with the divine, but also of the home" (Kaliff 2007: 84).

The symbolic properties of fire would have been familiar to Bronze Age metal smiths. To early metal workers the transformation from rock, to liquid and then

solid metal object must have seemed like magic. Likewise, it is possible to argue for the same process occurring at burnt mounds. Regardless of the functional interpretation preferred, burnt mounds are the locales where substances are transformed, through the application of heat to rock, and in combination with water, from one state to another. Human bone has been found in association with a number of sites in Sweden, suggesting a possible association between burnt mounds and mortuary practises, if not a mortuary application in itself (Kaliff 2007: 104-107; O'Neill 2009: 184-185). While it is unlikely that the Shetland mounds with their complex internal structures would have been used for a mortuary function, we must suppose that whatever activities did take place here were carried out in full knowledge of this wider frame of reference. Fig. 4

While the chronology for the construction of the Shetland Chambered Tombs remains uncertain (see Sheridan 2012), it is likely that during the Bronze Age they were a familiar and significant part of the islanders' landscape. The Bronze Age in Britain sees an increase in the construction of earthen burial tumuli, such as those at the Knowes of Trotty in Orkney. As Mary Ann Owac (2005) has demonstrated, the construction of burial mounds was deeply intertwined with Bronze Age cosmological worldviews.



She suggests that the intentional juxtaposition or replacement of materials in the construction of mounds serves to highlight and often invert natural stratigraphies, creating meaningful relationships between materials, and relating directly to the local worldview, and the journey perceived to be undertaken by the dead.

The Late Neolithic saw a shift in focus from a cosmological axis that favours horizontal and linear movement to one which focuses more heavily on the vertical axis (Fowler 2005: 120), so that by the Bronze Age a worldview is established which divides the world into three sections: sky, land/sea and the underworld,



Fig. 4: A typical looking burnt mound site on Papa Stour, Shetland.

sometimes associated with the sea (see Bradley 2000, Kaul 1998). This vertical focus is played out through the construction of mounds, the use of cave sites, and through the construction of souterrians. It is also visible in rock art depictions of the journey of the sun, in which the sun is taken across the sky by chariot during the day, before sinking and returning by boat at night (Kaul 1998).

At High Pasture Cave, Skye, the links between this cosmological worldview, and the elemental processes undertaken at burnt mounds are brought sharply into focus. Work at the cave has revealed evidence for activity on the site throughout the Bronze and Iron Age. A number of

human burials have been found within the cave itself, as well as evidence of feasting, and a stone built passageway with steps leading down into the cave itself. Evidence suggests that feasting was carried out on the site and the cave may have acted as an entryway to the 'underworld'. A large spread of burnt stones was found on the surface at the mouth of the cave, indicating that burnt mound technologies were integral to the activities carried out on the site. In addition, burnt stones were found within the fossilised cave deposits, suggesting that the activity extended from the ground level into the liminal spaces within the cave, or that the debris from the firings taking place above ground were considered to

be important enough in to be intentionally deposited in the cave alongside other materials such as bone and metalwork (Birch & Wildgoose 2010).

Mounds are also closely linked to acts of memorial and the creation of place. In constructing a mound from the debris of the firing, rather than disposing of the material in discrete spreads practitioners were both drawing attention to the site, creating a sense of place, and creating a physical reference to the activities being carried out, whilst simultaneously limiting access those activities by progressively hiding them behind a mound of burnt stone. At Liddle and Beaquoy in Orkney those working the site were actively engaged in maintaining the mound structure itself (Hedges 1975). A retaining wall with paved walkways between the mound and the structure walls leading to the entrance of the building meant that entry to the site was only possible once inside the mound material itself. At Liddle this arrangement is later altered and the entryway is moved to what would have been the rear of the building. A paved walkway was constructed over the mound meaning users must first cross the mound before they were able to gain access to the structures within (*ibid* 43-6, 56). At both of these sites the mound material itself is as much a part of the active life of the sites as the buildings. Fig. 5

Burnt mounds often represent considerable depths of time, and involve numerous phases of use, construction and reconstruction. At Tangwick and Cruester, Shetland, the structures were built into existing mound material, and underwent successive phases of remodelling, including the closure of chambers, and a continual cycle of maintenance in the hearth cell (Moore & Wilson 1999, 2001, 2008). Dates obtained from various locales within the mound at Cruester suggest that the mound had a life of over 1000 years (Campbell Antony 2003: 308-11). The role of burnt mounds in creating and maintaining memories of past activity can be seen at Clowanstown, Co. Meath, Ireland, where a number of burnt mounds were located over earlier Mesolithic Fish Traps. The decommissioning activities included deposition of a wooden container, and the monumentalising of the site using spreads of burnt mound, material, and a spread of stone including cremated animal bone, lithic material and several skulls (Mossop 2006).

The placement of the Clowanstown mounds also illustrates another factor in understanding the place of burnt mounds within wider Bronze Age cosmologies. Close proximity to water is often seen as a defining characteristic of burnt mound sites. The deposition of materials in watery and boggy places is increasingly evident from the Bronze Age onwards



(Bradley 1998). Watery places take on a special significance, and boats and watercraft hold strong symbolic and practical status. Water is a medium for movement, not only for the living, particularly in an island locale such as Shetland, but also as the medium through which the dead pass to the afterlife, or on which the sun travels through the night (Kaul 1998, see Strang 2004 for discussion of the symbolic properties of water). It may be that placing agricultural tools within the foundation of houses (Calder 1956), or into the boundaries of cultivatable land were active attempts by prehistoric Shet-

landers to mediate with a changing and increasingly challenging landscape, and to ensure their continuing prosperity (Murray 2012). The use of burnt mounds can be seen as a continuation of this process. As locales of transformative processes by which the earth, fire and water come together to create new materials and substances, and alter the states of existing ones, burnt mounds can be seen to fit into a wider suite of practises used to actively engage with the landscape and negotiate a place within the world.

Fig. 5: Some of the complex structures found within the burnt mound at Cruester, Bressay.

### **Conclusions: Bronze Age Shetland – Waving, not drowning?**

While getting to the roots of the meanings of burnt mound sites remains illusive and mysterious, it is possible to understand that they formed a part of a wider range of beliefs and practises which manifested themselves in a number of ways during the Bronze Age. While the technologies involved in their creation and use have been available to prehistoric peoples since before the Mesolithic, their popularity during the Bronze Age can be attributed to the way in which they enmesh within a wider set of worldviews, and facilitate an ongoing dialogue between Bronze Age people and the world around them. Therefore, which it may appear at first glance that the Bronze Age of Shetland is impoverished and stagnant, a closer examination reveals a different scenario. The proliferation of burnt mound usage in the Islands indicates a period of ongoing activity and industry. It would appear that not only were Shetlanders aware of aspects of wider Bronze Age culture, but that they embraced them, and incorporated them into their daily lives. Rather than standing on the shore-line waiting for the boats that would take them away to warmer climes, it is possible to imagine Bronze Age Shetlanders embraced the challenges presented by their changing landscape, and faced them head on.

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# Plus ça change...? Developments in Shetland, c 2500–1800 BC

*Alison Sheridan*

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## **Introduction**

In *The Border of Farming and the Cultural Markers*, a review of developments in Shetland from the first appearance of 'Neolithic' traits until 1500 BC was presented, with the main focus being on the period *c* 3700 – *c* 2500 BC (Sheridan 2012a). This contribution shifts the focus to the centuries between *c* 2500 BC and *c* 1800 BC, in order to compare and contrast developments in Shetland with those elsewhere in Scotland. This period encompasses the time when Beaker pottery – a novel ceramic tradition originating on the Continent – appeared and was used in Scotland, as elsewhere in Britain and Ireland (Sheridan 2012b; Shepherd 2012; Curtis and Wilkin 2012). In many regions, the appearance of this novel pottery type was accompanied by a variety of other novelties, including the use of metal – copper and gold (Needham 2012). Over time, and particularly from the 22<sup>nd</sup> century BC when tin started to be alloyed with copper to make bronze in

Britain and Ireland, the desire for metal and the concomitant need for networks over which metal could circulate was to have a profound effect on the nature of society in some regions, leading to what Stuart Needham has described as a 'sunburst' of activity in north-east Scotland between the 22<sup>nd</sup> and 19<sup>th</sup> centuries BC (Needham 2004), and to widespread examples of conspicuous consumption on funerary monuments and prestigious possessions by the elite (Sheridan 2012c). In Shetland, however, a very different picture emerges. While, in addition to the appearance of Beaker pottery, a novel funerary tradition featuring interment of individual corpses in stone cists seems to have appeared at some point between *c* 2300 BC and *c* 1800 BC, overall no radical changes in lifestyle or traditions appear to have been occasioned by these novelties. This contribution asks: how, when and why did Beaker pottery come to be used in Shetland? How does its appearance here, together with subsequent



developments, compare with what happened elsewhere in Scotland, and how can we account for the similarities and differences? And can we speak of 'Chalcolithic' and 'Early Bronze Age' Shetland?

### Beaker pottery in Shetland: the evidential basis

“ Studies of pottery from individual sites to date... serve to show that the invocation of distant parallels is no substitute for a locally deduced sequence and that the reality of the situation is going to be complex.”  
(Hedges 1986: 30)

In comparison with some parts of Scotland such as Aberdeenshire, Shetland appears to have very little pottery that could be regarded as belonging to the Beaker tradition. In his review of Beaker pottery from Britain and Ireland (which focused almost entirely on material from funerary contexts), David Clarke could list only three finds, all just fragments (Clarke 1970: 521): from the cist containing the skeleton of a 21-25-year old man at Fraga, Scatness (Bryce 1933); from the fill of a posthole in the non-funerary stone building – the so-called 'temple' – at Stanydale, Sandsting (Calder 1950); and from a 19<sup>th</sup> century find on Unst, the details of which had been

Fig. 1: Distribution of definite and probable examples of Beaker pottery in Shetland.

lost (Bryce 1933: 35). And in his review of Beaker domestic pottery from Britain and Ireland, Alex Gibson mentioned just four finds, including the sherds from the Stanydale ‘temple’ posthole (Gibson 1982: 45, 245). The others in Gibson’s review are from houses at Stanydale (*ibid.*), Ness of Gruting (*ibid.*, 45, 207) and Whalsay (the ‘Benie Hoose’: *ibid.*, 45, 110–1, but see below).

Audrey Henshall has also written about finds of Beaker or Beaker-like pottery from Shetland. In her catalogue and discussion of the assemblage from the aforementioned Ness of Gruting house (Henshall 1956), she mentioned the finds from the Stanydale ‘temple’ and house, and also drew attention to superficial similarities between the Ness of Gruting pottery and that from Wiltrow, Dunrossness. The Wiltrow pottery will be discussed below. In her review of Scotland’s chamber tombs, Henshall mentioned a find of cord-decorated pottery, possibly Beaker, that had been found in a ruined passage tomb, Giant’s Grave, on Hestinssetter Hill, Sandsting, along with cremated bone (Henshall 1963: 149, 160). According to James Hunt, who investigated this chamber tomb in 1865 or 1866, ‘...it is worthy of note that the pottery here found essentially differs from any found elsewhere; the only bit preserved had the string pattern on it’ (Hunt 1866: 310–311).

A further find from a funerary context that has been mentioned in discussions of possible Beaker pottery from Shetland is a sherd decorated with horizontal lines of cord impressions, found together with cremated bones in a disturbed context in a chamber tomb with heel-shaped cairn at South Nesting (Downes and Lamb 2000, 53; see also Dockrill *et al.* 1998). Dockrill *et al.* have remarked (1998: 80) that the pottery assemblage from this cairn is similar to that found at a nearby ‘house’ and burnt mound (the latter at Trowie Loch), but no details of this pottery have been published.

Finally, assemblages of Beaker pottery from domestic contexts are known from House 2 at Scord of Brouster (Whittle *et al.* 1986: 5–12, 59–64, figs. 54–55); from the wooden post- and stake-hole structure underlying the stone North House at Sumburgh Airport (Downes and Lamb 2000: 35–65 *passim* and fig. 24); and in and near the burnt mound at Tongs, Burra Isle (Hedges 1986: 19, 30, 32, fig. 9). The pottery from Midden II at Jarlshof (Hamilton 1956: 16) has also been mentioned in one discussion of ‘Early Bronze Age’ pottery from Shetland (Downes and Lamb 2000: 53), and indeed the presence of an intriguing bone plaque with Beaker-like decoration from the same midden has been noted and discussed by the present author (Sheridan 2012a: 26 and fig. 9); but see below regarding both the pottery and

the recently-obtained radiocarbon date for animal bone from Midden II. Whether any Beaker pottery was among the material recently excavated on the Hill of Crooksetter (Brend and Barton 2011) remains to be seen; post-excavation specialist work continues. Figure 1 shows the distribution of the definite and probable finds.

*So, what are the characteristics of this 'Beaker' pottery in Shetland?*

Arriving at an answer to this question is hampered by the fact that some of the pottery in question is lost, much is unpublished – some being illustrated here for the first time – and the extant material is scattered, with some in the National Museums Scotland (NMS) collections, some at Shetland Museum in Lerwick, and some still with its excavator. The finds from Giant's Grave seem never to have reached a museum, while the sherds from Fraga cannot be located among the NMS collections, despite Thomas Bryce having stated that they had been sent to the (then-named) National Museum of Antiquities of Scotland to be reported on by Dr Callander in 1932. The fact that they do not appear in the NMS registers, or in the list of acquisitions published in the *Proceedings of the Society of Antiquaries of Scotland*, suggests that they might never have entered the collections: Callander could have returned them to Bryce

– although this would arguably be uncharacteristic. However, Callander's description makes it clear that we are dealing with a thin-walled, fairly fine pot with a 'thin everted lip' and decorated with 'a broadish band of irregularly-formed upright zig-zags and by at least two narrow bands of crossed lines showing a lozenge pattern. These bands are separated by plain spaces' (Bryce 1936: 35); this description implies that the decoration had been incised. The whereabouts of the associated skeleton are unknown.

Notwithstanding these problems regarding the current location of some of the material, several observations can be offered, as follows:

### **1 Cord-decorated Beaker pottery**

The pottery which, stylistically, comes closest to a widespread Beaker style is the cord-decorated rimsherd from the Stanydale 'temple' (Fig. 2) – one of three slightly weathered sherds from the upper fill of a posthole. The other two sherds are undecorated belly sherds, and they could well all belong to the same pot, in which case the horizontal lines of twisted cord impression did not extend all the way down the body. This had been a small, fairly thin-walled, fineware pot made using slightly micaceous clay; the estimated rim diameter is *c* 150 mm and the wall thickness, *c* 9 mm. The rim had been squared off and upright, with the

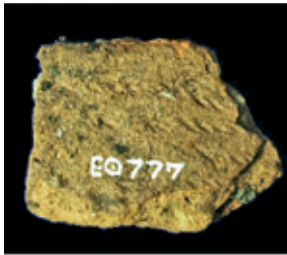


Fig. 2: Rimsherd of All-Over-Cord Beaker from posthole, Stanydale 'temple'. Photo: Alison Sheridan.



decoration starting immediately below the rim. Within Shetland, the closest parallel comes from a context belonging to the earliest (Phase I) activity at Tougs (Fig. 3, top left; Hedges 1986: 14, fig. 9, 42). This, too, was a squared-off rimsherd of slightly micaceous clay, around 9 mm thick, with an estimated rim diameter of 140 mm and with horizontal lines of twisted cord impressions (plus a further

line running around the rim top); Hedges has interpreted it as coming from a splaying neck. The sherd from South Nesting heel-shaped cairn is also reported to have horizontal-line twisted cord impressions (Downes and Lamb 2000: 53). (Note that one other claimed example of this same design, from the Stanydale house (Calder 1956: 356; Henshall 1956: 383; NMS X.HD 1082), can be discounted as the decoration was made by the stab-and-drag technique, not by impressing twisted cord: see Fig. 7.)

The cord-decorated pottery from Sumburgh (Fig. 4) is somewhat different, insofar as the lines are multi-directional (mostly diagonal, some herringbone), and a few sherds are decorated on both the exterior and the interior (e.g. 2-66d).

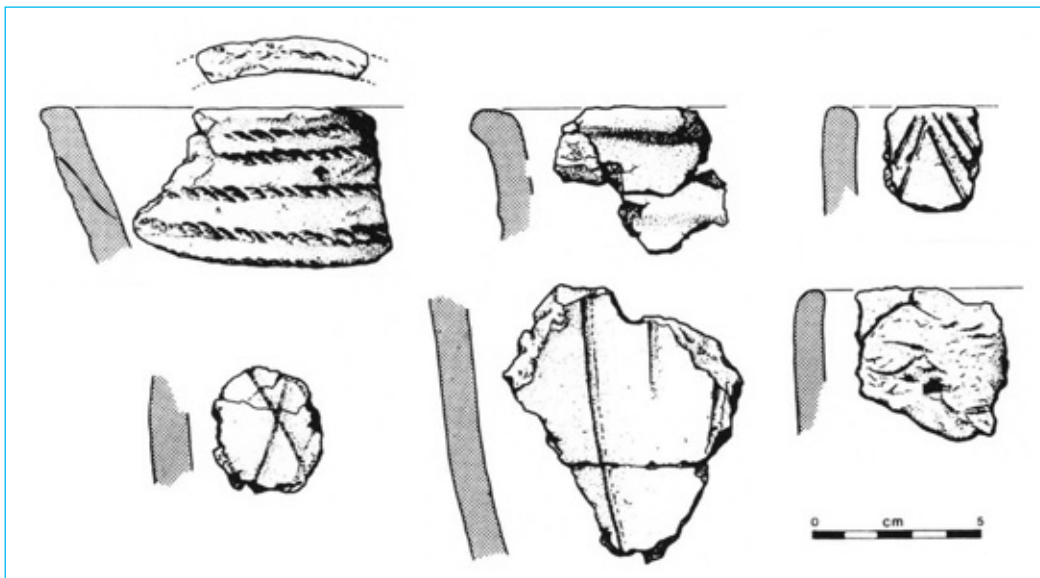


Fig. 3: Beaker pottery from Tougs (Phase 1). From Hedges 1986.

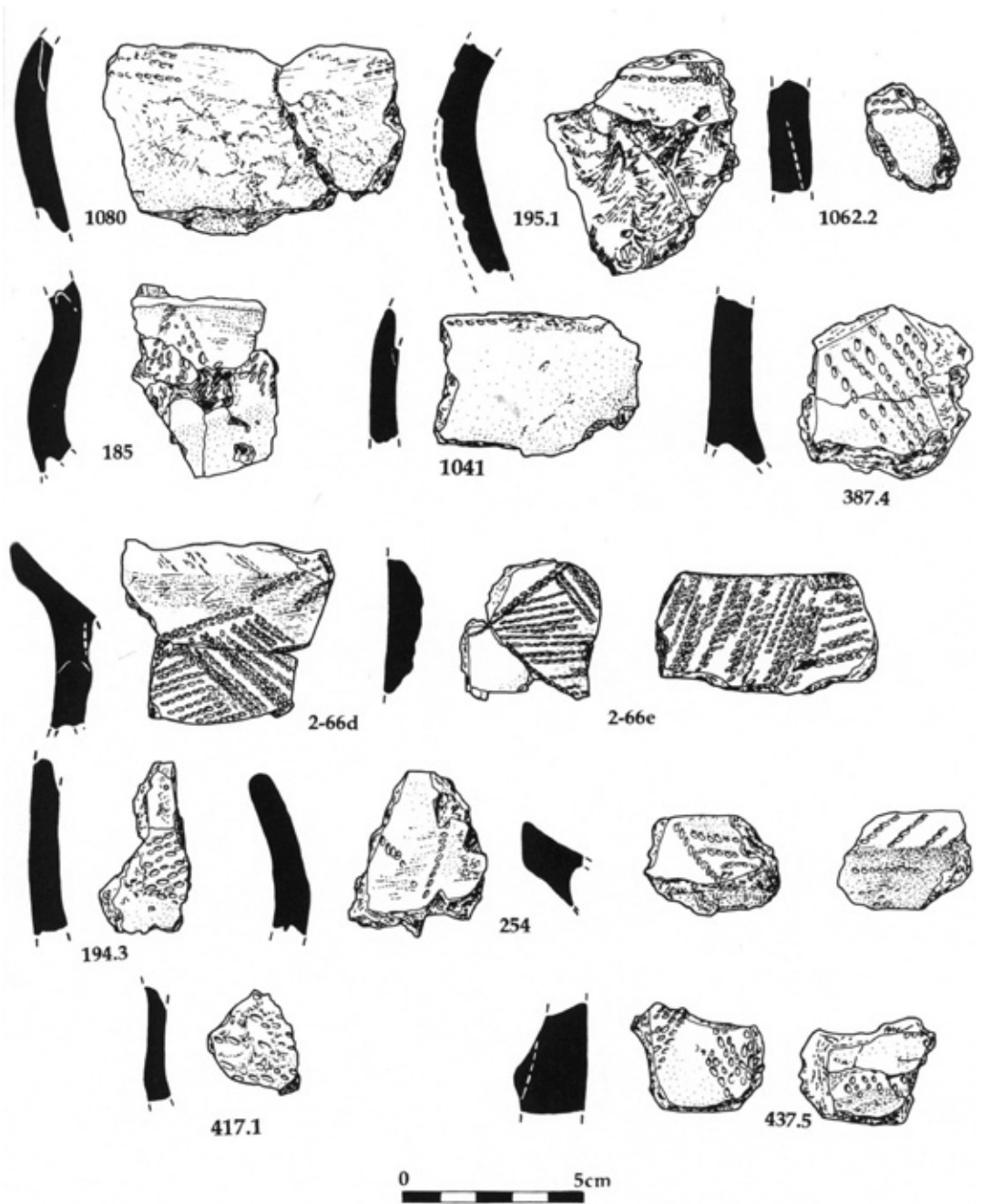


Fig. 4: Cord-decorated pottery from Sumburgh Airport settlement. From Downes and Lamb 2000

Furthermore, the shape of the vessels differs: the rims are everted (with two being flanged); the overall shape of the pots is described as ‘sinuous’. However, as at Stanydale and Tougs, the clay is slightly micaceous, the fabric is fine, and one of the pots is of comparable size to the vessels from those sites. According to Downes and Lamb, it should all date to the early phase of activity at Sumburgh, even if some of the cord-impressed sherds had been found in later contexts.

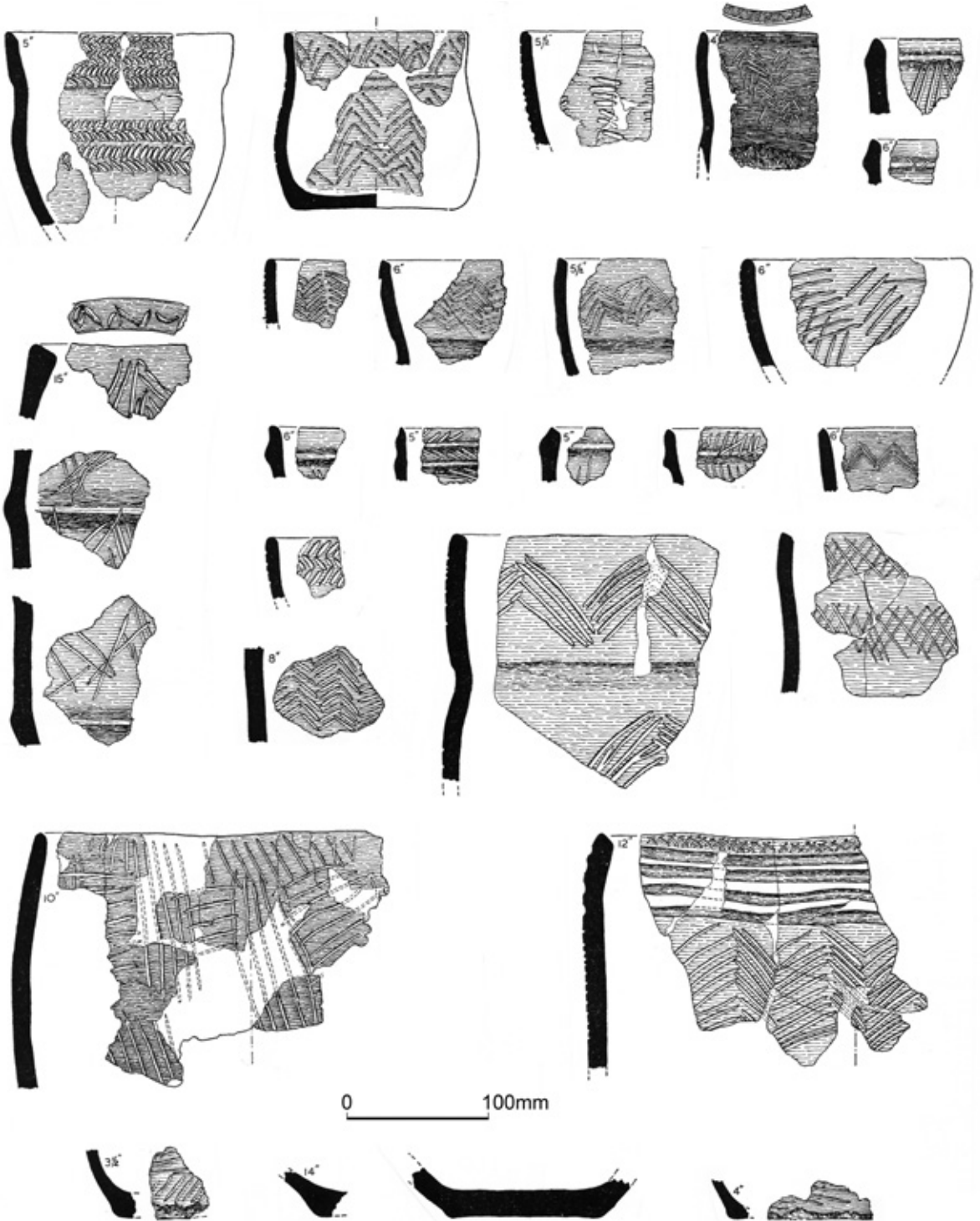
As for the only other cord-impressed Beaker candidate known to the author – the sherd/s from Giant’s Grave – unfortunately nothing is known of the design, form and fabric of this lost pottery.

The Stanydale ‘temple’ cord-decorated sherd has been described as belonging to the widespread ‘All-Over-Cord’ style of Beaker pottery (Clarke 1970: Map 1), which was among the earliest type of Beaker pottery to be used in Britain and Ireland, appearing as early as the 25<sup>th</sup> century (Needham 2005; Sheridan 2007; 2008; 2012b; Fitzpatrick 2011). This variety of Beaker does, however, seem to have had a relatively long currency, having been found for example in a context dated to between *c* 2250 and 1950 BC at Eweford West, East Lothian (Sheridan 2007: 116). This means that we cannot assume that the pottery with horizontal cord-impressed lines in Shetland necessarily

dates as early as the third quarter of the third millennium BC. This point will be returned to below.

## **2 Similar but different: a regional variant of the Beaker ceramic tradition?**

Many previous commentators (e.g. Bryce 1936; Henshall 1956; Gibson 1982; 1984; Hedges 1986; Whittle *et al.* 1986) have noted that the pottery mentioned in the introduction to this chapter has features that are comparable with Beaker pottery elsewhere in Scotland, even though it may not be identical; for this reason, some of the pottery has been described as ‘Beaker-related’ and ‘Beaker-like’ (Gibson 1982: 45). When Audrey Henshall wrote her report on the Ness of Gruting pottery, the amount of Beaker pottery in Scotland from non-funerary contexts was significantly smaller than is the case today, and so – as Alex Gibson has pointed out regarding the large assemblage from the settlement at Northton on Harris (Gibson 1984; 2006) – we are now in a much better position to compare and contrast the Shetland material with finds from elsewhere. The publication of Gibson’s Britain- and Ireland-wide review of non-funerary Beaker pottery (1982) also helps in drawing broader comparisons, and in understanding the nature of the overall ceramic repertoire associated with the ‘Beaker tradition’.





The features that have – justifiably, in this author’s opinion – encouraged the identification of the pottery as ‘Beaker’ or Beaker-related have been a combination of traits from the following list:

- *Fabric*: a fineware component in the repertoire, sometimes reddish – and, in Shetland, often made using slightly micaceous clay; but with assemblages from domestic contexts, a range of fabrics, including some coarseware.
- *Thinness of walls* (among the fineware vessels): under 10 mm.
- *Vessel form*: flat-based, sometimes with a bipartite profile, and fineware versions being fairly small to medium-sized; i.e. with estimated rim diameters in the 100–200 mm range. Assemblages from domestic contexts comprise a wider range of forms and of pot sizes, with some large jars being present. Note, in this regard, that Henshall’s reconstruction of the large jar X.HD 916 from the Ness of Gruting as a round-based vessel (Henshall 1956: Fig. 15) is not necessarily correct: this pot could have had a narrow flat base.
- *Decoration*: usually abundant, sometimes zoned, often incised, frequently featuring diagonal lines, often as herringbone, chevrons, lozenges or cross-hatching: Fig. 5. Regarding decorative technique there are attested, in addition to incision, the use of cockleshell impressions at Ness of Gruting and Stanydale house (fig. 6) impressions of twisted cord – as noted above – and occasional impressions made using a rectangular-toothed comb (e.g. at Ness of Gruting: Henshall 1956: Fig. 16, X.HD 925) – all techniques known from Beaker pottery elsewhere in Scotland, such as at Northton (Gibson 2006) and Calanais (Sheridan *et al.* in press). As noted above, the Stanydale house assemblage also includes a pot decorated by stab-and-drag (fig. 7).

Fig. 5: Beaker pottery from Ness of Gruting, showing incised decoration. From Henshall 1956. The author is grateful to the Society of Antiquaries of Scotland for permission to reproduce this illustration.



Fig. 6: Sherd with cockleshell impressions from Stanydale House. Photo: Alison Sheridan.

Fig. 7: Sherd with stab-and-drag decoration, previously misidentified by others as being twisted cord impression, from Stanydale House. Photo: Alison Sheridan.



The features that lend a more 'localised' or regionalised air to some of the Shetland material relate to vessel form and decoration. Some of the large jars from Ness of Gruting, for example, find only generalised, rather than exact, parallels among other Scottish 'domestic Beaker' pottery, and the presence of lugs on two vessels in that assemblage (Henshall 1956: 382) is not a characteristic of Beaker pottery elsewhere. Similarly atypical is the rather random arrangement of incised lines on pot X.HD 942, and the presence of vertical ribs on two other pots from the Ness of Gruting assemblage (*ibid.*, fig. 18, NMS X.HD 1468 and 945). Incidentally, as noted elsewhere (Sheridan 2012a: 24), the superficial resemblance between these latter pots and Grooved Ware should not be taken to indicate any connection with that ceramic tradition. A further good example

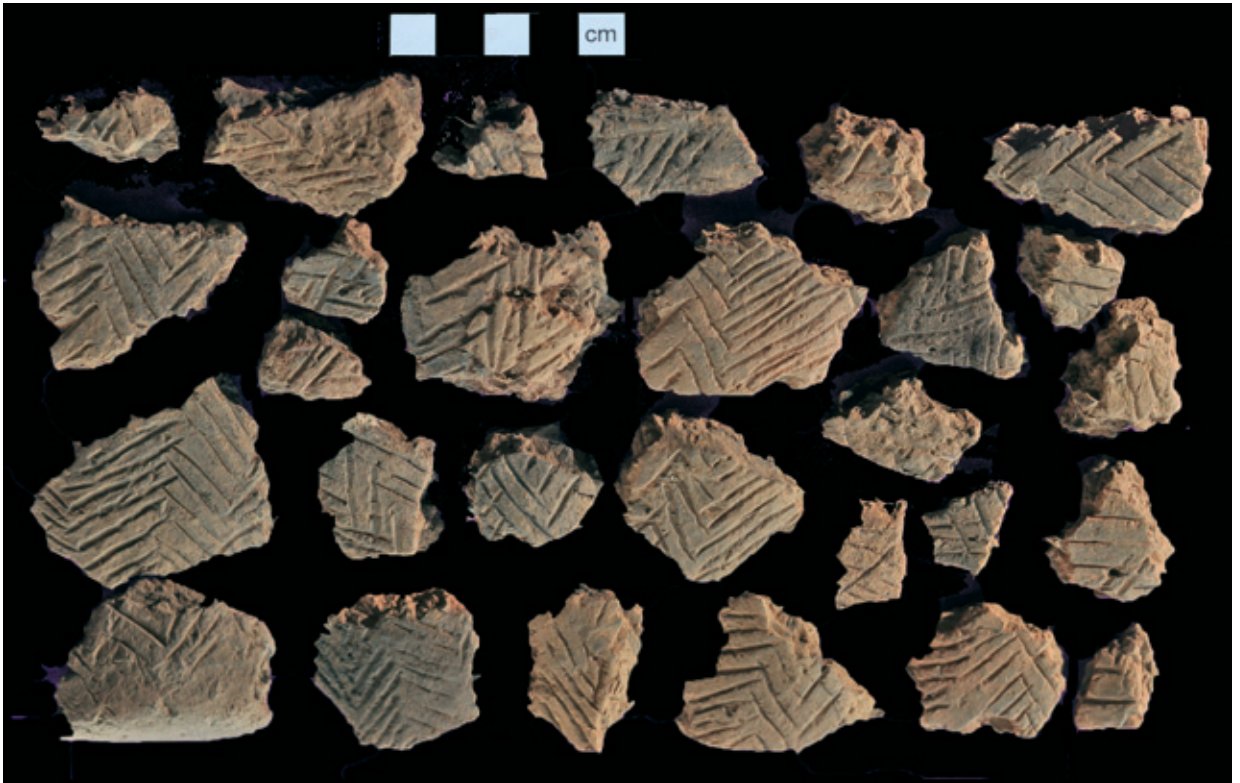
of this 'localised' character of much of the Shetland material is provided by the fragmentary vessel from Unst (Fig. 8). Here, the rim form, fabric and wall thickness are all reminiscent of Beaker pottery elsewhere in Britain, and indeed its slack profile can be paralleled at Northton (Gibson 2006: Fig. 3.17.27), while its specific decorative design – featuring rows of impressions above horizontal incised lines – is not easily paralleled, even though its constituent elements are.

A recent discovery from the Braes of Ha'Breck on Wyre, Orkney (Fig. 9 and see Thomas 2010), suggests that there may have been some sharing of design ideas between the users of Beaker pottery on Shetland and Orkney – another region with few Beaker finds and with its own 'take' on the Beaker ceramic tradition. The dense incised herringbone on the flat-based vessel/s echoes that seen on pottery from Ness of Gruting (e.g. Henshall 1956: Fig. 17, NMS X.HD 938) and Stanydale house. The Braes of Ha'Breck pottery is dated, by a radiocarbon date obtained from the associated carbonised hulled barley, to 3780±35 BP (SUERC- 37960 (GU26232), 2290–2040 cal BC at 68.2% probability, 2340–2040 cal BC at 95.4% probability: Antonia Thomas pers. comm.). This is closely comparable with the radiocarbon dates obtained from the barley found within the wall of the Ness of Gruting house



Fig. 8: Sherds of Beaker from Unst.  
Photo: Alison Sheridan.

Fig. 9: Sherds of one or more Beaker from Braes of Ha'Breck, Wyre, Orkney, previously misidentified by others as Grooved Ware. Photo: Antonia Thomas.



(Sheridan 2012a: Table 1) and, as argued elsewhere (*ibid*; and *see below*), there are reasonable stratigraphic grounds for suggesting that most of the pottery from that house was roughly contemporary with the barley cache.

### **3 Issues of definition: when is a Beaker not a Beaker – specifically in the context of Shetland?**

Issues of definition have long dogged the characterisation of the Shetland material, with Henshall being decidedly ambivalent about the Ness of Gruting assemblage, choosing to foreground apparent similarities with Hebridean Neolithic pottery while acknowledging ‘a connection with beaker pottery’ (Henshall 1956: 383); and Gibson referring to Shetland pottery ‘imitating’ Beaker pottery elsewhere (Gibson 1984: 95). While it is perfectly legitimate to question what constitutes ‘a’ or ‘the’ Beaker ceramic tradition – especially since the people who made and used the pottery were not doing so for the benefit of future ceramic taxonomy – nevertheless it is, in the present author’s opinion, possible to put forward an alternative view to the ones expressed by Henshall and Gibson. This view accords with Hedges’ argument, quoted above, that it is necessary to construct a locally-specific model of what kind of pottery was in use at a particular time, in order to understand how the pottery used in Shetland relates

both to the pre-existing local ceramic tradition/s and to the bigger picture of Beaker use elsewhere in Britain.

With the benefit of our current knowledge about the chronology both of Hebridean Neolithic pottery (Sheridan *et al.* in press) and of British Beaker pottery (e.g. Needham 2005; 2012; Sheridan 2007; Curtis and Wilkin 2012), it is easy to reject Henshall’s suggestion of influence from both Hebridean Neolithic and Beaker pottery at the Ness of Gruting, as being chronologically impossible. The *floruit* of the type of Hebridean Neolithic pottery with which Henshall was drawing parallels lies over a millennium earlier than the dates for the Ness of Gruting house and, as argued elsewhere, there is no evidence for the use of that type of pottery in Neolithic Shetland, even if the farming communities who established a ‘Neolithic’ lifestyle in Shetland may have come from the Hebrides (Sheridan 2012a). The aforementioned radiocarbon dating for the Ness of Gruting house, obtained from a cache of barley which must have been deposited as the house was being constructed, indicates that the house was built at some point between 2200 and 1980 BC. The most plausible interpretation of the pottery from this house is that it represents a locally – or regionally – specific variant of the Beaker ceramic tradition which had developed after the initial appearance of that type of pottery. This accords with the

‘adoption and adaptation’ model which this author has proposed to account for many developments in Shetland over the fourth to second millennia, in which successive episodes of contact with the outside world are followed by a strong localising tendency (*ibid.*).

As for Gibson’s argument that the Ness of Gruting – and Stanydale house and Benie Hoose – pottery represents an imitation of Beaker pottery elsewhere (Gibson 1982: 45; 1984: 95), this begs the question ‘from where?’ The parallels with Hebridean domestic Beaker assemblages are not sufficiently strong to suggest that there had been emulation of the pottery made by communities there; and there are precious few finds of any kind of Beaker pottery immediately to the south of Shetland. Furthermore, his explanation for regional variability among non-funerary Beaker assemblages, which posited the existence of local, non-Beaker elements that continued pre-existing traditions and were used alongside Beaker elements (Gibson 1984: 95), is hard to sustain within the Shetland context. It is indeed true that our knowledge of the ceramic repertoire of Late Neolithic Shetland is sketchy in the extreme, currently being limited to the assemblage of mostly large, globular undecorated vessels from House 1 at Scord of Brouster (Whittle *et al.* 1986: Figs. 56–57). However, if that material is in any way typical of the pot-

tery in use during the first half of the third millennium in Shetland, then there is nothing that bears any resemblance to the pottery from Ness of Gruting, Stanydale etc. – unless one counts the existence of one flat-based pot from Scord of Brouster (*ibid.*, fig. 57.11). The cord-decorated pottery described above constitutes a striking novelty, as do the vessel forms and decoration on the assemblages from Ness of Gruting, Stanydale etc. Indeed, all the evidence points towards the initial appearance of the new, alien, Beaker ceramic tradition, followed by the emergence of a regionally-specific trajectory for its development. The mechanism and date of the appearance of this tradition will be discussed below.

Meanwhile, it is legitimate to ask, within the Shetland context, where the definition of ‘regionalised Beaker pottery’ stops. The pottery reviewed above constitutes a fairly diverse set of material, but with some features in common between different sites, as in the case of the cord-decorated pottery listed above, or the pottery with incised, diagonal-line decoration from Ness of Gruting, Stanydale House, Scord of Brouster House 2 and Toug. However, other material that has been included in some discussions of Shetland Beaker pottery differs considerably from this and can arguably be excluded, not least on chronological grounds. Thus, while there are four

sherds in the Benie Hoose assemblage which appear to have 'Beaker affinities' (Gibson 1982: 110–111, regarding Calder 1961: Fig. 7.6,7,10 and 11) – namely two with incised horizontal lines, one with pin-prick impressions and one with dragged thumbnail impressions – these are not closely comparable with the pottery discussed above, and indeed their similarity with Beaker pottery elsewhere may be coincidental, not least since the pin-prick-decorated pot may have been square-mouthed. Furthermore, the remainder of the assemblage (Calder 1961: Fig. 7) is radically different, with large, coarse, undecorated jars predominating. The fact that organic encrustation within one of the latter has produced a radiocarbon date of  $3360 \pm 40$  BP (GrA-29373, 1740–1530 cal BC at 95.4% probability: Sheridan 2005: 183) suggests that at least part, if not all, of the Benie Hoose assemblage post-dates the Beaker pottery from Ness of Gruting and the other sites discussed above. A similar argument (minus the radiocarbon date) could be applied to the assemblage from the Standing Stones of Yoxie, even though this had not previously been cited as candidate Beaker material (Calder 1961: Fig. 8): despite the presence of a few sherds with decoration reminiscent of that seen on the Ness of Gruting pottery, the rest of the assemblage differs radically and could be of comparable date to the Benie Hoose material.

Three assemblages are particularly problematic as regards identifying their date and place in the overall trajectory of pre-historic Shetland pottery, and deciding whether there are any connections with a Shetland tradition of Beaker pottery. These are the non-cord decorated vessels from the Stanydale 'temple' (Calder 1950: Fig. 7); the few sherds from Midden II at Jarlshof (Hamilton 1956: Fig. 9); and the assemblage from Wiltrow (Curle 1936).

The Stanydale 'temple' pots, which include vessels that have been variously, and erroneously, compared to Manx Neolithic 'Ronaldsway' pottery (Calder 1950: 195) and to Swedish pottery (Henshall 1956: 383), comprise several vessels of diverse sizes, shapes and fabrics. While one (Calder 1950: Fig. 7B and B1) has a corrugated exterior comparable to that seen on some non-funerary Beaker pottery elsewhere (e.g. Glenluce, Dumfries and Galloway: Gibson 1982: Fig. GLE.8.19–21), the other vessels have no convincing Beaker *comparanda*. In the absence of any radiocarbon dates, and since we do not know whether the structure was used at different times in pre-history, it is quite possible that this pottery belongs to several different periods. We simply do not know enough about the overall picture of Shetland pottery development to be able to place it in any meaningful typochronology.

The small assemblage from Midden II at Jarlshof (Hamilton 1956: Fig. 9) is also frustratingly uninformative as to its date and identity. On the one hand, the presence of incised herringbone or criss-cross decoration on one sherd (*ibid.* fig. 9.7) echoes that seen on the Beaker pottery from Ness of Gruting and other sites; the flanged rim on another (*ibid.* fig. 9.1) is reminiscent of one from the Sumburgh house; and the apparent rustication on another sherd (*ibid.* fig. 9.6) is a decorative technique known from Beaker pottery elsewhere in Britain. Furthermore, the enigmatic bone plaque from the same midden bears Beaker-like decoration. On the other hand, the radiocarbon evidence for Midden II tells a different story. In addition to the date of  $3260 \pm 35$  BP (GU-12914, 1610–1500 cal BC at 95.4% probability) obtained from carbonised barley grain/s (Dockrill & Bond 2009: 50), there is now an even later date of  $2830 \pm 27$  (SUERC-43684 (GU-29030), 1070–900 cal BC at 95.4% probability) obtained from a bone point from the midden (Sheridan *et al.* 2012). Clearly, many more dates for Midden II are required before this conundrum can be resolved.

Finally, as for the Wiltrow assemblage, this comes from a site with abundant evidence for ironworking and the excavator assumed that the pottery must be contemporary with the ironworking, rath-

er than being residual from an earlier phase of activity. However, Audrey Henshall drew attention to superficial similarities between the incised decoration found on some of this pottery (Curle 1936: Fig. 14) and that from the Ness of Gruting (Henshall 1956: 381); and indeed the filled lozenge design on one sherd (Curle 1936: Fig. 14.10) is a motif seen on many Beakers in Britain. It is indeed possible that we are dealing with a palimpsest of activities, with a pre-existing house site being re-used as an iron smelting area; that would account for the abundance of non-ironworking ceramic material and of coarse stone tools. On closer examination, the assemblage clearly includes some material of probable Iron Age date: this is true, for example, of the sharply-kinking neck from a large jar (*ibid.*, fig. 15.3), reminiscent of some Iron Age pottery from Jarlshof and Sumburgh, and of the sherds from other large undecorated coarseware pots. Too little is known about the overall typochronology of Shetland's prehistoric pottery to tell whether all the assemblage is Iron Age, or whether this is a multi-period site with a Beaker element. Luckily, some sherds (albeit not the most interesting examples, in the present context) have radiocarbon-datable organic encrustations on their interior surface, so there is scope for obtaining some idea of the date of some of this pottery.

**When, how and why did Beaker pottery come to be used in Shetland, and was it part of a ‘package’ of novelties?**

The ‘when’ question is difficult to answer, given the paucity of radiocarbon dates relating to Shetland Beaker pottery. As far as the overall appearance of Beaker pottery in Britain is concerned, the evidence points to a diasporic-like appearance of Continental Beakers during the 25<sup>th</sup> century BC that was geographically extensive yet thinly and unevenly distributed (Needham 2012). This is believed to relate to the arrival of small numbers of individuals, coming to different parts of Britain and Ireland from different parts of the Continent, for various reasons. Some, such as the ‘Amesbury Archer’, could have been making heroic long-distance journeys – along with their retinues, as befitted the ideology of elite men keen to underline and enhance their prestige (Fitzpatrick 2011). Others came to seek sources of copper and gold (O’Brien 2012); with others, the motives are harder to discern. The rarity of these earliest Beakers has been noted by previous commentators: we are most certainly not dealing with an invasion of ‘Beaker Folk’. A ‘package’ of other Continental novelties is associated, including the use of metal and of new, fancy styles of archery gear; this suggests that the immigrants were bringing with them the traditions and practices of their homelands. These

traditions include Continental-style funerary practices. In Britain, with the exception of the communal cist associated with the ‘Boscombe Bowmen’ (Fitzpatrick 2011), the earliest British Beaker-associated funerary monuments consist of oval or subrectangular earth-cut graves, with or without wooden plank-built coffins/chambers, and with or without a modest mound of earth and stones on top. Some, as at Newmill (Perth and Kinross) and Upper Largie (Argyll and Bute), are encircled by a ditch, the latter having posts set into it (Sheridan 2008). According to Stuart Needham, an early phase when Beaker pottery and its associated novelties were a rare phenomenon was followed, from the 23<sup>rd</sup> century, by a period when people in many parts of Britain enthusiastically adopted this ‘package’ of novelties, and when regional styles of Beaker emerged; by around 2000 BC, other styles of pottery had gained in popularity and Beaker use was declining in many areas.

It is clear that the earliest appearance of the Beaker ‘phenomenon’ extended at least as far north as Skye where a slab-lined grave associated with early All-Over-Cord and incised Beaker at Broadford has recently produced radiocarbon dates comparable with other early Beaker graves in Britain, between the 25<sup>th</sup> and early 23<sup>rd</sup> centuries BC (Birch 2012) and, on the east coast, at least as far as



Inverness, where another early Beaker grave was found at Beechwood Park (Suddaby and Sheridan 2006). Further north, on the Black Isle, an assemblage of early Beakers, including a large All-Over-Comb decorated Beaker and a large rusticated Beaker, was found as a secondary deposit in a Neolithic chamber tomb at Kilcoy South – also confusingly known as Kilcoy West, Highland (Clarke 1970: Figs. 96, 126; Henshall and Ritchie 2001: 71-2, 153-157 and fig. 32), and All-Over-Cord sherds have been found on the north coast of Caithness, at Freswick and Lower Dounreay (Edwards 1929; Henshall 1963; Clarke 1970: 529). Indeed, the Lower Dounreay All-Over-Cord Beaker – which, like the Kilcoy Beakers, had been a secondary deposit in a chamber tomb – closely resembles one of the Broadford Beakers. So did this initial ‘diaspora’ extend as far as Shetland?

Frustratingly, the answer must be ‘We cannot say’ – or, at least, there is no unequivocal evidence for this. As mentioned above, the presence of All-Over-Cord Beaker is not proof of a ‘Beaker presence’ as early as the third quarter of the third millennium. The shape of the All-Over-Cord Beakers as implied by the rimsherds from Stanydale ‘temple’ and Tougs does not match that of the earliest All-Over-Cord Beakers elsewhere, which tend to have slightly more pointed rims and can have slightly curving necks – and,

as discussed below, the dating at Tougs suggests that that pot was made closer to the end of the third millennium. Furthermore, no example is known from Shetland of the oval/subrectangular Beaker grave format. The use of rectangular stone cists – translations into stone of the timber chambers – is associated with the period when Beaker use gained in popularity, rather than when it initially appeared, and thus there is no reason to suspect that the Fraga cist is particularly early; the ceramic evidence accords with that view. And Shetland is notable for the absence of the other elements of the Beaker ‘package’. There is no fancy archery gear, for example, and there are no metal artefacts that pre-date 1500 BC at the earliest (Trevor Cowie pers. comm.). The tanged blade from Northerhouse (Nordrhouse) is of Middle Bronze Age date, despite its inclusion in John Coles’ listing of Early Bronze Age metalwork (Coles 1969: 91).

What radiocarbon dates there are for Shetland Beaker pottery – from Ness of Gruting, Tougs and Sumburgh – relate to a time when the ‘regionalisation’ referred to above had already taken place. As noted above, the Ness of Gruting house seems to have been constructed between 2200 and 1980 cal BC, to judge from the radiocarbon dates for the cache of carbonised barley grains found within its walls (Sheridan 2012a: Table 1). This

ostensibly gives a *terminus post quem* for the pottery, although no great interval between house construction and the deposition of at least some of the pottery need be involved – and indeed, Audrey Henshall argued that most of the pottery might actually slightly pre-date the construction of the house (Henshall 1956: 381). That the house's occupation or use may have extended over several generations is implied by the presence of two unfinished miniature battle axe-heads in the house which, by analogy with a dated example from Doune, may date to some point between the 19<sup>th</sup> and 17<sup>th</sup> century BC (Sheridan 2012a: 28).

The date range for the construction of the Ness of Gruting house is not dissimilar to that obtained for the building beside the burnt mound at Tougs (Hedges 1986: 12): two samples of 'wood' – species and condition unspecified – produced dates of 3525±75 BP (GU-1110) and 3610±60 BP (GU-1111), which calibrate respectively to 2120–1660 cal BC and 2150–1770 cal BC at 95.4% probability. One assumes that there had been no 'old wood' effect with these dates since there will not have been substantial trees on Shetland at the time, although if driftwood had been used, there could be an age offset. Similar dates were also obtained for the phase of activity associated with the cord-impressed pottery from Sumburgh (Downes and Lamb 2000:

10): a piece of carbonised rope was dated to 3535±153 BP (GU-1015, 2300–1490 cal BC at 95.4% probability) and charred wood from a hearth or cooking pit – again, unidentified as to species – produced a date of 3629±53BP (GU-1006, 2200-1830 cal BC at 95.4% probability). The dates obtained for House 2 at Scord of Brouster (Whittle et al. 1986: 8) need not be considered here since all clearly relate to a previous, Neolithic phase of pre-house activity between *c* 3300 and *c* 2900 BC.

So, as regards the question of when Beaker pottery came to be used in Shetland, all we can conclude is that its appearance was probably before the last two centuries of the third millennium, but how long before that is unknown. That it arrived as a tradition of potting, featuring a full repertoire of vessel forms, is suggested by the variety of pot sizes and shapes in the 'developed' Ness of Gruting Beaker assemblage. And the fact that Beaker pottery is associated with the use of a rectangular stone cist at Fraga suggests that it may have appeared after this style of funerary monument had begun to be used elsewhere in Scotland – although the appearance of these two novelties need not necessarily have been contemporary. In the current author's opinion, the 23<sup>rd</sup> century would seem to be the most likely date for the appearance of Beaker use in Shetland; future discoveries will show whether this is correct.

*If the question of 'when?' is hard to answer, equally hard are the questions, 'From where?' and 'How and why?'*

Orkney seems an unlikely 'source area' for two reasons. Firstly, like Shetland, it lies at the northernmost edge of Beaker pottery distribution, and Beakers are notable for their rarity; the initial diaspora does not seem to have extended as far as Orkney and, in contrast to some areas to the south, the idea of using Beakers does not seem to have become very popular there. Secondly, there is no evidence for the use of All-Over-Cord Beakers in Orkney. This is not to deny the existence of contact between Shetland and Orkney: the similarity between the Ness of Gruting and Braes of Ha'Breck pottery suggests late third millennium links, as does the exportation of Shetland steatite vessels to Orkney. However, this contact seems to have occurred once the tradition of Beaker use in Shetland had already become well established. Arguably more plausible as potential source areas are the Western Isles and the northern 'mainland' of Scotland. Both these areas were touched by the initial diaspora, which introduced the tradition of using All-Over-Cord Beakers – among other types; and the subsequent use of rectangular stone cists is also attested in both areas.

As for the 'how and why?' question, the evidence from Shetland suggests that this

is more likely to be a case of active adoption by 'Shetlanders' who had travelled south (either to the Hebrides or to the northern Scottish mainland), than of introduction by immigrants from one of those areas. This is because both of these novel traditions seem to have been absorbed and adapted within a wholly localised social milieu. The style of house building continues a tradition established during the Neolithic period, and there are clear continuities in traditions of stone use for artefacts – including the re-use of fragments of felsite stone axeheads and knives, as at Toug, for instance (Hedges 1986). Furthermore, the association of Beaker pottery with chamber tombs – at South Nesting and in the Giant's Grave, on Hestinsetter Hill – continues a tradition of using megalithic funerary monuments that was, again, established during the Neolithic period. Whether the use of heel-shaped cairns was a novelty dating to the time when Beaker pottery began to be used remains to be seen; it is a possibility. As regards the use of rectangular stone cists, while the Fraga and Pettigarth's Field examples (Calder 1961: Fig. 6) are comparable with the use of such cists on 'mainland' Scotland, their deployment at Muckle Heog (Henshall 1963: 170) is decidedly idiosyncratic. Here, two such cists were found under a heel-shaped cairn; one contained the unburnt remains of several individuals together with ceramic or steatite vessels,

and a second contained a skull and several steatite vessels. This monument is unparalleled and, as argued elsewhere (Sheridan 2012a: 27), reflects a 'pick and mix' approach, combining the exogenous – i.e. the use of the cists – with the indigenous – i.e. the heel-shaped cairn.

The phenomenon of prehistoric Shetlanders travelling south and adopting novelties has a precedent during the early third millennium when, as argued elsewhere (Sheridan 2012a: 22–24), such travellers may well have visited Orkney and been inspired to adopt the pestle- and cushion-shaped maceheads that were used as symbols of power there. That external travel continued – or resumed – during the time when Beaker pottery was in use is indicated by the export of steatite cinerary urns to Orkney within the 2200–1900 cal BC timeframe (*ibid.*, 26), as well as by the evidence from Braes of Ha'Breck.

We can thus imagine the inhabitants of Shetland as active agents, in contact – however sporadic – with the outside world and choosing what exotic aspects to adopt, rather than as passive recipients of incoming influences.

### Conclusions

That the inhabitants of Shetland partook of the 'Beaker phenomenon', in their way and on their own terms, is clear; in

this, they were following a well-established pattern of adopting and adapting novelties following episodic contacts with the wider world. Shetland may not have been touched by the remarkable diaspora of the 25<sup>th</sup> century, nor did it witness the hierarchisation and competitive conspicuous consumption that is obvious in some parts of Britain during the 22<sup>nd</sup> to 20<sup>th</sup> century. There may indeed have been some social differentiation in Shetland, and perhaps the use of steatite vessels – an indigenous innovation – and the choice of funerary monument was linked with this. However, as had been the case during the early third millennium, when a markedly inegalitarian society seems to have existed in Orkney, but not in Shetland, it may well be that Shetland lacked the conditions for substantial social inequality to emerge. While agriculture and stock-rearing were clearly being undertaken (Dockrill et al. 1998), there may not have been the opportunities to amass surpluses that existed elsewhere; similarly, there was no scope for controlling the movement of highly-desired resources such as metal or metal artefacts – as seems to have been the case in Kilmartin Glen, for example (Sheridan 2012c).

What is also clear from this review is how small our evidential base is, and how badly we need more radiocarbon dates, and more well-excavated findspots, if we

are to advance our understanding of the ‘when, how and why?’ questions and to set them within a broader framework of developments in Shetland. In this regard, one issue that is particularly important to explore is whether there was a significant increase in population during the period when Beaker pottery was adopted and used. The evidence from the South Nesting project and elsewhere points to flourishing communities that were practising intensive ‘infield’ cultivation and stock-keeping in fertile areas (Dockrill *et al.* 1998; Dockrill and Bond 2009; cf. Hedges 1986 and Whittle *et al.* 1986), and Simon Butler’s review of the palaeo-environmental evidence for Shetland suggests that this was when a major development of heathland occurred, relating to the use of heath for grazing (Butler 1998). Now that it is realised that not every substantial stone-built house has to be of Neolithic date, we can ask how many of the oval houses that appear on Canter’s map (Canter 1998: Fig. 15) – and indeed, how many of the burnt mounds (*ibid.*, fig. 20) – might be of late third/early second millennium date. Targeted fieldwork similar to that used by the South Nesting Project (Dockrill *et al.* 1998) should help to provide the answer to these questions.

One other conclusion to emerge from this review of Shetland Beaker pottery is that we are still a long way from understand-

ing the overall typochronology of Shetland prehistoric pottery, as is clear from the discussion of the chronological uncertainties surrounding several ceramic assemblages.

Finally, the fact that the use of Beaker pottery seems not to have been associated with the use of metal in Shetland raises the question of whether it is appropriate to use the terms ‘Chalcolithic’ and ‘Early Bronze Age’ to describe the period in question. On the one hand, the lifestyle that was being followed was a continuation of what had been practised for many centuries during the Neolithic; it could be argued that Shetland remained essentially ‘Neolithic’ until metal began to be used, around or after 1500 BC – and indeed for some time after that. On the other hand, we need some way of recognising that developments in Shetland were not entirely divorced from those elsewhere in Britain. Perhaps a pragmatic solution would be either to use those terms, but to qualify them, or else to abandon period names and refer instead to ‘late third millennium/early second millennium BC developments’ to cover the timeframe of interest here. Given the diversity of the terminology that is currently in use, and the uncertainty over what time periods are being invoked, it may be that the latter approach is the least likely to cause confusion.

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At Julianehøj passage grave. From the excursion during the symposium. Photo J. Arntzen 2012.

# Felsite axehead reduction – The flow from quarry pit to discard/deposition

*Torben Bjarke Ballin*

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## **Introduction**

In previous papers from this project (Ballin 2011c; 2012a), the author discussed aspects of artefact production based on North Roe riebeckite felsite. These papers focused on more general questions, such as the colonization of the Shetland Islands, the advent of felsite production, the possible “interdict” on felsite exportation in the Neolithic period, and the general character of the prehistoric felsite exchange. The focus of the present paper is on the *flow* of felsite through Neolithic Shetland, from quarry to deposition, and it will be attempted to relate a number of key Neolithic sites on Shetland to specific stages in the felsite flow, see fig. 1. It is thought that this exercise may shed light on the organization of felsite procurement, reduction and exchange<sup>1</sup> and thereby, essentially, on the

social organization of Neolithic Shetland. The present paper deals exclusively with felsite axeheads, as there is presently insufficient evidence to allow an equally detailed discussion of the movement of felsite polished knives (so-called Shetland knives).

## **The “flow” of felsite**

Recent surveys and excavations have added much new information on the Shetland Neolithic, not least relating to felsite procurement, reduction and exchange. With the addition of these new assemblages (e. g. Hill of Crooksetter, Firths Voe, the lower levels at Old Scatness, and the North Roe Felsite Project; Ballin 2008a; forthcoming; Cooney *et al.* 2012), it has been possible to construct a flowchart (fig. 1) which shows the movement of felsite, from the North Roe

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<sup>1</sup> Exchange is here defined as in Renfrew (1977: 72), that is “... in the case of some distributions it is not established that the goods changed hands at all; [exchange] in this case implies procurement of materials from a distance, by whatever mechanism”.

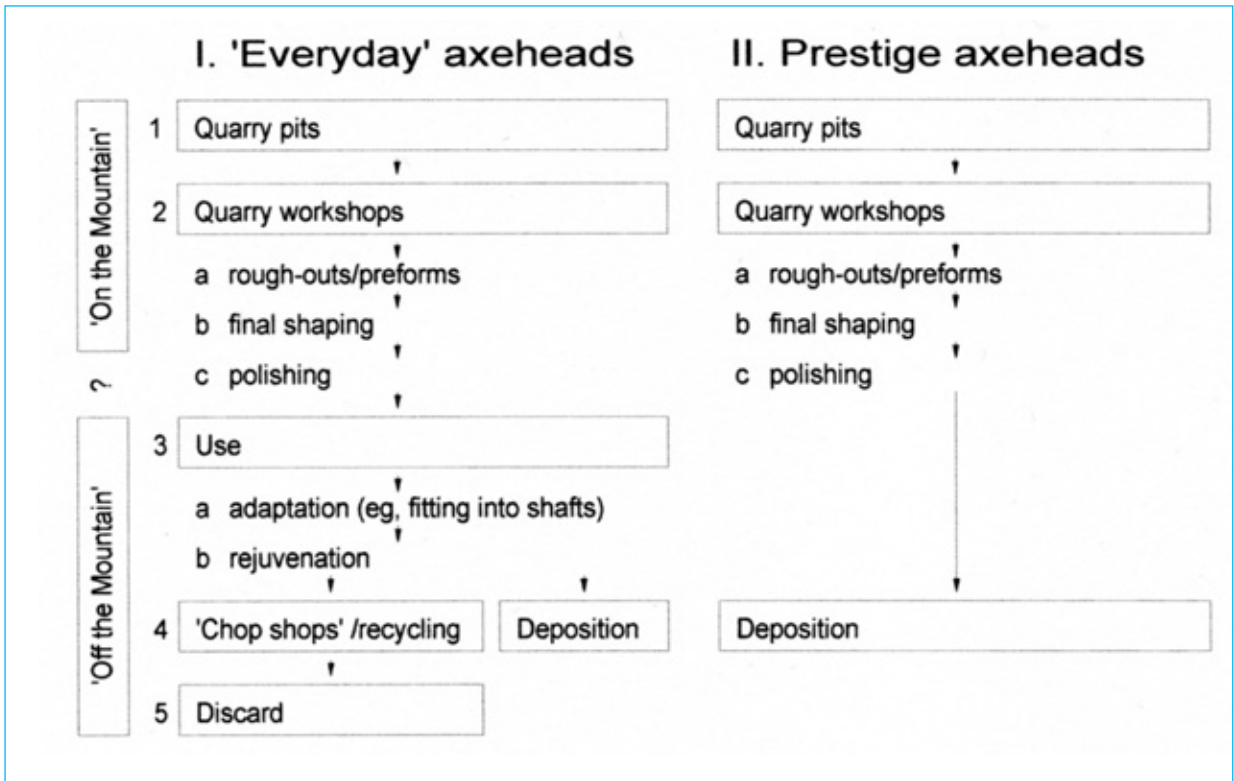


Fig. 1: Felsite axe head reduction – the flow from quarry pit to deposition/discard.

quarries to final deposition, on archaeological sites and in the landscape. Sheridan's (2012) recent discussion of the Modesty cache also added information relevant to the construction of fig. 1.

It is thought that the movement of felsite, within the sphere of axehead production and reduction, is best understood as two parallel flows, one relating to the production of domestic implements – although felsite itself may have had an inherent non-functional value, giving any felsite artefact some 'special' meaning or value – and one relating to the

production of prestige and ritual items (fig. 1's left and right columns, respectively). The main difference between the two flows is that the latter does not include a use phase, including adaptation, rejuvenation, and recycling. In both cases, the basic reduction occurs 'on the mountain' (i. e. within the quarry complex), with use and deposition occurring "off the mountain". It is still uncertain where the axeheads were polished.

Following the terminology of Vemming Hansen & Madsen (1983), the basic part of the axehead production is defined as a

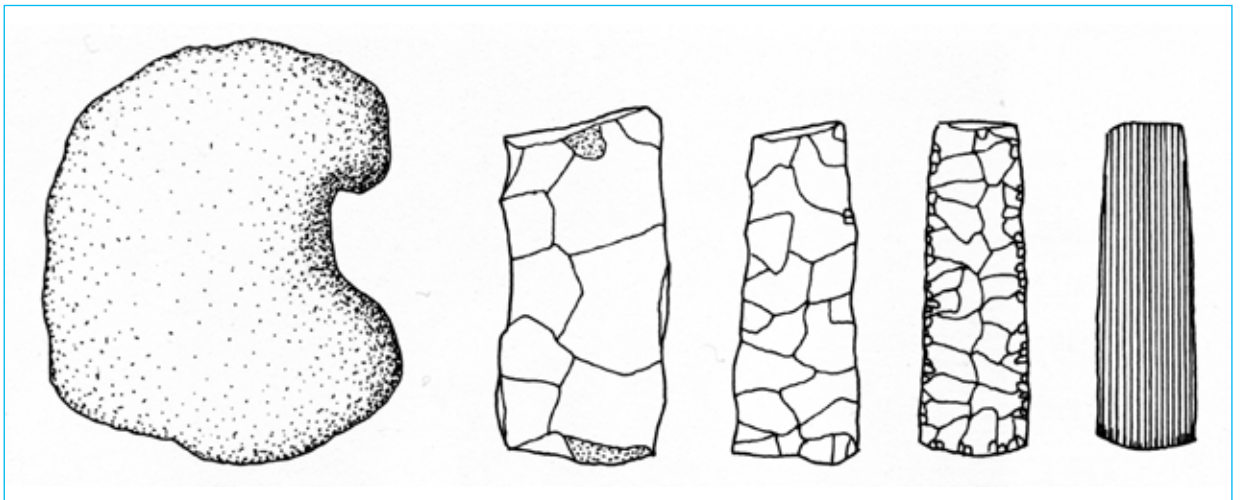
five-step process, see fig. 2: 1) a nodule or block is removed from the quarry or outcrop; 2) a crudely shaped blank is produced; 3) the blank is given its general axehead shape – the blank becomes a rough-out or preform; 4) the lateral seams are refined by the detachment of small chips, and the edge is formed by pressure-flaking; and 5) the axehead is finally polished. Each stage is associated with specific types of waste, as shown in Vemming Hansen (1981).

### The evidence – the sites and the felsite “flow”

Fig. 1 is the combined result of evidence from old sites and new excavations, supplemented by evidence from the recent surveys of the North Roe Felsite Project. Below, these sites are presented and related to the different stages in the felsite flowchart.

In the paper’s discussion of activities taking place at the North Roe quarries, focus will mainly be on the Midfield outcrops and workshops. The Beorgs of Uyea scheduled area – popularly referred to as “the Beorgs” – generally represents a palimpsest situation, covering centuries of overlapping activities, whereas the Midfield area is characterized by individual quarry pits and well-defined workshops. During the 2012 survey of both areas (Ballin & Davis 2012), it was possible to define discrete felsite-bearing scatters along the eastern periphery of the Beorgs of Uyea quarry area, but none included axehead rough-outs. Most likely, this is due to the Beorgs generally being a well-known archaeological, and to a degree tourist, location, and as it is also more easily ac-

Fig. 2: Stages in the manufacture of thin-butted flint axe heads (courtesy of Vemming Hansen & Madsen 1983: 45): raw nodule, blank, rough-out, finished axe head, and polished axe head.



cessible than Midfield, it is thought that any rough-outs which may originally have formed parts of these peripheral scatters have been ‘plucked’ by visitors and collectors: in addition to being a prehistoric palimpsest, the Beorgs has also been more heavily disturbed in modern times.

Below, known examples of the various type sites (fig. 1) are presented. Presently, it is not possible to determine with any degree of certainty whether ‘everyday’ axeheads and prestige axeheads were produced from the same workshops, or whether the production of these two functionally different types of axeheads were spatially separated.

### 1 Quarry pits

Quarry pits are known from three locations in the Midfield area, namely Midfield 1 & 2 along the area’s eastern flanks, and Midfield 3 along the area’s northern flanks (Cooney *et al.* 2012, Fig. 10; Ballin & Davis 2012). Generally, these pits are elongated features in the landscape, following the north-south trending felsite dykes (fig. 3). They occur in groups of two to five pits, with the pits being up to 15 metres long, 5 metres wide and 1 metre deep. They are generally not associated with piles of upcast, as many chert quarry pits are (Ballin & Ward 2013), which suggests that either the excavated surplus has eroded back into the pits, or they were backfilled in prehistory.



### 2.a Workshops “on the mountain” – the cruder work

As described in previous papers (e. g. Ballin 2012a), workshops occur along the dykes and on either side of the quarry pits. At Midfield 1, towards the Midfield



Fig. 3: 'String' of quarry pits along a Midfield felsite dyke. Courtesy of D. L. Mahler.

area's north-east, workshops with finer debris, probably relating to the production of Shetland knives, were found on the western, uphill side of the pits, whereas cruder waste, thought to relate to axehead production, was mainly located on

the eastern, down-hill side. This separation of knife and axehead production, which is not entirely mutually exclusive, may have been based on functional reasoning as well as religious ideas (cf. Scott & Thiessen 2005). The workshops in the

Fig. 4: Discrete axe head workshop at Midfield 1. The circle highlights an abandoned axe head rough-out with a crude lateral knapping seam clearly visible.



Midfield area are to a large extent discrete single-event scatters (like that in fig. 4), but there are also larger, but still well-defined scatters, which were probably used by the same group of people over, say, a few years (eg, Ballin 2011a, fig. 12), as well as somewhat larger palimpsest situations, which are more difficult to disentangle.



At the present time, it is thought that blanks (fig. 2) may have been formed at the quarry pits, but that rough-outs were shaped at the workshops. This, however, is to be tested during surveys and excavations at Midfield 1 in 2013 (Cooney *et al.* 2012).

## 2.b Workshops “on the mountain” – the finer work

Two tiny felsite-bearing concentrations (figs. 5-6) were noticed on the Uyea Scord plateau between Collafirth Hill and Midfield (Ballin & Davis 2012), possibly indicating the route from the Midfield quarry area to settlements along the eastern coast of North Roe or further south. In both cases, a few handfuls of diminutive chips and flakes were recovered, with one concentration being character-

Figs 5-6: The two felsite/quartz assemblages recovered from the Uyea Scord plateau between Collafirth Hill and Midfield. The pieces were collected from two areas, each measuring approximately 3 x 3 m.





ized by a felsite: quartz ratio of c. 1:10 and the other by a ratio of 10:1. These small scatters differ from scatters within the main quarry areas at the Beorgs and Midfield by the felsite artefacts being generally small and thin/delicate, and by the presence of quartz. The debris in the main quarry areas is generally characterized by the individual felsite pieces being fairly large and coarse, and by the complete absence of quartz (figs. 5-6).

During approximately one decade of occasional fieldwalking in the North Roe area, the author has only found one piece of quartz within the two quarry areas, namely a large (greatest dimension 95 mm) dual-platform core in homogeneous milky quartz. The piece has two well-defined platforms positioned at an angle to each other. It was recovered at the Beorgs, amongst the debris from one of the more productive felsite dykes. In terms of the Beorgs, it cannot be ruled out that small quartz flakes could have fallen through the cracks between the occasionally metre-thick layer of boulder- and cobble-sized felsite waste, but the smaller, well-defined, single-event felsite scatters at the eastern end of the Beorgs, and at Midfield, do not include any quartz either.

On Shetland, the domestic waste at Neolithic and Bronze Age sites is generally heavily dominated by debris from the production of quartz tools (Ballin 2008b),

and it is suggested, that the lack of quartz within the Beorgs and Midfield may indicate an absence of domestic activity within these areas in prehistory, and that the presence of quartz in scatters on the Uyea Scord plateau may indicate some mixture of basic felsite production and domestic activities. It is presently uncertain whether these scatters represent the camp sites of quarriers, locations for the production of final axeheads, or possibly both.

Although this is presently entirely conjectural, it should be considered whether the large quartz core recovered from the Beorgs may represent deliberate deposition. In his discussion of Shaft 27 at the Grimes Graves flint mines, Topping describes offerings at quarries, which may have formed part of rituals of 'symbolic renewal' (Topping 2005:66; also see Scott & Thiessen 2005). These deposits placed at prehistoric quarries could take the form of products from the quarries themselves, but they also include, *inter alia*, pottery and human remains.

### 2.c Polishing the axeheads

At present, it is unknown where the finally shaped felsite axeheads were polished (fig. 7) – somewhere on the mountain, or at special sites or domestic settlements off the mountain. It is a fact that no felsite artefacts or fragments with dorsal polish have been found within the quar-



Fig. 7: Polished felsite axehead, ARC 65451. Courtesy of D. L. Mahler.

ry complex, and no grindstones either. Given the presently available evidence, it is most likely that the finished axeheads were taken off the mountain to be completed elsewhere.

### 3 Use – adaptation and rejuvenation

The use stage of the axeheads is characterized not only by utilization of the individual tools, but also by ongoing modification of them. Although it was possible to fit many, if not most, polished axeheads into pre-existing axeshafts (Evans 1897, 151; Sheridan 1992; 199), some axeheads were too large and needed to have their butts reduced in width and/or thickness to fit. Axehead CAT 1079 from Hill of Crooksetter is a fine example of this practice (fig. 8), showing how pieces were first polished all over and then, if necessary, adapted to their intended shaft. In this case, a number of polished felsite chips and flakes were struck off the axehead's butt, allowing the axehead to fit into its shaft.

Although it is not entirely certain whether the axeheads were adapted to their shafts at the domestic settlements where they were to be used – this can only truly be proven by refitting polished “butt reduction flakes” to their parent axeheads – the realization that this practice existed is important in terms of how small polished chips and flakes on Neolithic sites are interpreted.

From the lower levels at the Old Scatness Broch, a small lithic collection was recovered, including almost 1000 quartz artefacts – mostly chips – and eight small felsite chips/flakes (Ballin 2008a). Three



Fig. 8: Axe head 1079 from Hill of Crooksetter after having been adapted to its shaft. Courtesy of ORCA.

of the felsite pieces have recognizable dorsal polish, indicating that they were removed from a polished axehead. In the report on the Old Scatness lithics, the author interpreted these pieces as examples of axehead recycling, whereas these small pieces may just as likely, given the evidence from Hill of Crooksetter, represent adaptation of an axehead to its shaft.

Rejuvenation of the polished felsite axeheads was carried out at a later stage, for example when the implements had been blunted or damaged by use. Extensive use

of a stone axehead would usually cause some wear of its cutting-edge, and worn pieces would occasionally have their edges trimmed by fine chipping and/or renewed polishing (Mahler 2010:16). Broken pieces could have new cutting-edges formed, mostly by flaking. The assemblage from Modesty, near Bridge of Walls, includes a relatively large number of intact and broken felsite axeheads and knives, and the axeheads are mostly relatively small or medium-sized everyday pieces, most of which are worn and/or rejuvenated/reworked (Sheridan 2012).

Although a number of felsite axeheads, and in particular adzes, are clearly functional pieces produced for everyday use, Ritchie (1992: 214) noted that 1: most Shetland axeheads are considerably larger and well-made than, for example, stone axeheads from neighbouring Orkney; 2: the larger Shetland axeheads tend to be unused; and 3: most were recovered not from domestic settlements but as stray finds in the landscape. This suggests that a comparatively large proportion of the felsite axeheads may be ceremonial or prestige objects, explaining the relatively low number of Shetland axeheads with more than sporadic edge-wear and/or traces of rejuvenation.

#### 4 Recycling or deposition

At the end of the felsite axehead operational schema or “life cycle”, the individual implements are either recycled, deposited or discarded. In the present paper, the term “deposition” is used to describe a deliberate, frequently ritualized act, where an artefact is “taken out of circulation” by depositing it in carefully chosen and prepared locations. Most Shetland axeheads are uncontexted finds, but the cache of felsite knives found by Dr Noel Fojut at Stourbrough Hill, West Mainland, is a fitting example of this practice (Fojut forthcoming). “Discard”, on the other hand, describes the act of permanently getting rid of worn or broken pieces by either throwing them

out of the site / “tossing” (Binford 1983: 189); or placing them in domestic waste disposal areas or middens. Discard is discussed below.

Meticulous inspection of the North Roe quarries has shown that in these parts of North Roe focus was on the manufacture of axeheads and Shetland knives, and less so or not at all on the production of smaller everyday tools – at the present time, only one formal everyday tool in felsite has been recovered from North Roe, namely a double-scraper found at Quina Waters, in the low-lying areas north of Collafirth Hill (Ballin 2011a, fig. 8). The exhibition and stores of Shetland Museum include not only axeheads and Shetland knives, but also some leaf-shaped – predominantly kite-shaped – arrowheads, as well as scrapers. The Museum arrowheads generally have two faces covered by invasive retouch, and it is not possible to determine where and how these pieces were made. Approximately eight of 10 scrapers have dorsal, and in one case also ventral, polish, and the author (e. g. Ballin 2011a) therefore suggested that smaller tools were generally, if not exclusively, produced by the recycling of polished axeheads and Shetland knives.

The excavations of Orkney Research Centre for Archaeology (ORCA) at Firths Voe brought about an unusual lithic as-

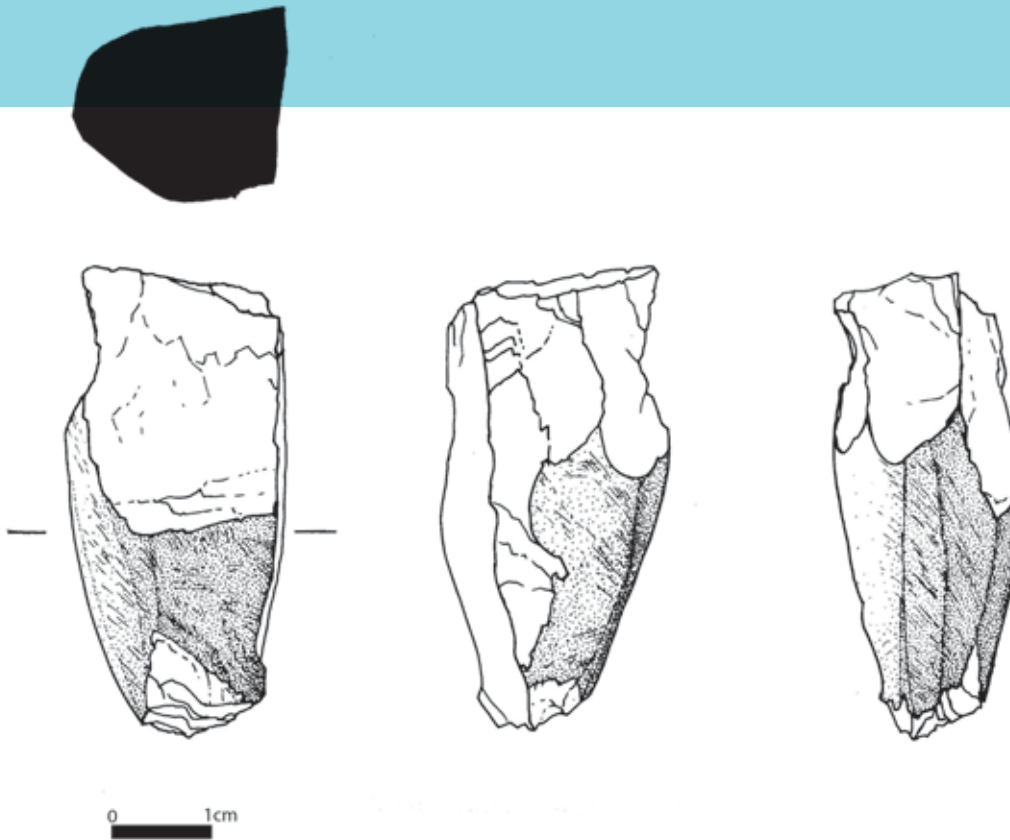


Fig. 9: Single-platform core based on the recycled butt of a polished axe head (CAT 6). Drawn by Amanda Brend; courtesy of ORCA.

semblage which shed light on the recycling of felsite axeheads (Ballin forthcoming). Where lithic assemblages from most domestic sites on Shetland – apart from rare sites like Ness of Gruting include no or little worked felsite (Henshall 1956), Firths Voe yielded an assemblage of 271 pieces, supplementing the site’s quartz assemblage at a ratio of almost 1 to 10. The felsite artefacts embrace 257 pieces of mostly diminutive debitage, six cores and eight tools. Approximately one-third of the unmodified and modified felsite artefacts have polished surfaces.

In his report on the Firths Voe lithics, the author characterized the site as a “chop shop” (Ballin 2012b):

“ As indicated by the high proportion of flakes with polished dorsal faces (28%), as well as abandoned fragments of polished axeheads and cores with polished surfaces (fig. 9), the raw material for the site’s felsite production was clearly not obtained from the North Roe quarries in raw form. Instead, it was supplied in the form of polished axeheads, which had been abandoned either as a result of damage or (if the process was governed by non-functional reasoning) for more impenetrable reasons. ”

New felsite tool blanks were manufactured from felsite cores (axehead fragments), and new tools were manufac-

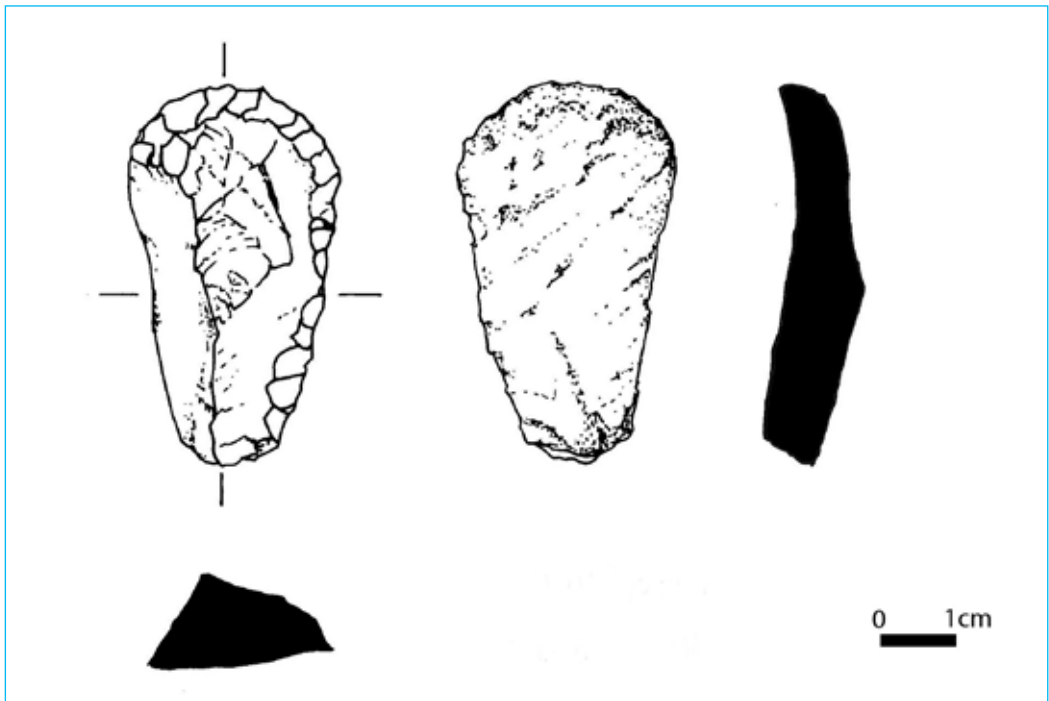


Fig. 10: Combined tool (scraper/scale-flaked knife) based on a hard percussion flake (CAT 1). Drawn by Amanda Brend; courtesy of ORCA.

tured either on newly produced flakes or on axehead fragments. Firths Voe, as well as neighbouring Hill of Crooksetter, both yielded well-shaped discoidal and endscrapers, but for the first time formal felsite knives have been recovered. The assemblage from Firths Voe included not only a simple scale-flaked knife (CAT 53), but also a well-executed combined tool (CAT 1) with a regular steep scraper-edge at one end, and a neat scale-flaked cutting-edge along one lateral side, see fig. 10. Another new insight into felsite tool production was provided by scrapers

from the two sites, where several had working-edges formed by secondary polish of the ventral face in combination with dorsal axehead polish. This is important, as it informs us that not all polish on small everyday tools is polish from the formation of the original axeheads or Shetland knives (fig. 9-10).

The Firths Voe “chop shop” clearly represents a specialized and well-organized activity area, and, in terms of the felsite flow, it should probably be linked to collections like the Modesty cache (Sheridan 2012). It is not absolutely certain whether the Modesty objects represent a sacrificial deposit or an economical cache,

but the character of the felsite artefacts – not all fully polished, generally used, some broken, rejuvenated, and/or repaired – suggests that this may largely be an economical cache. As such, the collection may generally represent ‘scrap’ intended for a “chop shop” like that of Firths Voe. The fact that these bits of “scrap” were not recycled may be explained in many – more or less conjectural – ways. The cache may simply have been forgotten, if it had been “... hidden for safekeeping at the base of a tree or in a house” (White & Modjeska 1978 on stone axehead holdings and circulation).

Felsite recycling was probably carried out in different ways, either in well-organized “chop shops” (e. g. Firths Voe), where some very well-executed implements were created, or as individual *ad hoc* cases where unshapely, but functional, tools were formed by adding an expedient working-edge to a broken-off bit of axehead, like the irregular felsite scraper from Scord of Brouster (Ballin 2005: Fig. 24).

As mentioned above, the size and execution of many felsite axeheads suggest that they were produced specifically for ritual deposition rather than for use, and these axeheads therefore do not have a use stage, see fig. 1. However, all ritually deposited axeheads were not oversized prestige or ceremonial pieces, with some clearly being functional axeheads which

for presently unknown reasons were taken out of circulation. Basically, it is possible to subdivide the ritually deposited felsite axeheads into two main groups, namely 1) axeheads made specifically for deposition, and 2) axeheads made initially for use as a chopping tool.

Our knowledge of felsite deposition is currently limited, as many of the more spectacular felsite artefacts are uncontexted stray finds. However, the presently available information suggests that ritually deposited “super-axeheads” were largely disposed of in the landscape, in the same manner as the cache of visually exceptional Shetland knives from Stourbrough Hill (Fojut forthcoming), whereas it was deemed acceptable to deposit the smaller, occasionally even “wonky”, functional axeheads on or near settlements as well as in the landscape. At Hill of Crooksetter, Site 003, see fig. 11, two medium-sized functional axeheads had been deposited with felsite flakes, cores and scrapers in association with an area of intense burning. In the original report on the site’s lithic assemblage, the author wrote (Ballin 2011b): “It is presently uncertain specifically which activities took place at this site, but the deposition of felsite flakes and tools in connection with fire-setting has a distinct ritual character”. For a full discussion and interpretation of this site and assemblage, see Reay *et al.* forthcoming.



Fig. 11: Hill of Crooksetter. Two ? ritually deposited felsite axe heads. Courtesy of ORCA.

## 5 Discard

Discard of lithic waste may take different forms, such as – in Binford’s terms: preventive maintenance – the immediate disposal of items away from intensively used spaces, “tossing”; *post hoc* maintenance – the actual cleaning up of areas and the transport of the debris to special dumping areas (Binford 1983: 189). A third type of waste is found in the prehistoric site’s “drop-zones”, where waste objects too small to be perceived as potential future problems to traffic across the site were simply ignored and left where they fell.

A number of factors suggest that felsite was perceived as more than simply a

functional raw material, that is, it may have been imbued with some form of symbolic meaning: 1) the time invested in the production of “show pieces” – oversized, all-over polished axeheads and overly patterned Shetland knives; 2) the association of axeheads and knives with ritual deposition; 3) the highly schematic and regulated manner in which smaller tools were produced: axeheads and knives at the quarry workshops or smaller tools at the settlements by recycling the larger tools; and 4) the *level* of scrap collection and recycling/cannibalization – e. g. the “scrap” from Modesty and the Firths Voe “chop shop”. In many respects, North Roe felsite seems to be a northern parallel to Arran pitchstone, which was also per-



ceived as having an intrinsic value (Ballin 2009: 73).

Although the felsite artefacts from the Firths Voe “chop shop” clearly represents abandoned or discarded material, rather than carefully deposited objects, the apparently special status of felsite would probably prevent artefacts in this raw material from being discarded as freely and willingly as waste in, for example, quartz: although felsite artefacts may be recovered from the drop and toss zones of felsite workshops and “chop shops”, these pieces are probably less likely to appear in actual middens.

### Discussion

In the present paper an account has been made of how felsite flowed from quarry pit to deposition or discard, and it has been shown how felsite procurement, reduction and exchange formed a highly sophisticated operational scheme. This scheme was not just complex in practical terms, dealing with the reduction and distribution of many tons of felsite, but also included regulation, some of which must have been based on non-functional reasoning. The latter may be one of the more revealing elements in terms of shedding light on the social organization on Shetland in the Neolithic period, but it also raises interesting questions regarding people, power and control: who regulated whom?

The following are examples of regulation based on apparently non-functional reasoning:

- *Extensive quarrying was only undertaken within well-defined areas, such as the Beorgs and Midfield. Abundant resources – some dykes kilometres long and up to 5-8 metres thick – of seemingly usable felsite in the low-lying North Roe interior (e. g. the Gilgordie Brogs dyke; fig. 12) were ‘nibbled’ but not properly exploited (Ballin 2011d).*
- At Midfield 1, there is a specialization of areas east (downhill) and west (uphill) of the main dyke or the quarry pits into *areas reserved for*

Fig. 12: A segment of the Gilgordie Brogs dyke. (Courtesy of Gabriel Cooney).



*axehead production (east) and areas reserved for knife production (west).*

- It is also fairly obvious that *the quarry complex was kept separated from areas associated with domestic activities*, as indicated by the almost complete absence of quartz and everyday tools within the quarry complex. It is possible that the small felsite/quartz scatters on the Uyea Scord plateau represent the camp sites of the quarriers, as well as locations where, for example, axeheads were finished, although probably not polished.
- For as yet unknown reasons, the *polishing of final axeheads probably took place 'off the mountain'*. At the present moment, not a single polished implement, flake or fragment has been found within the quarry complex.
- *Visually different types of felsite were preferred for different types of implements*, with plain, homogeneous felsite being favoured for axeheads and more colourful, patterned felsite for Shetland knives (Ballin 2011a).
- The *complete* absence of Shetland knives outside Shetland, and the fact that only a handful or two of felsite axeheads (which might not necessarily be based on Shetland felsite) have been recovered from mainland Scotland, suggests that *the exportation of felsite objects was limited by some form of regulation, almost akin to an interdict* (Ballin 2011c), fig. 12.

In *practical* terms, the procurement, reduction and exchange of felsite represent an impressively sophisticated level of task organization, which includes prospecting, raw material testing, quarrying, several distinct levels of reduction, subsistence/camping 'on the mountain', transportation of objects 'off the mountain', use, as well as repair, recycling, and deposition of felsite artefacts.

In *social* terms, the organization of the felsite reduction is equally sophisticated. As mentioned above, several parts of the felsite operational schema in fig. 1, are associated with some form or degree of regulation, dealing with matters such as *which* implements were "allowed" to be manufactured in which raw materials; *where* should the different tasks take place (some on the mountain/some off); and *when* was it "allowed" to produce the different tool forms – e. g. axeheads and Shetland knives at the beginning of the operational scheme and smaller tools only as part of the recycling of axeheads and knives. As described by Topping (2005) and Scott & Thiessen (2005), much regulation of quarry activities also dealt with the question of *who* should do what, with women frequently being banned from the quarries altogether, whereas some tasks were reserved for older men or 'men beyond reproach'.

It is expected that our understanding of the technological as well as social organization of felsite reduction will be improved notably over the next few years, not least due to the activities of the North Roe Felsite Project (Cooney *et al.* 2012). The fieldwork planned for the summer 2013 will focus on, *inter alia*, the spatial organization of the operations at Midfield 1.

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# Those who came before: Shetland's antiquarians and the Neolithic

*Jenny Murray and Carol Christiansen*

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Before professional archaeologists began to visit Shetland in earnest in the early part of the 20<sup>th</sup> century, Shetland's antiquities were investigated by visiting and local antiquarians. Indeed, work published by antiquarians, especially announcements of donations to professional societies in mainland Britain, undoubtedly enticed archaeologists to travel north and explore the large number of relatively untapped sites in Shetland's landscape.

There existed an antiquarian community with a focus on Shetland from the mid-19<sup>th</sup> Century onwards. The participants were exclusively men, and many lived on the British mainland. Some individuals, such as Gilbert Goudie, had family connections in Shetland and visited regularly for most of their lives. Others like Dr Andrew Mitchell had professional ties to Shetland which allowed them to visit only occasionally and for a limited period. In either case, however, visiting antiquarians

communicated with local antiquarians about sites and finds, and made a point to visit sites and collect objects with the aid of local information during their visits.

Local antiquarians in Shetland were generally self-taught but attained a high level of local knowledge, which complimented the more formal learning of their British counterparts. They acted as the eyes and ears on the ground for colleagues living away from Shetland. They carried on with research and explored new sites, which they reported in letters or in professional publications. More importantly, they had access to local people and folk knowledge that visiting antiquarians found difficult to reach.

Shetland Museum and Archives holds a mere fraction of the information collected and exchanged between visiting and local specialists. In letters, diaries, photographs, essays and published articles, sites and finds are noted and discussed.

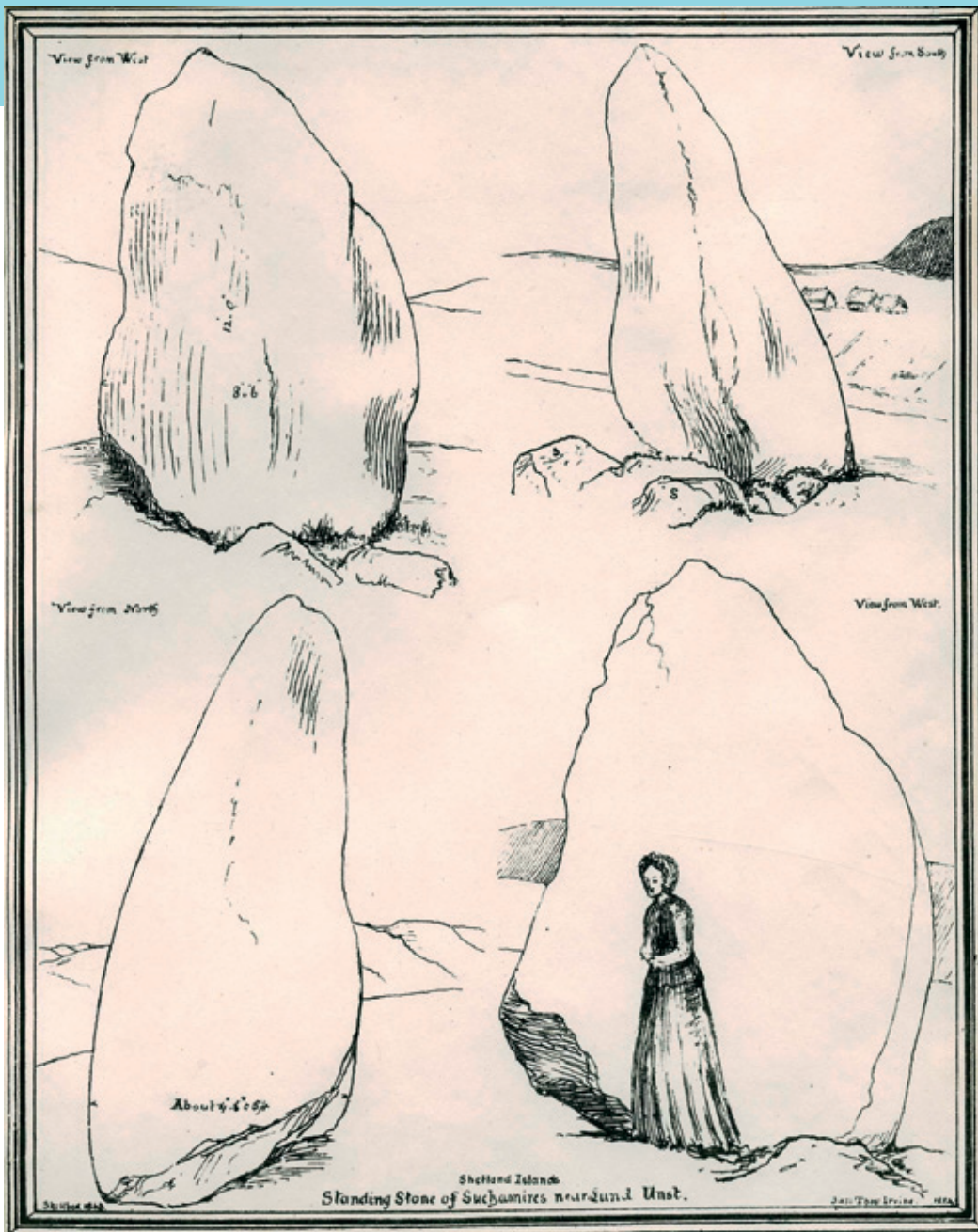


Fig. 1: Standing Stone of Suckamires, near Lund, Unst, sketched in 1868 by James Thomas Irvine.

In some cases it is possible to link documentary information about sites to published articles or finds located in Shetland Museum or elsewhere. In other cases, however, the information contained in unpublished documents shed light on new, unknown sites, features and finds.

### James Irvine (1826-1900)

James Thomas Irvine was from Cullivoe in north Yell and became an accomplished historian and antiquarian. Following the early death of his father, James grew close to his paternal uncle, Thomas Irvine. A keen enthusiast of Shetland's

history, Thomas was to influence the young James in all things Shetlandic including its archaeology, place-names and folklore (Ritchie 2011: 5). At the age of fourteen, like many others during this period, James left Shetland to earn a living but never lost his passion for his birthplace, returning often to record its history and architecture.

Based in England during his working life, Irvine was an architect specialising in churches and cathedrals (ibid). His interest in historic built heritage was probably the stimulus for Irvine's visits home to record and draw the islands' ancient churches, standing stones and antiquities. It was during one of these trips in the 1860s that Irvine excavated and recorded a group of five cairns at the Sands of Breckon in north Yell. Irvine recognised the need to document ancient history and published regularly in the Shetland Times and the Proceedings of the Society of Antiquaries of Scotland.

In a paper to the Society Irvine outlined his excavation of the Breckon cairns (Irvine 1898). He recognised that this grouping was an important and unusual cairn cemetery unlike any others he had noted in the islands and described them as the largest cairns he had seen. Within their stone chambers Irvine discovered a skeleton of a young person lying prostrate and placed in a stone-lined box. A further

three skeletons were uncovered, two of which appeared to have been laid on a thick bed of fish bones. He also found evidence of burning, including wood ash which concealed tiny fragments of oxidised copper. Were these finds the first tantalising evidence for Shetland's Chalcolithic period? Recognising its significance, Irvine deposited the copper fragments with the National Museum in Edinburgh. There is no evidence today of the five cairns uncovered by Irvine, and his record remains a valuable insight into this complex.

Irvine published two further papers, where he presented detailed photographs and records of Shetland's standing stones (Irvine 1885; 1887; Fig. 1). He also recorded various burnt mounds or 'fairy knowes', which survived from antiquity due, he explained, to superstitious reluctance to graze animals near them (1887: 218). He makes no mention of Neolithic houses but concentrates instead on burial practices, looking at cairns, cists and later boat burials. Irvine discussed an excavation carried out at Tafts of Bayanne in Yell when he was a boy. While gathering stones to build a house workmen uncovered a stone dwelling which they dismantled. Irvine recollected them finding saddle querns and triangular stone knives. In correspondence between Irvine and a woman who remembered the finds, which were later



sent to an unknown location in England, she recalled quantities of ashes, human remains and a large shell midden (Irvine 1885: 386). Irvine frustratingly notes, 'Similar remains were also found opposite the Tafts, at a place called 'The Whumblins of Cunnister', where there seems to have been a group of ancient buildings, though no one showed sufficient interest in them to collect any of the relics' (ibid).

His vexation at objects being taken out of the islands, and the previous lack of concern for others now lost, may have been his incentive to join the newly-formed Shetland Literary and Scientific Society. His uncle Thomas offered the first artefact of the Societies' collection – a bell from the Kirk o' Ness and a box of archaeological specimens (Ritchie 2011: 30). Irvine became an important member of the Society, producing a report and illustrations of the excavations of the broch of Clickimin (Irvine 1866).

### **Shetland Literary and Scientific Society**

In 1861 the Shetland Literary and Scientific Society was formed, boasting 227 annual and five life members in its first year. Not all of its fellows lived in Shetland, and it solicited membership from scholars and antiquarians in Britain, Scandinavia and abroad. Shetland-based members represented a cross-section of mainly Lerwick civic society at the time.

One of its first acts was to form a Library and Museum, it having received many donations of artefacts and scholarly works at its formation. An accessions list of donations, providing the date of donation and name of donor, shows that the majority were polished axes taken from various sites around Shetland, although the sites are not mentioned (Shetland Literary and Scientific Society, 1861-63: [3-8]).

Its first Curator of Antiquities was Robert Nevin Spence of Windhouse, Yell, a legal clerk living in Lerwick. One of his initial duties was to organise the excavation of the broch of Clickhimin, but he died in 1863 and did not live to see the excavations fully realised. J. T. Irvine stepped in to carry out the recording of the excavations (Irvine 1866).

By the 1880s the Society's museum in the Tollbooth at Lerwick was experiencing difficulties and it sold its collection to the Society of Antiquaries of Scotland for a sum of £50 (Ritchie 2011: 31). The objects are illustrated and described further in the notification of purchase by the Society in Edinburgh (Mitchell 1882: 13-20).

### **Burgh Collection**

It would be four more decades before Shetland held another museum collection, this time housed in the Town Hall 'with many interesting exhibits already on view' (Corrie 1931: 76). The core of the

collection was purchased by public subscription from the trustees of the former Provost of the Burgh, the late James Goudie. The 'Burgh Collection' remained in the islands and now forms part of archaeological collections at Shetland Museum and Archives. It encompasses many stone tools of Neolithic date including felsite axes and knives (fig. 2). Unfortunately few records were kept about where or in what context these artefacts were found. Nevertheless, the Burgh Collection was an important repository for Shetland collectors prior to the development of a formal museum service in the 1960s.

### **Robert Cogle (1853-1918)**

Robert Cogle was a self-taught historian and antiquarian from Cunningsburgh. Like many Shetland antiquarians in the latter half of the 19<sup>th</sup> century, he was interested in ancient Scandinavian history and culture as a basis for understanding Shetland history. To this end he taught himself Icelandic. He corresponded regularly with Gilbert Goudie, Thomas Irvine, and Jakob Jakobsen. Goudie sent him newspaper cuttings, books and pamphlets related to antiquarian matters, which Cogle was very grateful for. He was particularly interested in Shetland superstitions and folktales, which he recorded in his letters. By profession he was a fisherman, working at the Greenland seal and whale fishery. His interest was Shetland-wide

and his research continued, even when confined to ship:

“ During the voyage I have endeavoured to solicit information from the Shetland portion of the crew concerning old tales, legends, etc. but as most of them were native of the north part of the islands, with whom I was unacquainted, they seemed greatly prejudiced against giving any information of the kind; either owing to a superstitious fear of making such disclosures, or from the impression that to do so would lower them in the opinion of those belonging to the south.” (D60/3/19/5).

In another letter, Cogle described a newly discovered prehistoric feature in his home parish of Cunningsburgh in 1875:

“ It was found in March last by a man while searching for stones to build a fence. It was imbedded in a sandy soil, nothing being visible except the tops of a few stones. It was about thirty feet square, and in the middle was a compartment made of large flags set upright, and containing skeleton of a cow or a horse, then followed a flag lying flat and under it a quantity of burnt corn either bere or barley, but so severely charred that most of it fell to dust when removed. The stones of which this building was composed



Fig. 2: Adze and Shetland knives in the Burgh Collection, Shetland Museum.

were apparently brought from the island of Mousa about two miles from this place, as there are none of the same quality to be found nearer. " (D3/20/14)

Mealsair or Mail Ayre is 150 metres east of a very early burial ground at South Voxter (The Royal Commission on the Ancient Monuments of Scotland (RCAHMS) HU42NW 9). The site described



Fig. 3: Shetland tools found at Shurton Brae, Lerwick, donated by Peter Moar.

by Cogle has not been identified in more recent times and does not appear on the RCAHMS site map.

### **Peter Moar (1889-1983)**

Peter Moar was from Unst but spent many years living in Lerwick, where he helped to uncover important finds and sites ahead of building development around the town. He discovered important early finds in Shetland and collaborated with John Stewart in discovery and reporting of finds. He acted as an *ad hoc* repository for stray finds before there was a museum in Shetland, and donated

finds to the Burgh Collection. He gathered information about sites from local people and provided advice on potential sites found by others (D11/12/7). Moar was instrumental in providing valuable early information on the site at Kebister, which was recorded on maps and index cards compiled by Shetland Museum. He knew that Neolithic material had been found on Shurton Hill near Lerwick in 1934. In 1943 he discovered 5 polished knives in the same area, and was given a polished stone adze found there 10 years previously (Moar 1948). The knives and the adze are now in the collection of Shetland Museum (fig. 3).

### John Stewart (1903-1977)

John Stewart was born on the island of Whalsay. The son of a crofter fisherman, his childhood appears to have been immersed in books and debate. With both parents and seven siblings these family discussions covered politics as well as religion (Stewart 1987: vi). With this inherent and flourishing thirst for knowledge, Stewart entered Aberdeen University in 1923, where he graduated with an MA. He never returned to Shetland but spent his working life teaching in Aberdeen until his retirement in 1970.

His interest in the history and culture of his native islands never left him and he returned to Shetland during his holidays to study its language and archaeology. A keen practical archaeologist, during the 1930s Stewart undertook various excavations in his native Whalsay, concentrating on a Neolithic house and cairn at Pettigarth's Field (Fig. 4). He kept meticulous records of these "digs"; the earliest "*Report on a Cairn from the West side Houll Loch, Whalsay*" was documented in August 1935 (D27/9/7). In these handwritten notes he left no stone unturned and we can glean from them the enquiring mind of a man trying to piece together the architecture and belief systems of his ancestors from a bygone age. He notes the construction of the cairn in detail and lists the finds, offering a detailed discussion of each – for example:

" No. 4. Smooth oval sandstone object 3½" x 1½" x ⅓" found at 6 – the smooth oval sandstone is foreign to the district so must be some symbolic offering."

He concluded some stones were deliberately broken adding to his theory these were symbolic offerings. As his understanding of Neolithic Shetland grew, Stewart began publishing his thoughts and findings through a weekly column in the Shetland Times, later published in booklet form. In it he notes (Stewart 2008: 5):

Fig. 4: John Stewart (right) and Peter Moar excavating in Pettigarth's Field, Whalsay 1948.



“ Although we cannot give a single accurate date, we can say that the earliest remains in Shetland present a more complete picture of the inhabitants than anywhere else in Britain, for there are tombs, temples, houses, fields, walls, stone implements; the complete Neolithic economy in fact, except for the boats that brought them.”

Radiocarbon dating was in its infancy when Stewart was researching archaeology but his booklet offered Shetlanders their first chronological account of their history. Using typology as a method of dating his finds, he notes the changes in tomb construction, varying pottery type and decoration (Stewart 1987: 4). Stewart observed that fashions changed and he dated a new type of beaker to the early Bronze Age, fragments of which were found in burial cists (ibid: 8; Fig. 5).

Among Stewart’s papers in Shetland Archives are correspondences with the National Museum in Edinburgh and the Royal Commission of Ancient and Historical Monuments (Scotland). It is obvious from these letters that Stewart sent many artefacts found during his excavations to Edinburgh for identification. He also registered his findings with the Sites and Monuments Records, and much of his detailed accounts were published for the Scottish Regional Group,

Council for British Archaeology (Stewart 1954). It was during this period that Stewart collaborated with Charles Calder, culminating in a joint excavation of the Neolithic ‘Benie Hoos’ and Yoxi ‘temple’ in Pettigarth’s Field (Calder 1961). These excavations, plus Stewart’s earlier work, offer us a detailed insight into Shetland’s prehistoric material culture. Detailed drawings of decorated pottery and stone tools highlight an established domestic settlement. Evidence showed that the house had been repaired and rebuilt with habitation spanning hundreds of years (Calder 1961: 37).

All the finds from Pettigarth’s Field were deposited with the National Museum in Edinburgh but the Shetland Archives retains some of Stewart’s field notes and a fine collection of black and white photographs that record his excavations in Whalsay. There can be no doubt that John Stewart has left us an important legacy; his extensive discoveries of the Neolithic culture in his homelands have been disseminated not just to Shetlanders but to a much wider public.

### **Acknowledgements**

The authors would like to sincerely thank the Stewart Family for allowing us to include their family photographs and also Mrs Mary Kay for identifying her father in Figure 4.

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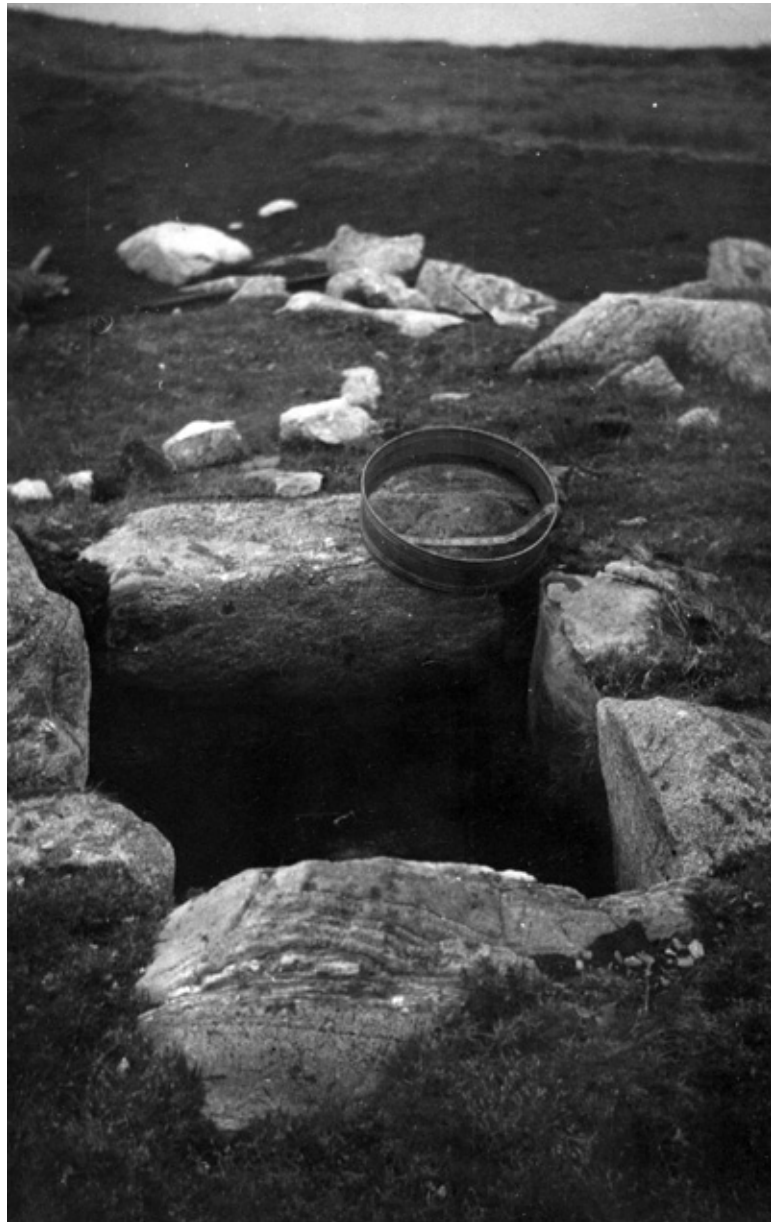


Fig. 5: Bronze Age cist at Willie's Wart, Whalsay (Shetland Archives D27/9/10/2/1).

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### **Shetland Archives**

D11/12/7 Plans by R.G. Flavell of suspected ancient monuments on Trebister Ness, with typed comments by Peter Moar, October 1966.

D27/9/7 Manuscript report by John Stewart on prehistoric cairn at west side of Houll Loch, Whalsay, August 1935.

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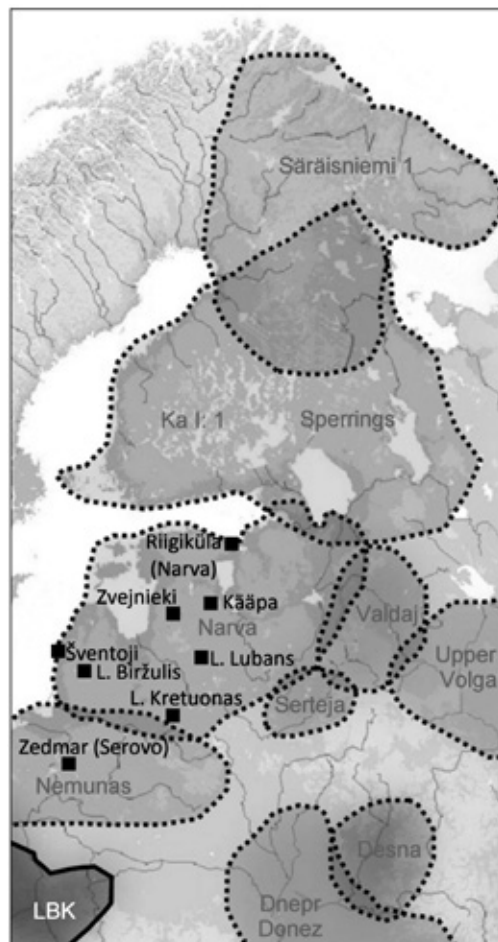
# Neolithic in the Baltics From Agrarian Option to Practice

*Inga Merkyte*

## Introduction

Building upon M. Zvelebil's and P. Rowley-Conwy's (1984) general availability model, this article aims to demonstrate that for the Eastern Baltic societies (the region covered by modern Estonia, Latvia, Lithuania and the Sambian Peninsula) the tendency to conceptualise foraging and farming as separate steps of development has severely constrained the understanding of the highly complex interactions between new phenomena and local strategies. The acceptance and success of a new idea or a new technique depends on a variety of factors. "Agrarian knowledge" has circulated in the Eastern Baltics during the whole of the Neolithic, but this was just one economic option in a complex socio-economic system, where hunting, fishing, gathering, and trade were equally significant factors.

Fig.1: Map of North Eastern Europe with cultural groupings containing pottery c. 5000 with key sites mentioned in the text. L.: Lake. (after Piezonka 2008.)



## Chronology

In Baltic and Finnish research the innovation and use of pottery is one of the most important indicators of the transition to the Neolithic, unlike in Central and Western Europe where the main criterion is the transition to productive economy. The knowledge of ceramics in terms of technology and shapes spread in the East European forest zone during later part of the 7<sup>th</sup> Millennium BC, with local hunter-gatherer groups (Piezonka 2008; 2011; Budja 2011, with references.). The area between Volga and Dnepr is a true “battle zone” for establishing the very earliest pottery, including cultural entities such as Kairšak, Elšan, Rakušečnyi Yar, Surskaya, etc. (ibid.). From the second half of the 6<sup>th</sup> Millennium BC onwards

the new technology spread further to the west and north, and the hunters and fishermen in the area east and north of the Baltic Sea started producing the Narva, Dubičiai (ex-Neman/Nemunas), Ka I: 1/Sperrings and Säräisniemi 1 pottery types, see fig. 1.

Traditionally, the transition between Early and Middle Neolithic is defined by the appearance of Comb-and-Pit ware, while the transition between Middle and Late Neolithic is defined by the appearance of the Globular amphora (4000/3650-2100/1900 BC) and Corded Ware cultures around 3200 BC in Lithuanian and Latvia, and in the mid-3<sup>rd</sup> millennium (2600-2300 BC) in Estonia (fig. 2).

Fig. 2: Chronological table, based upon sources listed in the bibliography.

Period	Lithuania, BC	Latvia, BC	Estonia, BC	Cultural groupings
Early Neolithic	5500/5300-4400/4200	5500-4200	5000/4900-4200/4100	Narva, Dubičiai (ex-Nemunas), Sperrings (Co mbed)
Middle Neolithic	4400/4200-3100/2900	4200-3200/3000	4200/4100-3200/3100	Narva, Nemunas, Pit-Comb Ware, Textile Ware
Late Neolithic	3100/2900-2000	3200/3000-1900/1700	3200/3100-1900/1800	Narva, Nemunas, Pit-Comb Ware, Globular Amphora, Bay Coast (Rzucewo), Corded Ware Early Textile Ware
Early Bronze Age	2000-1700	1900/1700- 1000	1900/1800-1100	Cultural fragmentation: Lubāna-type Ware, Kiukainen-type Ware, Textile Ware, Žalioji-type Ware, Striated Ware, West Baltic Barrow Culture
Middle Bronze Age	1700-1300	[1250-1000]		
Late Bronze Age	1300-500	1000-500	1100-500	

Around 300 carbon dates are available from the region (Antanaitis-Jacobs & Girininkas 2002; Kriiska et al. 2005; Piličiauskas et al. 2011). The last ten years can be termed as a revolution in respect of radiocarbon dating, involving Accelerator Mass Spectrometry and a greater temporal resolution. Nearly all the recently acquired dates stem from dating food crust deposited on ceramic shards, which is appreciated as a highly direct dating method.

Nevertheless, it is too early to enjoy the results. While the effects of hard water and marine water have been acknowledged for some time now, only recently are we becoming aware of the distorting effects caused by the origin of the crust. B. Philippsen from Århus University has demonstrated (on North German and experimental materials) that the fault margin can be as much as 1000 years, and that stable isotopes are only suitable to a limited extent for identifying the origin of food crust and thus for undertaking proper adjustments of AMS results (2010). As demonstrated in her study, it is troubling that there is only little correlation between the food crust dates arriving from the same site – resulting in discrepancies of 1000-1500 calibrated years. The new Baltic AMS dates differ from the conventional dates by up to 400 uncalibrated years. Thus, chronology remains an unresolved issue, compare fig. 2.

### **Settlements and Dwellings**

The distribution of the cultural groupings in the Eastern Baltics does not provide an entirely clear picture of the cultural and social situation in the region. The major cultural entity, being the Narva culture, is spread from Northern Estonia to Central Lithuania, see fig. 1. It shares the same traits in terms of pottery shapes, expedient use of lithic materials, abundance of bone and wooden artefacts, and reliance on hunting and fishing.

Looking closer, the region is fragmented into an island-like settlement pattern, resembling a sort of the Danish Åmose situation. The Neolithic sites cluster around water bodies, implying both periodical movement and returns. The famous Narva area, after the Estonian independence renamed Riigiküla, has a concentrated occupation of 24 sites (Kriiska 1999). Lake Kretuonas in Eastern Lithuania was surrounded by 36 sites of Neolithic to Early Bronze Age date located up to 1.5 km from the present shores (Girininkas 1994). The coastal Šventoji is made up of 42 sites (Rimantienė 2005) (Fig. 3). Biržulis Lake in Western Lithuania has attracted over 40 sites of Mesolithic-Neolithic date (Stancikaitė et al. 2006).

Such settlement patterns, dictated by the availability and diversity of natural resources, have inspired reduced residential mobility and a sense of territori-



Fig. 3: Example of settlement patterns (Šventoji, after Rimantienė 2005: Fig. 15).

ality, the best example being the famous Zvejnieki cemetery from 7500 to 2600 BC (Larsson & Zagorska 2006).

Dwellings in the area are varied. Some are small pit houses, others are complex surface structures like the ones at Zvidze (Lubans Lake), Latvia. Some sites have even produced evidence of Neolithic pile dwellings. Settlements can also be fenced (Šventoji 1, Žemaitiške 2

(Kretuonas Lake)). Near the settlements permanent fishing installations have often been observed. Some settlements were multilayered, like Zedmar on the Sambian peninsula and Iča (Lake Lubans) in Latvia, as well as others.

It is often possible to detect pioneer behaviour from such intensely exploited areas. Yet the best-documented cases of pioneer movements in the 3<sup>rd</sup> millennium BC are associated either with so-called

Coastal Bay Culture or groups of Corded Ware Culture. These are spreading in small groups to inland areas, leaving traces of short-lived habitation sites with remains of fingerprinting ceramic shards (Rimantienė 2001).

### Pollen Data

Accumulating pollen evidence points to environmental management practices long before the onset of proper farming. Although there is an emerging consensus that only macrobotanical remains should be accepted as indisputable evidence for agricultural activities (e. g. Tinnera et al. 2007), the broad spectrum of different non-native cultigens in Baltic pollen diagrams deserves attention.

In general, Baltic pollen diagrams are similar to the ones of Southern Scandinavia: expansion of hazel trees from the mid 6<sup>th</sup> Millennium BC, associated with food collection but also construction of fishing gear, expansion of edible wild plants like rowan and a decline of elm around 3800 BC, supporting the idea of pan-European epidemics rather than the earlier assumed stress on animal husbandry.

But already at a very early date we are seeing hops (*Canabis/Humulus* type) of East Asian origin, planted by the Zvejnieki population (Kalnina 2006: Fig. 7). At the same time, around 7000 BC, there

is a significant increase of charcoal dust. It can be debated whether hops were appreciated for their use as food and medicine or rather for producing excellent fibre strands in high demand for fishing nets: likely for both. Grains of hops are also discovered at later sites, such as Šventoji 3B of the Middle Neolithic (Rimantienė 2005).

Pollen of cereals was discovered in sediments dated to the Early Neolithic of Southern Lithuania and West Byelorussia, including oats, seemingly deriving from Western Asia (Kabailienė & Stančikaitė 2001: Fig. 3.4; Weiss et al. 2006). The same pollen profiles have produced contemporary evidence of sorrels (*Rumex acetosa* & *acetosella*), indicating landscape opening.

It should be mentioned, that grains of millet are often discovered at coastal sites, but these are regarded as result of the exchange in amber, for sandy dunes are not suitable for cultivation of millet (Rimantienė 2005).

### **Domestic Animals**

The earliest evidence of domestic animals is dated to the Late Mesolithic. 19 teeth identified as cattle incisors (*Bos bovis*) – as opposed to 23 auroch (*Bos primigenius*) teeth, also encountered – were found in two of the 14 burials in Donkalnis (Lake Biržulis), Western Lithua-

nia (Daugnora & Girininkas 2004: Table 1). This is just slightly less than the occurrence of elk or deer teeth among the grave goods. The teeth were discovered in two separate burials, suggesting direct contact with agrarian societies.

Bones and teeth of domestic animal bones have also been discovered in early Neolithic sites of Riigiküla III (ex-Narva), Kõnnu on Saaremaa Island, Zvidze (Lake Lubans) in Latvia (Daugnora & Girininkas 2004). For instance, Kõnnu Early Neolithic layers held 10 bones of goat/sheep (3,5%), 3 bones of pig, 1 of horse, 1 of dog, while the Latvian Zvidze layers of the Early Neolithic produced 151 pig bones, 39 horse bones, 16 bones of dogs and several cattle bones. Although small, the discovered quantities indicate viable population of domestic animals.

More interesting is to ask what kind of social, even political factors would have made the addition of domestic animals to the economy either viable or desirable. One answer might be trade. Indeed, the sites with the earliest evidence of animal husbandry are located in an area which is devoid of flint or other suitable lithic resources. Limitations may have fostered the impetus to produce exchangeable commodities, and eventually be a core factor of the transition towards regular agrarian practices.

Another trend, becoming more apparent over time, reveals different strategies in animal husbandry. For instance, at the Zedmar A site the preference is placed on goats or sheep, in the Estonian Loona site (Saaremaa island) pigs are making up the dominant group (9% of all bones), in South Lithuania it is cattle (Dusios 8, 14%), in West Lithuania – goat/sheep, pig and horse, but no cattle, in East Lithuania – cattle and horses.

Currently there are 10 locations in Eastern and Western Lithuania with finds of, in all probability, domesticated horse bones attributed to the Late Neolithic (Girininkas et al. 2009). Earlier finds of horse bones have also been made in the broader region beginning from the Mesolithic, but their origin in terms of natural wild or introduced domestic habitat is disputed (ibid.).

In the Late Neolithic most of the sites have significant amounts of bones of domestic animals, on average around 20% (ranging from 5 to 32%), the highest quantities being encountered in Lithuania (Daugnora & Girininkas 2004).

### **Diet $^{13}\text{C}$ and $^{15}\text{N}$**

The most abundant isotopic information revealing diet in the past comes from the Zvejnieki cemetery (Eriksson 2006). In general the  $\delta^{13}\text{C}$  levels are rather low –  $\sim 21$  ‰, lower than for instance in

known Danish materials, which is due to the lack of plants. The  $\delta^{15}\text{N}$  levels are also low,  $\sim 12$  ‰, which implies lack of marine recourses. Nevertheless, the data clearly demonstrates reliance on different subsistence strategies in different periods of the past, as also confirmed by recent studies of Lithuanian remains – albeit there are no sharp divisions between marine and terrestrial, as in Danish materials (Antanaitis-Jacobs et al. 2009). It is evident that local conditions are a factor: establishing local baselines is thus necessary for proper interpretations of the isotopic values (Schutkowski 2006).

### **Pottery Indications**

Although pottery is no longer coupled with sedentism or with productive economy as marking major shifts in human history, introduction, acceptance, and “domestication” of pottery is still considered an indicator of social transformations.

Narva settlements, even of the earliest Neolithic, have produced surprisingly large quantities of pottery, amounting to thousands of shards (Girininkas 1994; 2011 with ref.). Other neighbouring cultures have much smaller quantities of pottery, but significantly richer lithic inventories. In the earliest period there are two types of pottery – large pointed or rounded based vessels, and bowl lamps, just like the Ertebølle-set.

But even within the same cultural unit it is possible to note technological differences. For instance, the earliest Narva pottery from eastern Lithuania (Žemaitiškė, Lake Kretuonas) is made with the help of so-called U-technique, is dominated by shell temper, and often decorated. The earliest Estonian Narva pottery (Kääpa) is produced with the help of H-technique, is undecorated, and tempered with plants and only occasionally with crushed shells.

The attempt to summarise the typological dynamics of Narva pottery have produced two distinct patterns. Subdividing the rims into basic types of straight, inverted, everted or combined (I, S, C and SC profiles), it is evident that the dominant type in the Northeastern Narva area is the most simple one, namely the straight rim type. In the Southwestern area of the distribution of the Narva Culture the earliest period is not attested yet, but the pottery shapes in general are showing domination of more complex shapes.

Perhaps complexity was expressed differently in different areas: a survey of decoration elements used on pottery clearly demonstrates that Northern Narva pottery had a larger repertoire of decoration elements than the Southern Narva area. Comparing the Narva I period with Narva II, we observe an increase of common decorative elements, combination of

several elements, decoration occurring on the whole surface, etc. All elements of phase I are thus incorporated into the repertoire of phase II or, in other words, into the standardisation of the symbolic language.

By estimating the amount of decorated pottery at individual sites, it is possible to observe another trend, namely that the earlier the occupation, the richer becomes the decoration of the pottery at the site over the time. This demonstrates the existence of locally accumulated complexity at developing of social centres.

Middle Neolithic innovations comprise so-called Textile Pottery, termed so due to textile impressions on the surface. The earliest dates are currently deriving from Lithuania (Piličiauskas et al. 2011). Such decoration is the secondary result of a significant technological novelty, namely the use of the paddle and the anvil, when mats are used as surfaces for paddling and thinning the walls of the pottery.

Another trend appearing in the Middle Neolithic in the Eastern Baltics is the shift from vessel types mainly used for food preparation to vessel types used for storage. Also a separate group of smaller vessels appears, with diameters of 12-15 cm, showing new family and food preparation trends. Some vessels, mainly

in the south, are becoming flat based (for placing on surfaces such as shelves or tables). In the north flat-based vessels are only dated to the Late Neolithic. Finally, it should be mentioned that Funnel Beaker pottery has also been discovered in Latvia, at the Lake Lubans sites.

The greatest complexity in terms of pottery shapes is observed in the 3<sup>rd</sup> millennium. 14 different principal types of pottery have been established in the coastal areas of the southern part of the region – the Coast Bay Culture.

### **Exchange**

Exchange was of vital importance, primarily due to unevenly distributed strategic resources such as flint and rocks in general (Daugnora & Girininkas 2004: Fig. 17; Zvelebil 2006). The central area of the Eastern Baltic and the central area of the Narva Culture, is completely devoid of suitable lithic resources.

Flint is occurring as natural nodules on the surface or deposited in gravel in southern Lithuania. A number of specialised flint mines have also been discovered in Southern Lithuania and North-western Byelorussia (Baltrūnas et al. 2006). The occurrence of Narva pottery in Southern Lithuania, foreign to the area, is being explained as a result of resource-driven interaction. Different sorts of flint, including a very distinct type of pink flint

originates in Northern Russia, in the Valdaj Highlands. The greenish schist is spreading across the eastern Baltics from Northern Estonia. The area of Karelia is contributing with violet-coloured quartz sandstone (Daugnora & Girininkas 2004; Girininkas 2011).

Ground stone tools are spreading from around 4000 BC (the Middle Neolithic) (Juodagalvis 2010). At the same time, both on the coast but also on inland sites, amber workshops are emerging. The most intense period of amber exchange starts at the end of 4<sup>th</sup> millennium BC, where a significant standardisation of production occurs (Beck et al. 2003). Amber spread from the Baltics to Central Russia and on to Southern Europe.

Distribution of flint axes like the ones made of grey danien flint of possibly Scandinavian provenience – fig. 4, or Polish Krzemionki flint demonstrates the intensity of such contacts and the routes of exchange, also of information (Juodagalvis 2010: Fig. 128; Girininkas 2005: Fig. 55).

### **The Role of the Contact Cultures**

From the last quarter of the 4<sup>th</sup> millennium BC the Baltic region is discovered by so-called Contact cultures (or Cultures of contact according to H. Vandkilde), at first by the Globular Amphora Culture, and later on by the Corded Ware Culture. The



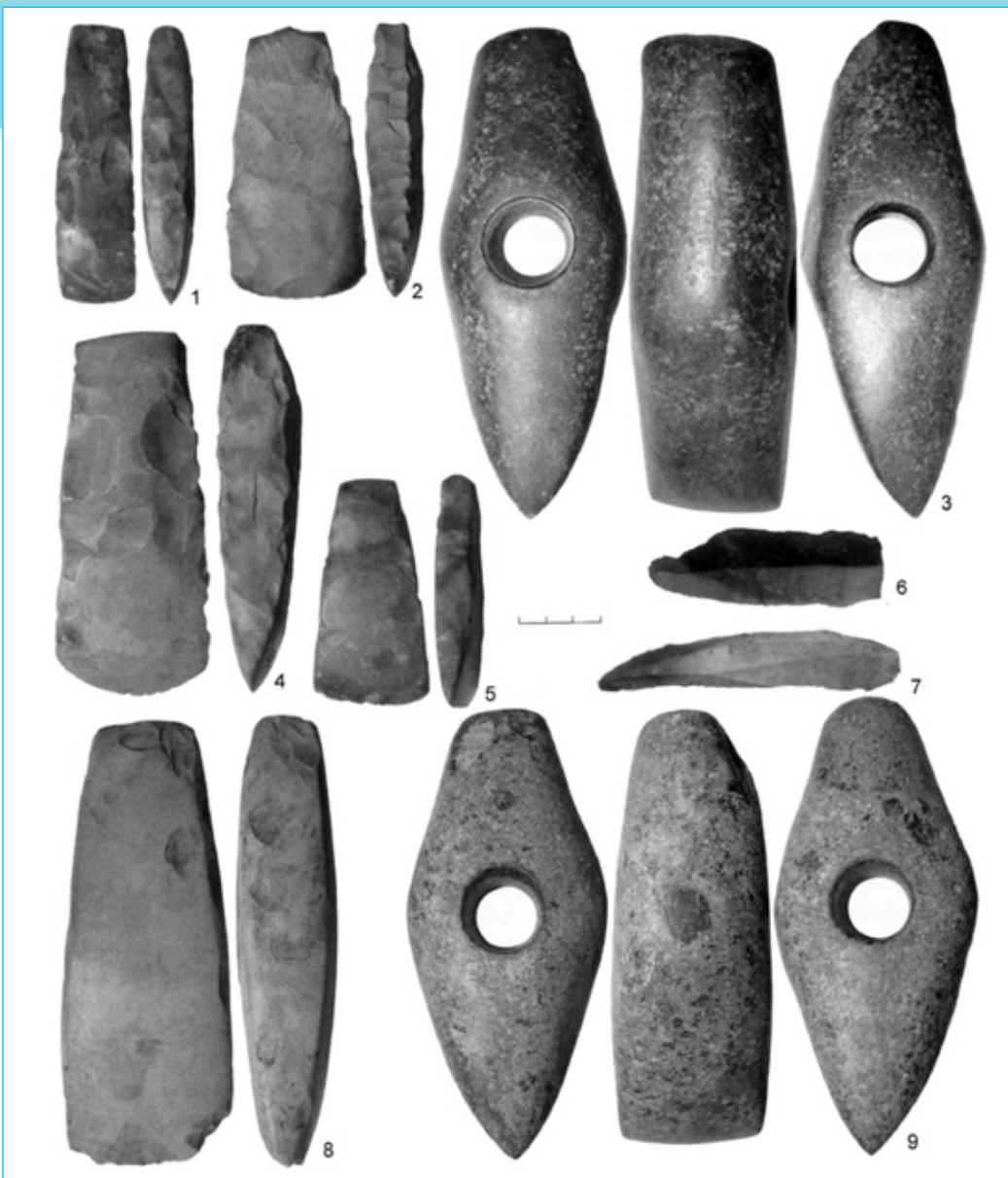


Fig. 4: Norūnai hoard, Southern Lithuania, (after Juodagalvis 2010: Fig. 128).

culmination of exchange networks coincides with these cultures. Much paper has been devoted attempting to downplay the role of these cultures and certainly on ruling out the possibility that these immigrants were the ancestors of the Balts.

The appearance of these cultures may have not changed the ethnic composition

of the inhabitants, but they certainly introduced new rules and economic strategies. The distribution of the sites of the Contact Cultures coincides with places of strategic resources. The mobile nature of these cultures is geared by resource-driven cultural interaction, limiting both access to the resources and introducing new exchange models for the local groups, and at the same time inspiring

the flow of new and exotic, but also vital materials. Thus, in the 3<sup>rd</sup> millennium BC the flow of flint was abundant and stable, as reflected also in the macro-flake technologies of the Late Neolithic.

The mitochondrial DNA extracted from four Neolithic burials in Lithuania belongs to haplogroups which are not existent in the modern population (U5b2) or are very rare (U4); U5-types are found in 45% instance in Saami population (Bramanti et al. 2009; Jankauskas 2010). Thus, the ghost of migration is still daunting.

### **Post Scriptum: The Bronze Age**

During the earliest phases of the Bronze Age (1800-1500 BC), in itself a highly active "Contact culture" period, Neolithic traditions were completely abandoned (Girininkas 2011). This is reflected both in the pottery and in lithic materials. New locations were chosen for settlements with heavier and more fertile soils. Culturally, the region undergoes fragmentation, creating a platform for the later mosaic of ethnic subdivisions. Homesteads are gradually becoming the dominant economic unit. Also, the settlements are being established on locations with restricted access. Towards the end of the 2<sup>nd</sup> millennium BC the first hill-forts appear, and with the introduction of cremation burials, the Eastern Baltics joined the main stream of European cultural development.

### **Summing-up & Conclusions**

It is attempted here to demonstrate the complexity of the Neolithic societies in the Eastern Baltics, including all expected agrarian pre-conditions being in place well before the third millennium BC. Already from the earlier part of the Baltic Neolithic it is possible to observe a trend towards decreased residential mobility and long-term occupation, with large settlements and micro-regional consciousness, including territoriality with recurrent attachment to the same area. The concentrated settlement islands of population usually associated with lacustrine environments have exploited varied local resources intensively, engaging also in interregional multidirectional trade networks, providing constant opportunities for interaction with the "managers of neolithisation", along with flows of information including that of agrarian knowledge (Sørensen & Karg 2012, with references.). Towards the 3<sup>rd</sup> millennium BC these trends intensify, as viewed in technological development and specialisation, together with exploitation of strategic resources and production of marketable outputs, growing diversity of cuisine practices, and ditto in food handling

It is significant to stress that the hunter-gatherer societies of the Eastern Baltics were not passively absorbing new ideas from agrarian core areas, but had a

much broader communicative interface spanning from the Volga-Oka region to Fennoscandia. Copper rings from Zvejnieki burial 277, dated to 4460-4330 BC, demonstrate a local inventiveness not yet seen in other European pre-agrarian contexts (Gaismiņa 2006: Fig. 2; Zagorska 2006).

The hunter-gatherer societies in the East Baltic demonstrated cognitive readiness for adoption of agrarian practices throughout the Baltic Neolithic, yet it was not before the appearance of the resource-driven Contact Cultures, that social and subsistence strategies had to be truly reconsidered. The competition for strategic resources resulted in more closed and regulated networks of exchange and in territorial divisions, thus pushing the Eastern Baltic communities into farming, in fact the only viable escape from the environmental and geo-political “trap” created by the external and differently geared structures represented by agro-pastoral communities. At the same time, the Contact Cultures, agents of encounters, are in themselves the result of contact.

Seen in this light, it is impossible to explain the rapid neolithisation processes in Denmark without (a significant) influx of foreign population, in fact the early “Contact Culture” of the Funnel Beaker complex. Without this, Denmark would

have developed along similar lines as the Baltics: slowly and on the basis of extensive traditional networks which, for instance, introduced Baltic styled pottery to the Ertebølle Culture, no doubt in exchange for flint.

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# Patterns of agricultural spread in Nordic landrace crops

*Matti Leino*

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## **Introduction**

Phylogeography is the study of geographic distribution of genetic diversity with the aim to elucidate the historical processes behind. It has been suggested that phylogeographic patterns observed in crops, at least partially, reflect the original spread of agriculture (Brown 1999; Jones et al. 2008). The genetic relationships in crop plants from different geographical areas could also indicate how seed has been exchanged and spread in historical times.

A critical point for conclusions to be drawn from phylogeographic studies is the type of crop material studied and its availability from relevant geographical areas. Here I discuss some aspects of genetic analyses on different crop materials and possible historical interpretations. Examples from my present work on barley in the Nordic countries are presented.

## **Landraces**

Present day crop cultivars cannot be used for detailed phylogeographic studies. Modern cultivars are produced at scientific institutes and plant breeding companies and a single cultivar can be distributed over large areas. Instead, locally cultivated traditional landraces are a more relevant material for phylogeographic studies. A currently accepted definition of landraces reads 'a dynamic population or populations of a cultivated plant that has historical origin, distinct identity and lacks formal crop improvement, as well as often being genetically diverse, locally adapted and associated with traditional farming systems' (Camacho Villa et al. 2005). The landraces represent the diversity of crops grown since the origin of agriculture up until the 19<sup>th</sup> century when modern plant breeding arose.

Contrary to modern day cultivars, where new seed is regularly purchased, landraces are maintained by the farmers' own



Fig. 1: 19<sup>th</sup> century agriculture. Although ethnologists have been good at documenting all kinds of artifacts from pre-industrial agriculture such as tools, buildings, clothing etc, the biological material was forgotten and most crops and landrace animals were lost.  
Photo: Nordiska Museet

seed production from one year to the next. Different actions and events, such as pollen flow, seed exchange, mutation, genetic drift and intentional and natural selection can alter the genetic setup of a landrace over years. Nonetheless, a core of genetic diversity could remain relatively static in the landraces for a long

time. In a study of Swedish field pea comparing landraces that were recently assembled with 100-year-old landrace samples preserved in a historic collection, similar geographical patterns were obtained in the extant and in the historical material (Leino et al. 2012). However, the extant landraces showed clear signs of genetic drift, most likely due to their maintenance as small, isolated populations during the 20<sup>th</sup> century. Studies in European wheat landraces support a de-



gree of genetic continuity over thousands of years (Allaby et al. 1999). Thus, the genetic relationship between different landraces from different localities can potentially reflect historical events from very far back in time.

### **Studies of extant, aged and ancient plant materials by DNA methodologies**

With the onset of modern plant breeding in the late 19th century, the landraces cultivated for millennia in Europe were rapidly replaced by modern cultivars. Landraces were rarely saved (fig 1). Later during the 20<sup>th</sup> century, the value of landraces was recognized and collections were made to preserve landraces in gene banks. Today substantial amounts of European landraces can be found in gene banks, but this material presents several constraints. Firstly, the geographical distribution is very uneven, with especially poor coverage in Northern Europe (Jones et al. 2008). Secondly, the accession passport data, if present at all, is often unreliable, meaning that uncertainties exist about the landrace authenticity and its accurate provenance. Thirdly, the maintenance of landraces in gene banks could alter the genetic integrity of the landraces by contamination or genetic drift (random loss of genetic diversity in small populations). In fact, several of these concerns were in many cases confirmed in a study involving Swedish landraces from the

Nordic Genetic Resource Center (Hagenblad et al. 2012). From other areas of Europe, such as the Alps and Mediterranean, more extant landrace accessions and with better passport data are available (Jones et al. 2008). The use of extant landraces maintained by genebanks is the easiest approach for phylogeographic studies, but it is necessary to perform careful evaluation of accessions in respect of accurate and reliable provenance of data.

An alternative material to gene bank held landraces is historical herbaria or seed collections. In Nordic museums large, and probably world-unique, seed collections from the 19<sup>th</sup> century can be found (Leino 2010, fig 2). This material has excellent passport data (e. g. age and name of the location where the seeds were collected). Most important, the seeds have not been handled since their original harvest more than 100 years ago and are therefore not riddled by the problems occurring in gene bank maintenance. Indeed phylogeographic patterns using this type of historical material can be clearer than those obtained from extant material of the same species (Lister et al. 2009; Hagenblad et al. 2012; Leino et al. 2012). Moreover, the geographic coverage of Northern Europe is very good. Although seeds from historical collections are no longer viable they can nevertheless be studied using DNA method-



Fig. 2: 19<sup>th</sup> century barley seed stored at Nordiska museet. The seeds are not viable but genetic analysis is still possible using DNA technologies. Photo: Matti Leino

ologies (Leino et al 2009). The DNA in aged seeds is partly degraded and cannot be as easily analysed as DNA extracted from viable material. However, amplifications of short fragments of DNA where genetic variability occurs can be obtained and used in the phylogeographical studies.

The use of archaeological crop remnants would expand the time period that can be studied by molecular methods and answer the important question of whether or not landraces remain genetically stable over time. Archaeological plant remains are most often charred or sometimes waterlogged. Hitherto, DNA analyses of

such ancient materials have proven difficult, especially for charred materials (Schlumbaum et al. 2008). However, recent developments in DNA sequencing are proving promising and could offer the possibility of analysing also more recalcitrant types of material in a near future (Bunning et al 2012).

Another important aspect is the pollination system of the crop studied. Cross-pollinating species, e. g. Brassicas, rye and maize, have a constant gene-flow within and between populations, contrary to self-pollinating species such as wheat and barley. Consequently, the genetic variation within populations may well exceed the variation between populations. This phenomenon hinders the observation of fine-scale geographical patterns. None-



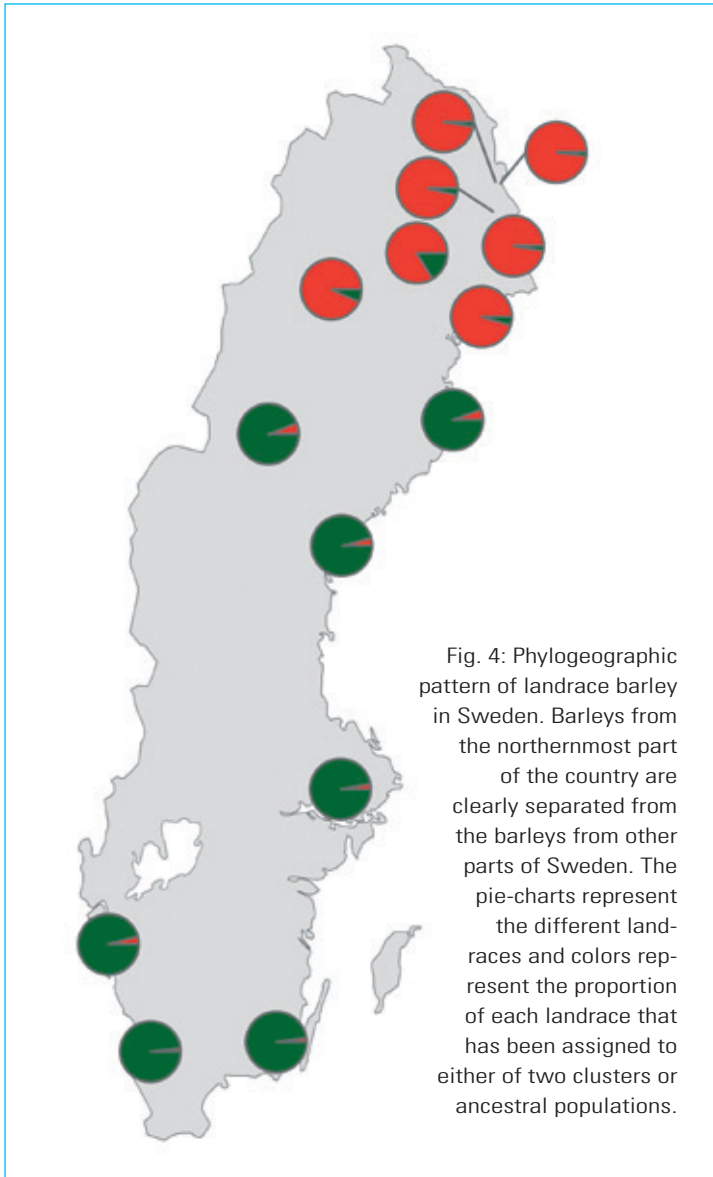
Fig. 3: A six-row barley landrace from Jämtland, Sweden. One of the few landraces available as viable material. Photo: Matti Leino

theless, on a larger geographical scale patterns can still be observed also in cross-pollinating crops such as maize (van Heerwarden et al. 2010) and rye (Oliveira et al. unpublished) if sufficient genetic markers are used.

### **Phylogeographical patterns in Swedish landrace barley**

Historically barley is the most important cereal in the Nordic countries (Hjelmqvist, 1979). Landrace barley was typically of the six-row type and used for making bread and porridge. Two-row barley was

less common and used chiefly in beer production. Six-row barley was not subject to modern plant breeding until the 1920s (Olsson, 1997). Consequently, six-row barley landraces, especially the historical materials, are less likely to be mixed up with cultivars from seed industries. The species are also particularly suitable for phylogeographical studies due to its self-pollinating habit (see above) and the high number of molecular genetic markers available.



Unfortunately, very few landraces of barley from the Nordic countries have been preserved in gene banks as viable material. We therefore analysed historical seed samples of six-row barley lan-

draces from the seed collection held at Nordiska Museet using suitable DNA markers to search for phylogeographical patterns. In an initial study, 14 landraces from Sweden were studied with micro-satellite markers (Leino & Hagenblad 2010). This study showed a very clear differentiation between landrace barley from northernmost Sweden (Norrbotten) and landraces from other parts of the country (fig. 4). In addition, genetic diversity was higher within and between populations from mid and southern Sweden.

#### **Different introduction routes of barley to the Nordic countries?**

The results obtained from Swedish landraces suggested that barley seed was not introduced to the northernmost parts of Sweden from the South. More likely the seed would have come from the east, i. e. Finland. To test this hypothesis we are presently studying landraces from other countries in Northern Europe: Finland, Norway, Denmark, Estonia and Russia, together with a higher number of Swedish landraces. The majority of the accessions are historical (19<sup>th</sup> century) material found in several Nordic museums (Leino 2010), but a few extant landraces are also being included for areas where historical material is missing. To obtain a higher resolution of genetic relationships these accessions are being tested with a set of 284 single nucleotide polymorphism (SNP) markers.

Preliminary results show a similarity between landrace barley from northernmost Norway, Sweden and Finland, whereas the landraces from the central and southern parts of these countries are more similar to each other. The landraces from Estonia and Russia appear to be genetically different from all of the Nordic barleys.

In recent studies of extant European landraces, some Finnish and Northern Swedish barleys show similarity to Eastern European (Hungarian and Romanian) barley and an eastern introduction route to the North was suggested (Jones et al. 2011). In contrast, barley from central Sweden and Denmark are more related to Western European landraces. At present, there is no data available to compare with our material, but one working hypothesis is that the distinct separate population of barleys from the far North represents the traces of an eastern route of seed spread, whereas the remaining parts of the Nordic countries were cultivated with barleys that were brought to Scandinavia from Western Europe.

An alternative, or perhaps complementary, hypothesis is that the landraces from the far North represent a more ancestral barley population and that this population has been replaced in other parts of the Nordic countries by later seed introductions. Analysis of archaeolo-

gical remains could allow the two scenarios to be distinguished from each other.

### **Conclusions**

Phylogeographical studies of Nordic landrace crops could reveal historical patterns of seed spread and elucidate connections between farming populations over different geographic scales. In this area, historical material, i. e. 19<sup>th</sup> century seed collections, has proved to yield clearer patterns than extant landraces obtained from gene banks. In the case of barley, landraces cultivated in the far North of Scandinavia and Finland constitutes a separate cluster, possible due to a separate introduction route.

The extent to which the observed phylogeographic patterns in Nordic landraces reflect the original spread of agriculture or is obscured by later over-stamping by seed trade/exchange would require the use of archaeological materials, and with the use of developing DNA technology this will be a highly interesting research topic for the future.

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West Voe,  
Sumburgh,  
Shetland.  
D. L. Mahler  
photo 2011.

# Farmers hunting and hunters farming

## – The expansion of agrarian societies during the Neolithic and Bronze Age in Scandinavia

*Lasse Sørensen*

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### **Introduction**

The expansion of agrarian societies during the Neolithic and Bronze Age in Scandinavia is in this paper investigated on a large geographical and chronological scale by focusing on radiocarbon dates processed on charred cereal grains, pollen grains, bones of domesticated animals or contexts of material culture connected to agrarian activities. The results open new discussions of where, when and why the different expansions occurred in Scandinavia during the Neolithic and Bronze Age. It is hereby possible to scrutinize the various reasons behind the introduction of agrarian activities in different regions.

### **Agrarian evidences from South Scandinavia**

$^{14}\text{C}$  dates of domesticated animals and charred grains from South Scandinavia clearly show that farming was introduced to this region more or less simultaneously during the period of 4000 to 3700 cal BC (Larsson 1984; Nielsen 1984; 2009; Andersen 2008; Skousen 2008; Sørensen & Karg 2012). From South Scandinavia there are, compared to other regions in Central Europe, many  $^{14}\text{C}$  dates of domesticated animals from the Early Neolithic I (Hartz & Lübke 2004; Noe-Nygaard et al. 2005). The direct dates have mainly been conducted on cattle (*Bos taurus*), while only a few dates have been made on sheep (*Ovis aries*), goats (*Capra hircus*) and domesticated pigs (*Sus domesticus*).



The lack of  $^{14}\text{C}$  dated bones from sheep and goats are due to a higher degree of fragmentation of these bones, identification problems and difficulties in extracting collagen from the preserved bones. The few  $^{14}\text{C}$  dates of pigs are also associated with the difficulties in distinguishing bones from domesticated pigs from the wild boar (*Sus scrofa*) (Magnell 2005).

$^{14}\text{C}$  dates have also been conducted on charred cereal grains from South Scandinavia, showing cereal cultivation and processing from 4000 cal BC onwards (Kaul & Sørensen 2012). The identified species from Early Neolithic contexts are emmer (*Triticum dicoccum*), einkorn (*Triticum monococcum*), naked barley (*Hordeum vulgare/nudum*), bread wheat (*Triticum aestivum/compactum*) and possibly spelt (*Triticum spelta*) (Larsson & Broström 2011; Sjögren 2012; Sørensen & Karg 2012). Generally charred cereal grains and quern stones have been found on many inland Early Neolithic sites, whereas very few evidences of crop cultivation have been reported from coastal or lake shore sites (Nielsen 1984, 2009; Rosenberg 2006; Hallgren 2008; Skousen 2008; Rudebeck 2010; Larsson & Broström, 2011; Mischka 2011; Sørensen & Karg 2012).

### **Farmers hunting and herding hunters in southern Scandinavia**

The Early Neolithic period in Southern

Scandinavia is characterized by an agrarian way of life supplemented by some hunting and fishing, which was practiced on inland sites representing a change in the settlement pattern. At the same time hunting and fishing activities supplemented by some herding of domesticated animals took place on coastal and lake shore sites, thus representing a continuity of the hunter-gatherer way of life (Sørensen & Karg 2012). The sudden appearance of a new material culture – short necked funnel beakers, clay discs, point butted axes and polygonal battle axes – together with the clear evidence of agrarian activities and flint mining in South Scandinavia around 4000 to 3700 cal BC may suggest that agriculture was introduced by smaller groups of pioneering farmers from Central Europe. The few domesticated animals at the coastal and lake shore sites could be interpreted as initial herding activities by communities that still lived as hunter-gatherer-fishers, who had contact with pioneering farmers. Generally, the complexity of agricultural technologies, especially regarding to crop cultivation and keeping of domestic animals all year round, require a long-term experience in order to succeed. If these hunter-gatherers wanted to succeed as farmers, they had to integrate with agrarian societies. The impact of these pioneering farmers within the archaeological record depended on the local hunter-gatherers ability and desire

to integrate with the incoming farmers, making the neolithisation process different from region to region.

### **Agrarian evidences from Southern Norway – farming on the edge**

Recent research in southern Norway suggests that big game hunting may have played a more important symbolic role than the incoming agrarian activities (Glørstad 2010; 2012; Solheim 2012). The region is located on the periphery of the Funnel Beaker Culture, thus leading to a limited number of contacts with pioneering farmers from South Scandinavia. Agrarian activities have been confirmed

from 4000 to 3700 cal BC by the evidence of cereal pollen, which was found in a few pollen diagrams in southern Norway (Henningsmoen 1980: 175; Høeg 1982; Østmo 1988; Prøsch-Danielsen 1996; Kaul & Sørensen 2012). Unfortunately, the cereal pollen from southern Norway has been identified as barley (*Hordeum*), which causes some serious problems. Pollen grains from barley can, when found in limited numbers, easily be identified incorrectly. They could just as well derive from different kinds of wild grasses such as wood barley (*Hordelymus*), wild rye (*Leymus*) or sweet grass (*Glyceria*). Pollen diagrams show a

Fig. 1: Short necked funnel beakers of type II from Dønski near Oslo (Koch 1998; Demuth & Simonsen 2010). Photo Lasse Sørensen.



higher level of plantain pollen (*Plantago lanceolata*), thus indicating a more open landscape from 3700-3300 cal BC. The period is roughly simultaneous with the building of the few megaliths in South Norway around 3500 cal BC (Høeg 1982, 1989, 1995, 1997, 1999). The agrarian expansion during the Funnel Beaker Culture can be regarded as a continuous process of pioneering farmers trying to expand towards southern Norway from neighboring regions, but their impact seems to have been rather limited.

### **Visits of a few pioneering farmers?**

A few finds near Oslo do, however, show material culture together with depositional practices of symbolic values, which originate from South Scandinavia. A flint axe depot consisting of three thin butted flint axes and a raw nodule has been found in Disen (Glørstad 2012). Furthermore, some short necked funnel beakers were found in a shallow pit in Dønnski, where the pottery was below 1 cm in thickness and contained tempered inclusions below 30 mm in size (Demuth & Simonsen 2010) (Fig. 1). The ceramics from Dønnski were either imported from South Scandinavia or produced by incoming farmers, because it differs from the locally produced ceramics in southern and western Norway. The local ceramics from the Early Neolithic is very thick (above 1 cm) and coarse tempered with inclusions of up to 1 cm in size (Skjølsvold

1977: 336; Nærøy 1987: 118; Olsen 1992; Åstveit 1999; Hallgren 2008; Åhrberg 2011).

Additionally, several stray finds of point- and thin butted axes and polygonal battle axes can also refer to a continuous exchange and possible contacts between hunter-gatherers in southern Norway and farmers from Southern Scandinavia (Hinsch 1955; Østmo 1986). Most of the axes are found near light sandy soils and water courses, which was ideal both for farming and seafaring along the coast (Solberg 2012). The distribution of Neolithic flint axes clearly demonstrates that some flint axes played a role as prestige symbols in hunter-gatherer societies. The interpretation is supported by the fact, that some of the axes were exchanged to the region of Nordland within a large geographical hunter-gatherer network (Valen 2012). Nonetheless, many of the Neolithic flint axes also represent an intensification of a depositional practice in southern Norway, indicating a new way of perceiving the landscape compared to the Late Mesolithic. These changes could be linked to agrarian activities associated with a few pioneering farmers moving from the neighboring regions to southern Norway. The combination of a shorter growing season for crop cultivation, lower population density and limited areas of easy arable soils in the central parts of Scandinavia could be

some of the reasons why the agrarian expansion stopped in southern Norway and north of the Mälardalen. Nevertheless we should not rule out, that pioneering farmers could have reached certain favorable agrarian parts of western Norway during the Early Neolithic.

### **Agrarian evidences in Southwestern and Western Norway during the Early Neolithic**

In Southwest Norway pollen cereals of barley have been reported from a pollen diagram on Lista and another on Jæren, thus indicating a limited amount of cereal cultivation. Here, we face the same identification problems in separating barley pollen from various species of wild grasses (Prøsch-Danielsen 2012). A few stray finds of polygonal battle axes, point- and thin butted flint axes together with imitations of flint axes in local raw materials, seem to support the theory of some minor agrarian activity during the Early Neolithic in Southwest Norway (Bergsvik & Østmo 2011). However, it is more likely, that a new material culture – ceramics and flint axes – could have been brought to Southwest Norway by local hunter-gatherers, who had contacts with a limited number of pioneering farmers in South Norway. The traces of agrarian societies become even sparser in West Norway, as no Early Neolithic flint axes have been registered in this region. Only a few double-edged battle

axes and imitations of thin butted axes made in local raw materials have been registered in West Norway (Østmo 1999; Bergsvik 2003; Brevik 2010; Bergsvik & Østmo 2011). Nonetheless it is important to acknowledge, that an agrarian expansion is not one incident, but several, where pioneering farmers continuously tried to expand into unknown territories. However, the agrarian impulses became very limited during the Pitted Ware Culture and it is not until the mid-third millennium that agrarian activities emerge (Strinnhom 2001; Østmo 2008; Olsen 2009; Prescott 2009).

### **The Middle Neolithic/Late Neolithic I transition – an agrarian expansion during the third millennium**

Evidence of cereal cultivation is observed in many pollen diagrams in Norway during the mid-third millennium (Høgestøl & Prøsch-Danielsen 2006; Hjelle 2012). This is supported by the many <sup>14</sup>C dates of charred cereal grains showing agrarian activities during the transition between the Middle Neolithic B and Late Neolithic I (2600-2200 BC) in southern and western Norway (Glørstad 2004; Sørensen 2012; Kaul & Sørensen 2012). Furthermore, the earliest domesticated animals from Hordaland have been <sup>14</sup>C dated to the transition between the Middle Neolithic B and Late Neolithic I (Hjelle et al. 2006).



Fig. 2: A Bronze Age rock carving from Dysjaland, Rogaland, showing a herdsman with his dog and livestock (sheep?). Photo Lasse Sørensen.

Recently, it has been suggested that animal husbandry already began during the Middle Neolithic B (2800-2400 cal BC) in western Norway (Olsen 2009). The hypothesis is based on finds of black layers with some charcoal and thickness of several centimeters, which have been interpreted either as the systematic burning of heather or organized clearances of vegetation for the construction of pasturing fields. A few sites with the interpreted clearance layers are distributed within the inner parts of the fjords, which could

suggest a shift in both subsistence and settlement pattern towards an agrarian way of life during the Middle Neolithic B or the Battle Axe Culture (Olsen 2012; Kaul & Sørensen 2012). However, the clearance layers are completely lacking any archaeological finds making it difficult to associate the layers with a particular culture. Furthermore, it is at present difficult to determine whether the black layers are a product of actual clearances or secondary drifting of cultural layers from nearby sites (Prescott 2012: 171).

But many of the sites, located near the clearance layers, are situated within the inner fjords, which continue to be re-settled during the Late Neolithic (2400-1700 cal BC) and Early Bronze Age (1700-1100 cal BC) (fig. 2). The repeated settlement pattern indicates the initial stages of an economic shift during the Middle Neolithic B towards an agrarian subsistence economy concentrated on animal husbandry supplemented by some hunting and fishing. Arguably, a very limited amount of material culture can be associated with the Battle Axe Culture in these parts of West Norway (Oldeberg 1952; Hinsch 1956). Nevertheless, a few battle axe types of Malmers group D: 2 and E: 2 and some corded ware pottery have been found in western Norway, which seems to support either a direct or an indirect contact with the Battle Axe Culture in southern and western Scandinavia (Malmer 1975; T. B. Olsen 2004; Østmo 2010, 2012). Husbandry practices seem to have been initiated during the Battle Axe Culture, but it is not before the Late Neolithic that the agrarian activities were intensified.

### **The Bell Beakers in Norway – part of a large scale agrarian expansion?**

Whether the increased evidences of crop cultivation in West Norway can be associated with an agrarian expansion of pioneer farmers from the Western European Bell Beaker Culture is still debatable

(Harrison 1980; Liversage 2003; Sarauw 2007, 2008; Prescott 2009; Vander Linden 2012). Only one Bell Beaker vessel from Slettabø has been found in Norway, making the evidence rather limited (Skjølsvold 1977). However, the concentration of flint daggers and tanged points along the Norwegian west coast indicates that North Jutland may have served as a bridgehead of contact by seafaring ships during the Bell Beaker Culture (Scheen 1979; Apel 2001; Østmo 2005; Sarauw 2006). The ships transported people with an agrarian knowledge together with a wide range of new material culture including flint daggers, tanged points with straight wings, wrist-guards of slate and metallurgy (Prescott 2009). The agrarian evidences found along the Norwegian coast support the argument of a possible leap frog migration from South Scandinavia (Anthony 1990; Moore 2001).

### **The agrarian expansion towards Central Norway and Sweden**

It is still uncertain whether the Bell Beaker Culture's agrarian expansion also reached central parts of Norway. Generally the agrarian evidence is still relatively sparse. In Central Sweden (Hälsingland and Ågermanland) there are evidences of crop cultivation from around 2600 to 2300 cal BC (Viklund 2011; Kaul & Sørensen 2012). Furthermore, a tooth from a domesticated cow

found in the kitchenmidden of Hammersvold was  $^{14}\text{C}$  dated to the transition between Middle Neolithic B and Late Neolithic I (2600-2200 cal BC) (Asprem 2012). Moreover several plough marks were found on the site of Egge located northwest of the city of Steinkjer, in Trøndelag. A piece of charcoal found in one of the plough marks was  $^{14}\text{C}$  dated to 1769-1538 cal BC, thus indicating an agrarian cultivation during the Early Bronze Age (Solem 2002; Kaul & Sørensen 2012, Asprem this volume).

The central part of Norway and Sweden contains a huge potential in respect of finding further evidence of an agrarian way of life from the Middle and Late Neolithic. A quick investigation of the distribution of flint sickles from the Late Neolithic and Early Bronze Age in Central Norway show that about 80 % had signs of gloss, thus indicating harvesting of either cereals or common reed (*Phragmites australis*) (Juel Jensen 1994). The distribution of the flint sickles becomes less dense in Northern Trøndelag and the sickles disappear in Nordland, which demonstrates the limit of the agrarian expansion during the Late Neolithic and Early Bronze Age (Marstrand 1956; Zinsli 2007; Valen 2012; Skandfer 2012). The reason is probably linked with a low population density and limited access to large areas of easy arable soils. An alternative explanation

may be related to grain varieties and ability to grow crops in Northern Scandinavia. Current DNA-analysis on historical barley types show that the northern type of barley is different from the barley found in Southern and Central Scandinavia (Leino & Hagen Sheet 2010; Leino this volume). Maybe the barley used during the Late Neolithic and Early Bronze Age had difficulties withstanding the very short growing season and the rainy periods in Northern Scandinavia?

#### **Evidence of agrarian activities in North Scandinavia**

Currently most of the  $^{14}\text{C}$  dates primarily support an agrarian expansion during the Late Bronze Age from 1100 to 500 cal BC (Johansen & Vorren 1986; Johansen 1990; Arntzen & Sommerseth 2010; Viklund 2011; Jensen 2012; Arntzen 2012; Sjögren & Arntzen 2012; Kaul & Sørensen 2012). During the Late Bronze Age a re-organization of the cultivation methods seems to have emerged, which for South Scandinavia resulted in the construction of Celtic fields, the introduction of the bow ard and new cereals such as flax (*Linum*) and rye (*Secale cereale*) (Robinson 1994; Pihl 2013; Wehlin 2013). All these changes could have made it possible for agrarian societies to expand further north and beyond the Arctic Circle during the Late Bronze Age. However, we should not dismiss the possibility of farmers trying to establish them-

Fig. 3: Expansion of arable land, making it suitable for cultivation, is also important today. Photo Flemming Kaul.



selves so far north already during the Late Neolithic and Early Bronze Age (Kaul 2011; 2012; Rønne 2011; 2012; Skandfer 2012). Arguably, the climate may have been so harsh that it probably took several attempts to expand further north, which first became a reality during the Late Bronze Age and Pre-Roman Iron Age (Sjögren & Arntzen 2012). The less successful farmers either had to withdraw towards the south or switch to fishing, hunting and gathering, possibly supplemented by some livestock. The importance of the agro-pastoral subsist-

ence in North Scandinavia is still debatable and might first have become really important during the Iron Age (Fig. 3).

### **Conclusions and perspectives**

Agrarian activities began around 4000-3700 cal BC in South Scandinavia, caused by a minor migration of pioneering farmers from Central Europe. The indigenous hunter-gatherers integrated with the incoming farmers at different haste during the Early Neolithic. The expansion stopped in southern Norway and north of the Måhlaridalen. The reason for this stop of expansion is still debatable, but the re-



gions further north in Norway and Sweden had a lower population density, colder climate, limited areas of easy arable soils and shorter growing season for crop cultivation. The next agrarian expansion towards Central Scandinavia occurs during the transition between the Middle Neolithic B and Late Neolithic. Limited husbandry practices probably began during the Middle Neolithic B or Battle Axe Culture, and increased agrarian activities including crop cultivation was intensified during the Late Neolithic or Bell Beaker Culture. During the Late Neolithic an improved ship technology could have urged pioneering farmers to expand further north reaching central parts of Scandinavia along the coast. The first reliable evidence of agriculture in northern Scandinavia can be dated to the Late Bronze Age, where a re-organization of the cultivation methods could have created new possibilities of establishing agrarian societies beyond the Arctic Circle. Generally, the transition towards an agrarian society can be characterized as a complex and continuous process, which is dependent on a constant gene-flow from pioneering farmers and the local hunter-gatherers willingness to change their ideology and subsistence strategy. We are therefore dealing with several transitional processes, which are different from region to region.

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Cairn, Gallow Hill, Shetland. D. L. Mahler photo.

# Norway – Denmark. Material connections in the Early Bronze Age

*Karen Margrethe Hornstrup*

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## **Introduction**

During the last decades it has been generally agreed that there were close links between North West Jutland and Rogaland in the Late Neolithic and the Early Bronze Age (e. g. Nordenborg Myhre 1998; Apel 2001; Kvalø 2004; 2005).

The assumptions are based on the comparatively short distance between Rogaland and North West Jutland and on similarities in metal objects during the Early Bronze Age. Detailed analyses of the material are necessary for an understanding of the formation of the Early Bronze Age in Scandinavia. This paper analyses a selected number of metal objects from burials dated to Early Bronze Age, period (per.) II and III, in order to shed more light on the connections between Norway and Denmark. There were probably varied forms of relations between Norway and Denmark, but only one subject, marriage, will be discussed here.

## **The distribution of graves**

Rogaland was evidently an important area in Norway in the Early Bronze Age since not only most of the known graves, but also the richest graves are found on Karmøy and Jæren. Moreover, there are spectacular grave cists with decorated slabs, huge burial mounds, and large rock art sites, and Rogaland has been interpreted as a meeting point (Nordenborg Myhre 2004: 223). The graves are rather dispersed in East Norway along the south and west coast, and the concentrations of graves are situated at Lista, in West-Agder and in Steinkjer, North-Trøndelag, and here especially at Sparbu (Johansen 1986; Rygh 1906). In all parts of Denmark, there are numerous graves from the Early Bronze Age, but North West Jutland was a significant area, especially in per. III characterized by an extraordinarily large number of male burials containing swords besides richly equipped female burials (Hornstrup 1998).

### Comparison of artefacts

When the right preservation conditions are extant, the form and decoration of selected bronzes from Norway have been compared with types from Denmark and Sweden. On the assumption that the distribution patterns of tools, as well as male and female related artefacts were different (Asingh & Rasmussen 1989), the following types were selected: bronze hilted swords, razors, ribbed arm rings, and ornaments from the Rege burial.

Within the male category, there are two bronze hilted swords from Karmøy and Lista<sup>1</sup> belonging to Ottenjann type B1; a common type in per. III (Ottenjann 1969: 34ff). As the swords are almost identical they probably are produced by the same bronze smith (Hornstrup 2011). The closest parallels to the swords were – besides those from Schleswig-Holstein – from North West and West Jutland.

The razor was an important male implement in the Bronze Age. Razors with handles shaped like naturalistic horse heads with manes and decorated bands on the blade were the preferred type in per. II, especially on Zealand (e. g. Aner & Kersten, No. 458 and 1033). One of these



Fig. 1: Map of Norway and Denmark.

<sup>1</sup> S7425 Jaasund, Sola k., Rogaland; C27790 Meberg, Farsund k., Lista. Information about the Norwegian finds is available at Universitetsmuseenes arkeologiske gjenstandssamlinger: <http://www.unimus.no/arkeologi/forskning/sok.php>

razors was found in a grave at Todnes, North-Trøndelag (fig. 2 a). An almost identical razor, although with a slightly stylized head, is from Sola, Karmøy, dated to the late per. II or early per. III (fig. 2 b). Danish razors from per. III are characterized by handles formed as stylistic horse heads and narrow blades. The majority

are from Jutland, and only a few of those are decorated (Aner & Kersten 1981 ff.). Three Norwegian per. III razors are from Karmøy, Hov in Oppland, and Sparbu, North-Trøndelag (fig. 2 c-e). A common feature is the relatively long neck, which occurs on a few razors from Jutland, but far more often in eastern Scandinavia, especially Sweden (e. g. Oldeberg 1974: S293, S523, S745). The razor from Karmøy is probably not decorated, whereas the other razors have a decorated band at the blade. Furthermore, the razor from Sparbu has a unique

Fig. 2: Razors from the early Bronze Age in Norway. a) T2412. Todnes, Sparbu, Steinkjer k., North-Trøndelag. After Rygh 1906: 11, fig. 8. b) B908. Solagaardene, Sola k., Rogaland. Photo: Ann-Mari Olsen and AmS. c) B5952. Gunnarshaug, Karmøy, Rogaland. After Shetelig 1905: 29, fig. 8. d) C4417. Hov, Gran, Oppland. After Rygh 1885: No. 116. e) T7587. Holan, Sparbu, Steinkjer k., North-Trøndelag. After Rygh 1906: 14, fig. 10.

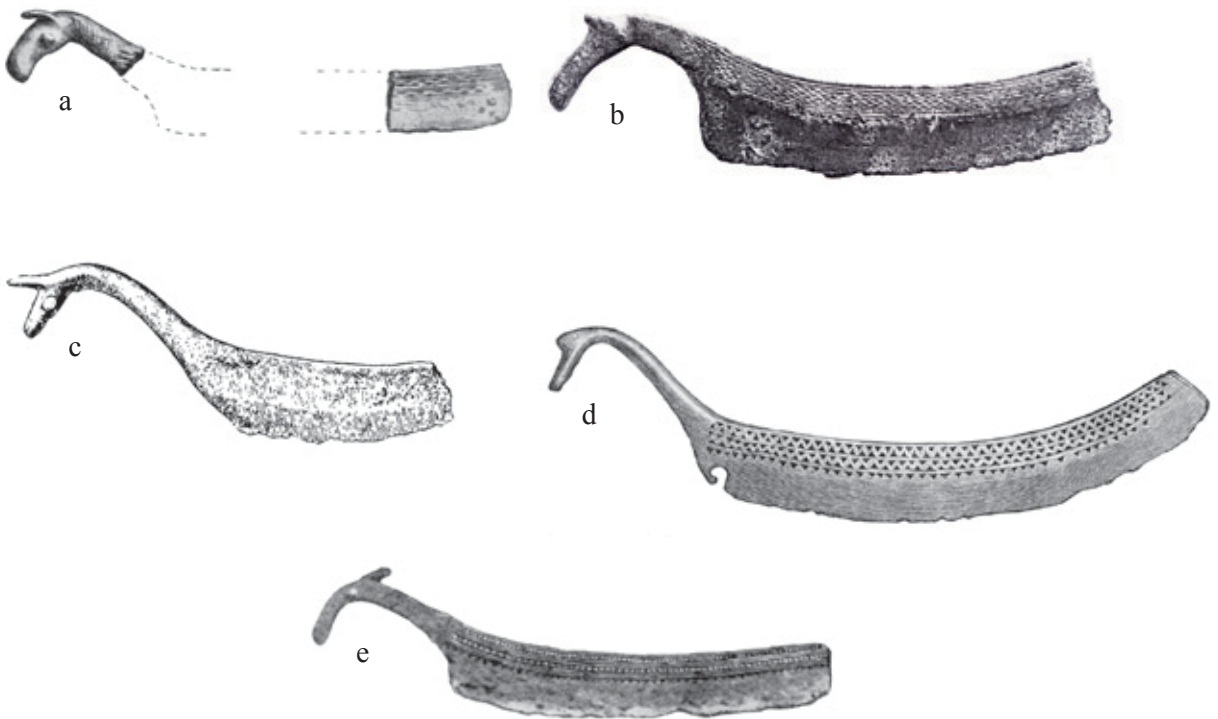




Fig. 3: The Rege burial.  
 Photo Terje Tveit, Arkeologisk  
 museum, Universitetet i Stavanger.

feature as the horse's ears are laid back (fig.2 e). On all the Danish and Swedish razors from the Early Bronze Age the horse's ears point forward, and the question is, if the handle of the Sparbu razor depicts a hunted animal, maybe an elk? It thus appears that the Norwegian per. III razors seem to be inspired by the East Scandinavian types, and at least the Sparbu razor must be of local produc-

tion. Furthermore, the razors with the long neck indicate links between distant Norwegian sites.

Within the female category, the richly equipped Rege grave from Rogaland<sup>2</sup> containing a belt plate, a tutulus, a neck collar, two ribbed arm rings, a dagger, a bronze tube and a brooch – see fig. 3 – has been interpreted as evidence of a

<sup>2</sup> S1263-69, Rege, Sola k., Rogaland (Lund 1935).

close link between Jutland and Norway (Lund 1938: 39). However, the closest parallels to the broad neck collar with narrow ribs, the belt plate with three zones of running spirals and the decoration of the arm rings are all found on Zealand (Hornstrup 2011). The artefact combination is typical of per. II, and the latest part of it.<sup>3</sup>

In South West Norway and in Thy, the ribbed shaped arm rings represented an important part of the female equipment.

There are 10 such arm rings from Rogaland and one from Lista (Larsen 1997; Johansen 1986: 58ff.). Already in 1913, A. W. Brøgger stated that the closest parallels to the ribbed arm rings were from Jutland (1913). Compared with the scattered finds in other parts of Denmark, there is a surprisingly high concentration of ribbed shaped arm rings in Thy with 35 ribbed arm rings (Aner & Kersten 2001). 25 of the arm rings from Thy and eight from Norway have been studied, and four arm rings from Rogaland and the one

**3** The transition from Period II to III is complicated as a large number of graves contain items from both periods or are dated to a late phase, sub-period II which mainly appears in Zealand (Randsborg 1968). However, recent dendrochronological and radiocarbon of burials from Periods II and III indicate, that the transition phase must have been brief (Hornstrup et al. 2012).



Fig. 4: Ribbed arm rings from Sjørring, Thy. After Aner & Kersten 2001: No. 5181.

from Lista are almost identical and very similar to a type consisting of 11 specimens from North Thy (Hornstrup 2011: 71). The only difference is that the Norwegian arm rings have pronounced edges, and the arm rings from Thy have vertical strips at the ends, see fig. 4 and 5.

The Norwegian arm rings should probably be dated to late per. II and III, whereas the Danish specimens are dated to per. III (Hornstrup 2011). In contrary to Norway, the Danish arm rings developed to very broad rings in the late per. III (Hornstrup 2011: 71). The occurrence of almost identical arm rings must indicate close connections between South West Norway and Thy. Finally there are a few soapstone moulds for the production of palstaves dated to Period II. One mould is found at Voile, West-Agder, and two are from North Zealand: Valby and Søllerød.<sup>4</sup> All of the moulds are single hoards from wetlands. Other moulds for palstaves found in Denmark are made of bronze (Jantzen 2008: 171f). It is a well-known fact, that there are several soapstone quarries in Norway, and quarries are also found in Sweden, especially in the county of Halland and Bohuslän (Storemyr et al. 2002: 360, Fig. 1; Jantzen 2008: 146).

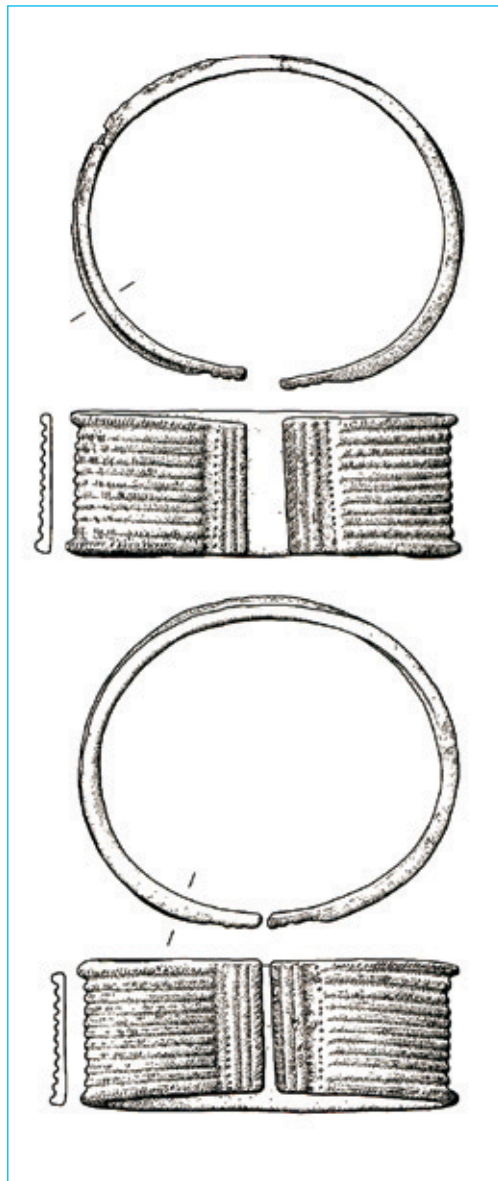


Fig. 5.: Ribbed arm rings from Anda, Klepp, Rogaland. Photo Terje Tveit, Arkeologisk museum, Universitetet i Stavanger.

<sup>4</sup> C21853 Voile, Farsund, West-Agder (Johansen 1986: 72ff, fig. 49 ); Ke 96 Valby and Ke 433 Søllerød, both Frederiksborg amt (Aner and Kersten 1971).

### **External connections with Norway**

Given the few examples it appears that the Norwegian-Danish connections are in no way clear-cut as there is little evidence. The two razors from North-Trøndelag and Karmøy and the ornaments from the Rege grave, all of which most likely are from per. II, probably came from Zealand, and the soapstone moulds could be regarded as a kind of repayment. The two per. III bronze swords from Rogaland and Lista are supposed to have come from Jutland, and the ribbed arm rings indicate close connections between South-West Norway and Thy. The razors of per. III style from various Norwegian regions were inspired by types from east Scandinavia, probably Sweden.

In a recent paper Ørjan Engedal states that the bronzes in Sweden dated to per. I came from Central Europe and from Sweden by inland routes to Norway (2012), whereas the flint objects probably were of Jutish origin (Apel 2001; Engedal 2012). Studies of Late Neolithic flint types prove that the south west Norwegian implements came from the Limfjord area around Aalborg (Becker 1993; Sarauw 2009).

In the Early Bronze Age it is confirmed that Norway had connections with various parts of South Scandinavia. It was previously supposed that only Jutland was the external link to Norway, according to the Danish researcher, Sophus

Müller, who argued for a western and an eastern culture flow from Central Europe to South Scandinavia. The western flow to Jutland comprised especially the Early Bronze Age metals, and the eastern flow to East Scandinavia included mainly metals from the Late Bronze Age (1876; 1897: 336). This west-east division corresponded to the metal distribution in Norway as well (e.g. Brøgger 1913), and since long distance trade was the preferred interpretation of cultural development it was a logical step to continue the Jutish trade route across Skagerrak to South-West Norway (Lund 1938: 46; Marstrander 1950). Another important fact is the distance between Norway and Denmark, where Skagerrak is the shortest route between Rogaland and North West Jutland (Johansen 1987; Kvalø 2004; 2005). As a consequence, researchers have focused on Jutland although Zealand was an important area in the early Bronze Age.

Moreover, it appears that a local Norwegian production of razors and arm rings seems to stand out in the course of Period III, and the soapstone mould indicates bronze casting of tools as early as Period II. The question of local production in Norway is controversial. Finds of alloys, small bronze pieces etc. indicate bronze production in the Late Neolithic and Early Bronze Age whereas Nils Anfinset is sceptical because of the scarce



evidence (Prescott 2006; Melheim 2009; Engedal 2012; Anfinset 2012: 237).

### **Marriage**

No matter what the nature of the connections between South Scandinavia and Norway, it still meant a long and risky open-sea voyage, and only wealthy groups were able to perform those costly travels.

It is a well-known statement, that exchange of females was an important strategy in maintaining alliances or generating new alliances in the Bronze Age (Rowlands 1980: 30; Kristiansen 1998: 398). The foreign females would presumably carry their own dresses and personal items with them to the new society, and these objects would probably follow them to the grave (Rowlands 1980: 30; Bergerbrant 207: 119ff also for further references). The question is whether the woman from the Rege burial and not only her ornaments, came from Zealand. It appears however, that there are more burials containing belt plates and neck collars in Rogaland, some of which are contemporary with or a little earlier than the Rege burial.<sup>5</sup> Furthermore, swords and weapon palstaves etc. from male burials are just like the ornaments from the female burials of South Scandi-

navian style. In this respect, there is no basis for proving that the Rege woman was a foreigner although the possibility naturally exists.

The ribbed arm rings from Thy occur in rich graves containing belt plates with conical spikes, gold spirals, and neck rings, but also in graves either with a small ceramic vessel or without any other grave goods. The main part of the arm rings from Thy and South-West Norway occur as pairs, often similar, and due to the diameter they must have belonged to adults. Presumably, the arm rings expressed a common identity of an adult female group across the Skagerrak.

In contrast to the previously mentioned swords, razors, belt plates and neck collars, which have been found over a large part of South Scandinavia, it is amazing that the ribbed arm rings are that concentrated in South-West Norway and Thy, and they can indicate a direct link. Referring to Ian Hodder, there are greater cultural differences between cultural groups in periods of instability than in peaceful periods (1982: 26). So this phenomenon probably mirrors a peaceful relationship and could be interpreted in relation to marriages. Instead of consid-

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<sup>5</sup> Belt plates: B 2844 Klepp k., B 3322 Særheim, Klepp k., B 4320 Vigrestad, Hå k., S 859 Orre, Klepp k., S 4265 Kåsen, Klepp k. Neck collars: B 4320 Vigrestad, Hå k., S 1272 Braut, Klepp k.

ering women as passive objects of exchange, Joanna Brück has stated the view based on anthropological examples, that females moving to other societies as marriage partners played an active role as mediators between their former and the new society (2009). As the move probably meant a kind of mental loss, the women tried to maintain some relations with their relatives e. g. by continued exchanges of gifts (Brück 2009: 14). These relations were an advantage for the males and their groups because they hereby gained access to her network including social, political, and economical resources, and maybe also the possibility of further marriages (ibid). The active role of the females may explain the occurrence of almost similar arm rings in two distant parts, as the arm rings could be seen as symbolizing the relationship with the former group. At the same time the arm rings have a local style, expressing the membership of the new group. The arm rings occurred in Rogaland as well as Lista, and the close connections between these parts of Norway are further confirmed by the two almost identical full hilted swords.

### **Concluding remarks**

By comparing the material culture between Norway and Denmark it emerges

that connections cannot always be determined from a rational way of thinking such as the shortest distance. In the Early Bronze Age, there were connections between different Norwegian regions and different South Scandinavian areas. Not until per. III are there clear indications of interactions between South West Norway and North West Jutland, which can be explained as a result of possible marriages. In general, the Norwegian-Danish connections might include small-scale migrations, warfare, commodity or social exchange, meeting at third places besides marriages. Future local studies combined with metal analyses may hopefully provide more details of the character of the different external connections and not least the internal Norwegian links.

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# The One-edged razor – northernmost and southernmost

## Northern Worlds meet Southern Worlds

*Flemming Kaul*

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### Introduction

The one-edged razor is a peculiarity of the Nordic Bronze Age culture. During per. II and III of the Bronze Age the one-edged razor with the handle in the shape of a horse head became one of the emblems of the Nordic Bronze Age. Some of the northernmost razors of this type will be highlighted, as well as examples of Late Bronze Age razors with decorated blades. It is proposed that the emergence of the Nordic one-edged razor around 1400 BC was due to influences from the Mycenaean-Minoan world. Southern worlds and northern worlds became connected in the use of the one-edged razor. In the South, in the sacred Dicte Cave on the island of Crete, a votive razor with a horse headed handle has come to light. In the North, close to the Arctic Circle, at Skjeggnes, Nordland, Norway, the northernmost razor with the handle in the shape of a horse's head has been found.

### The Nordic razor

The extent of influences from the Aegean Bronze Age cultures to Northern Europe has long been a topic of debate, and many types of objects have been considered as evidence of contact such as the folding stools and the pictorial evidence of chariots (Randsborg 1967; Harding 1984; Schauer 1985; Bouzek 1985; Randsborg 1993; Kristiansen & Larsson 2005; Harding 2007).

The Nordic Bronze Age razor is one-edged and asymmetrical. From the blade the handle protrudes as a continuation of its back. The earliest razors, appearing during Montelius period (per.) II of the Nordic Bronze Age, are characterized by a handle terminating in a plastic horse's head. The back is straight or slightly concave (fig. 1). Some of the earliest razors carry a spiral shaped handle (Müller 1921: 16) (fig. 2).

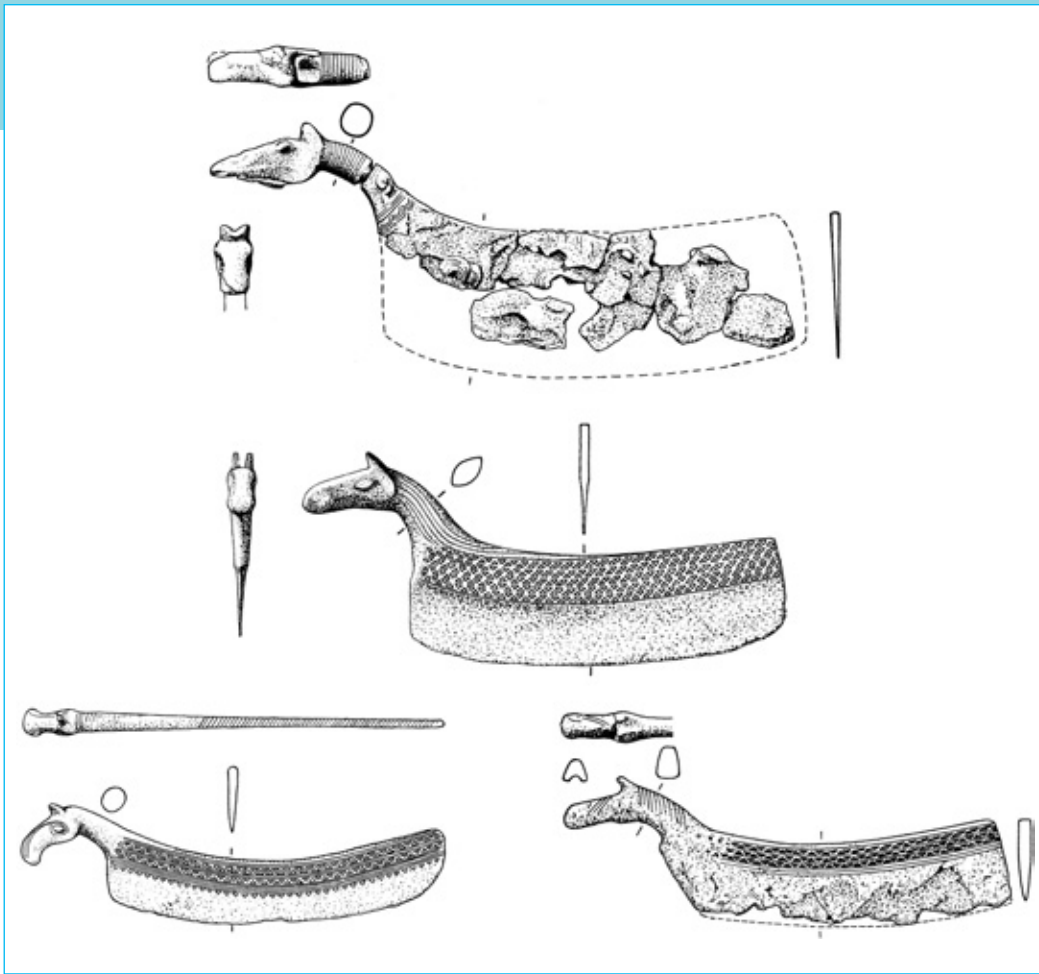
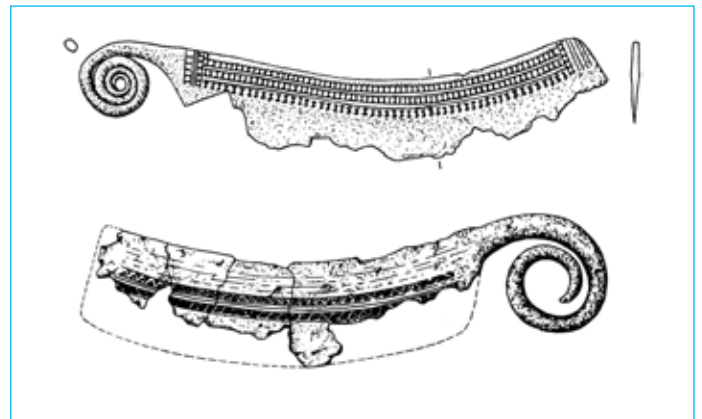


Fig. 1: Razors with horse headed handles, Nordic per. II, Ubby, Darup, Karlstrup and Petersdal, all Zealand, Denmark. Length: 9.0-10.8 cm. After Aner & Kersten 1973 & 1976.

Montelius' per. II began around 1500 BC. Recent chronological studies based on absolute dendro-dates of the Danish oak coffins demonstrate that the mature per. II of the Nordic Bronze Age first took its start around 1400 BC (Randsborg & Christensen 2006: 21). The first Nordic bronze razors with the handle in the shape of a horse's head can be related to this mature phase of per. II, though some very few specimens could be one or two decennia earlier than that, belonging to the Løve-horizon (Lomborg 1969: 109-119). The tweezers seem to appear some decades earlier, though not associated with any distinct type of razor.

Fig. 2: Razors with spiral handles, Nordic per. II, Kirke-Værløse and Dragsholm, Zealand, Denmark. Length: 9.8-10.5 cm. After Aner & Kersten 1973 & 1976.



### The Minoan and Mycenaean razors

Even though we are dealing with a common European phenomenon, the shape of the Nordic razors differs markedly from almost all other Middle Bronze Age razors: The Nordic razors are one edged and asymmetrical, whereas all other razors are two-edged and symmetrical (Jockenhövel 1971; 1980). So, at this time, we find a huge European area with different variants of the two edged type. There is one exception from this, where we find basically the same design as in the Nordic Bronze age area, namely in the Aegean area. Whereas the handle with its horse's head is fully cast on the Nordic

razors, the handle of the Aegean razors is mostly flanged and with holes for rivets. Parts of the handle were made of organic material, wood, bone or ivory, secured by the flanges and rivets (fig. 3).

The Aegean one-edged razor appeared at the transition between Late Heladic/Late Minoan II and Late Heladic/Late Minoan A. It continued without many changes until and including Late Heladic/Late Minoan III C. Before that, the Aegean razor was two-edged and symmetrical, and with a leaf-shaped blade. An overlap period between the two different types can be observed.

Fig. 3: Late Minoan razors from Zapher Papoura, Knossos, Crete, Greece. Length: c. 18 cm. F. Kaul photo.







Fig. 4: View over the Lasithi plain from the mouth of the Dicte Cave, Psychron, Crete, Greece. F. Kaul photo.

The last decades have seen a reassessment of the absolute chronology, in particular based on the dating of the Thera eruption. Evidence from Greenland ice cores as well as evidence of dendro-dated limited tree ring growth from the northern hemisphere indicates a major volcanic event in the second half of the seventeenth century BC (Baillie 1996; Muscheler 2009). Recently a branch of an olive tree, charred and buried in the pumice of the eruption on the very island of Thera has yielded  $^{14}\text{C}$ -dates of the second half of the 17<sup>th</sup> century BC (Heinemeier *et al.* 2009). The reassessments of the absolute chronology indicate that the transition between Late Minoan II and Late Minoan III A took place around 1450-1420 BC. It seems likely that the two-

edged razor in the Aegean was replaced by the asymmetrical one-edged razor around 1450 BC (Kaul 2013). The chronological observations are of great importance since they render it possible to give sufficient time for allowing the dissemination of this particular shape of razor from the Mediterranean to Scandinavia.

### **The Dicte Cave**

Since being partially of organic material it has not been possible to determine the full shape of the handle of the Minoan and Mycenaean one-edged razors. However, some votive objects found in the Dicte Cave at Psychron, Crete, throw light on this matter. The Dicte Cave ranks among the most important sacred places of Minoan Crete, and according

to one ancient tradition it was the birth place of Zeus. The mouth of the cave opens on a mountain side at a height of 1025 m above sea level, with a splendid view over the fertile inland Lasithi plain (fig. 4). At the bottom of the cave there is a pool out of which rises a forest of stalactites. Most of the bronze votive objects, including figurines, knives, razors, tweezers, pins, chisels and double axes were found in crevices in the stalactite pillars, and in the pool area in the lower grotto (Hogarth 1900: 100). The main period of the bronze votives includes Middle Minoan III to Late Minoan III, but there are also later depositions (Boardman 1961; Weber 1996).

The votive razors from the Dicte Cave belong to the one-edged type, and by their shape they should be dated to Late Minoan III. The razors are all cut out of thin sheet bronze. On these votive representations of Minoan razors the full shape of the handle is present. It is obvious that in some cases the handle is in the shape of an animal's head, and in one case we are seemingly dealing with a stylized horse's head. Also other handle shapes are represented, where the handle terminates in a spiral curl (Boardman 1961: 50-51; Weber 1996: 156-157). By means of the votive razors from the Dicte Cave it is now possible to determine the shape of the full handle of at least some of the Minoan and Mycenaean one-edged razors.

Not just the overall design of the early one-edged razors but also the shape of the horse headed handles – and the spiral handles – show striking resemblance between the Aegean and southern Scandinavia. It seems possible due to the recent re-assessments of the absolute chronology in both areas to track a 'time corridor', where this shape of the razor could have been transferred within a relatively short period of time in the sec-

Fig 5: Votive razor with handle in the shape of a horse's head, from the Dicte Cave, Psychron, Crete, Greece. Length: 8.6 cm. The full razor and a detail. F. Kaul photo.



ond half of the fifteenth century BC. We are not dealing with import of the objects themselves, but an introduction of the idea behind. The razor is not to be considered as a sub-type of a certain object or tool, but as an autonomous object reflecting specific ideas as to hair-fashion, probably the idea of the shaven warrior. When the use of the razor was introduced in the North it swiftly spread and became accepted over larger parts of northernmost Germany and southern Scandinavia as a sort of fashion or ideal.

Both in the North and in the Aegean the razors occur in rich burials with weapons, often accompanied by a pair of tweezers. Some common ideals as to hygiene, hair fashion and bodily appearance obviously became shared by warrior aristocracies far apart. The razor should not be regarded as an isolated object, but as part of a larger ideological or social 'package'.

### **Exchange routes**

How could such ideas disseminate through Bronze Age Europe? Trade of tin and copper as well as trade of Nordic amber to the Mediterranean can be seen as a vehicle of social interaction and further diffusion of ideas. We must be aware of the fact that during the Bronze Age the sources of the so-called Baltic amber that reached the Eastern Mediterranean area were not just the coasts of the Baltic Sea but also the beaches

along the North Sea (Bech & Mikkelsen 1999; Jensen 2000; Jensen 2002).

But how was this north-south exchange system organized? A trade network mainly depending on alliances has been suggested, linking Southern Scandinavia with Central Europe – the Carpathian area and North Italy. The basis was the establishment of marriage alliances and trading partnerships. Along the exchange alliances chieftain traders or warriors travelled to the North bringing with them metal and technological knowledge, and *vice versa* (Kristiansen & Larsson 2005). This exchange system was hinged on a yet another system with connections further south, eventually the Aegean trade system.

But still, we have only extremely vague ideas as to the organization of exchange of valuable commodities such as amber. How many travelled together? What about escort or guides, local or translocal? – caravans? – Or guided and protected by the rules of hospitality? Even though marriage alliances and trading partnerships may have been vital for the establishment of and safeguarding the travel routes, we should expect some general agreements on regulations and customs as to hospitality for the traveller, providing security and night-accommodation. It is tempting to consider defended sites such as Albanbühel, South Tirol, Italy – where

amber has been found – in a strategic position overlooking the Eisack/Isarco Valley south of the Brenner Pass, as a chiefdom farm serving as a small *caravanserai* (Tecchiati 2011).

The *palafitti* settlement site of Molina di Ledro close to Lago di Garda has yielded interesting finds. The shape of a pottery cup and its handle closely resembles the shape of the vessels of the Vapheio type which were in fashion both in Crete and Mycenae towards the end of the first half of the second Millennium BC. Some sherds of similar vessels have turned up at a site south of Peschiera at Lago di Garda, and from Terramare sites at the Po River Valley (Barfield 1966; Bouzek 1985: 49-51; Nicolis 2010). Amber beads of Nordic amber have been found at Molina di Ledro, as well as on the pile dwelling site of Fiavé in the neighbouring valley (fig. 6), here being dated to 1500-1300 BC; at Fiavé even an imitation of a Mycenaean boar's tusk helmet has come to light, though made in straw/fibres of *viburnum* (Perini 1987:173-174 & 190).

From around 1500 BC along the Adige Valley, and lake valleys such as Lago di Garda, more settlements, also pile dwellings leading to the Po Valley, have yielded amber. Peschiera itself and neighbouring settlements should perhaps be seen as central places of communication.

Following the rivers of Mincio, Adige and Po south of Lago di Garda, a number of recently excavated sites, even though a bit later, from around 1200-1000 BC, have dramatically widened our knowledge of contacts with the eastern Mediterranean world. From the outskirts of Verona to the lagoon of Venice and the Po/Adige estuary quite some sites has yielded Late Mycenaean pottery, especially of the Late Heladic III C period (Malnati 2003; Terzan 2007). At Frattesina finds of amber, faience, glass, ivory and ostrich eggs have demonstrated that such sites were centres for production and exchange between areas inland of the Po and alpine areas, the Mediterranean and the Aegean. Nordic amber was worked here and re-

Fig. 6: Amber bead, extremely well preserved due to wet conditions, from the palafitti settlement at Fiavé, Trentino, North Italy. Diameter: c. 1.2 cm. F. Kaul photo.

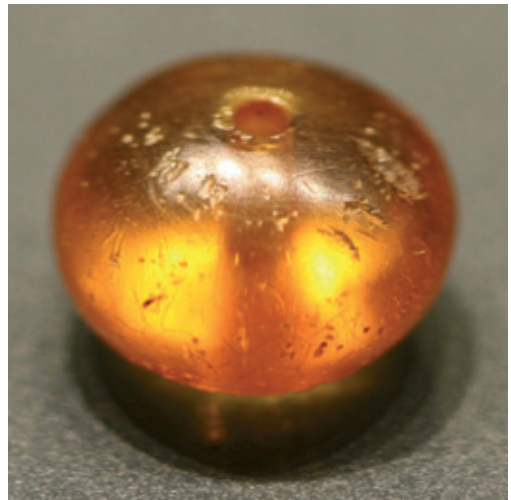




Fig. 7: The cave opening close to the fortified site of Monkodonja, Istria, Croatia. F. Kaul photo.

exported, both half-worked pieces as well as un-worked lumps of amber have been found (Il Villaggio di Frattesina 2010; Nicolis 2010). The North Italian sites thus seem to demonstrate an establishment phase of an amber route around 1500 BC (1600 BC), and an 'explosion' phase at around 1200 BC.

Monkodonja in Istria, northern Croatia, provides a link between the Minoan-Mycenaean world and Central Europe. Inside stone built walls – with inner walls encircling an acropolis area occupied c. 1600-1300 BC and with impressive outer walls with two gates, a highly structured

occupation has been documented. Monkodonja may be regarded as an imitation of Mycenaean palace architecture (Terzan *et al.* 1999; Hänsel 2007). In the find material, there seem to be evidence of contacts with Cyprus. Not far from one of its gates there is a cave, and at its opening seats or steps are cut into the rock, surrounded by standing stones (Terzan *et al.* 1999). The area around the cave opening could have been widely accepted as a sacred place – perhaps even the seat of an oracle? – Also a meeting point for the mediation of ideas. The innermost parts of the cave have collapsed, so its secrets remain.

The dispersion of the one-edged razor or rather the idea behind it could have followed such lines of communication: From Crete or Greece northwards along the Adriatic coast until Istria, then up Po or Adige, or via River Mincio to Lago di Garda. From here, after some days of travel, you reach the Brenner Pass, or similar, smaller passes, and you are soon north of the Alps. This proposed route is one among many 'amber routes' (Harding 1984: 80). I have allowed myself to focus on this route, when considering the geographic situation of sites such as Frattesina. Of course, this should not exclude the importance of the many other amber routes. Recent finds of Mycenaean imports in southern Germany such as the fragment of an ox hide ingot from Oberwilflingen, and the golden crown from Bernstorf could have reached the areas north of the Alps via a route northwards from *Caput Adria*, or by the Po-Adige-Brenner route (Primas & Pernicka 1998; Gebhart 1999; Krause 2010). A typical Nordic razor with horse headed handle, from a burial, found at Tovacov at Brno in Moravia, represents the southernmost find of this type, but far away from its main distribution area (Jockenhövel 1971: 201). It belongs to per. III of the Nordic Bronze Age (1300-1100 BC), and hence it has nothing to do with the primary transmission of the idea of the razor to the North. When the razor as such should be considered as a very personal item, this find may reflect a trav-

eller from the North who had died here, on an eastern route, eventually ending up at *Caput Adria*.

It was the idea behind the razor that was transferred – and its particular shape – probably reflecting new ideals related to the shaven warrior. It was via the travel routes, some regularly supplying the North with metal, others supplying the South with amber, that such knowledge became extended. Somewhere in Europe certain prominent members of the societies could have met and discoursed as to ideals of bodily appearance could have taken place. Following the line of recent discoveries, candidates for such places could be at Monkodonja in Istria, in the Po valley, at Lago di Garda or Bernstorf in Bavaria.

The diffusion of the razor and the ideas behind just prior to 1400 BC should not be seen as part of a wave that overwhelmed the passive receivers in the North. Terms like 'influence' or 'diffusion' do not seem sufficiently explanatory. We could perhaps talk about active 'diffusion', where leading members of the societies having knowledge of the world of the South – probably after long journeys – deliberately picked up certain elements that could be used in self-promotion in a dynamic time of change. Such leaders must have had a great authority within their local networks, since it was

possible for the razor with horse headed handle to spread and being accepted all over southern Scandinavia within a generation or even a shorter span of time. With lightning rapidity – as a fashion – many men of importance felt themselves obliged to possess and use the razor.

The introduction of the razor should not be regarded as an isolated phenomenon, but as part of a larger picture of south-north social interaction. It should be considered as component of an ‘aristocratic package’, reflecting a new chieftom elite culture (Kristiansen and Larsson 2005: 212-226; Kaul 2013). At the same time elements such as the folding stool, bronze drinking vessels and the horse-drawn chariot were introduced or chosen in the North, all to be considered as ruling class symbols. These features, together with the razors, indicate the acceptance of parts of a Minoan/Mycenaean lifestyle.

### The northernmost razors

During the second half of the 14<sup>th</sup> century BC the one-edged razor swiftly spread over larger parts of South Scandinavia, the area also including northernmost Germany (Jockenhövel 1971: 186 & 201). Its core area is Denmark, Schleswig-Holstein and South Sweden. The horse headed razor became very popular and a sort of emblem of Nordic Bronze Age culture. Carrying the horse’s head the razor should be regarded as one of the

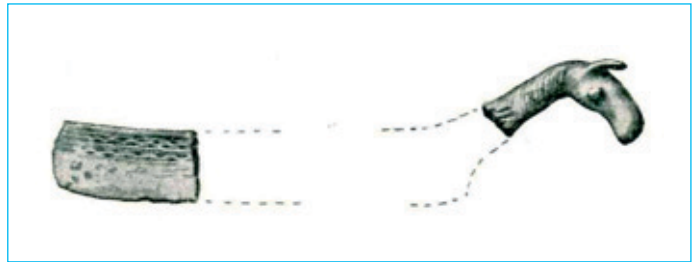


Fig. 8: The northernmost razor with horse headed handle belonging to period II, Todness at Steinkjær, North Trøndelag, Norway. After Rygh 1906.

most important bearers of iconography, the horse referring to the sun horse (the Chariot of the Sun). Probably the razor was given to the young man as marking the transition from childhood to adult status. As part of the initiation rites the young man learned about cosmology and religion. Thus, it would have had an underlying ideological meaning. A man buried with such a razor was – while living – considered as a vital member of the Nordic Bronze Age agrarian societies.

The northernmost razors with the handle in the shape of a horse’s head are found at the broad border zone of the Nordic Bronze Age culture, being representatives of the Bronze Age cultural ‘package’. In a burial cairn in a larger cairn cemetery at the farm of Todness at Steinkjær, North Trøndelag, Norway, the northernmost razor of this type belonging to per. II has been found (Rygh 1906: 11; Rønne 2011: 61-62). In another cairn a sword from the same period was found, with a spiral



decorated hilt. In the same area, at Sparbu, a horse headed razor from Nordic per. III (1300-1100 BC) was found.

In 1962 the northernmost of all razors with the handle in the shape of a horse's head, though from per. III, was found at the excavation of a stone cist in a cairn, c. 15 m in diameter, at the farm of Skjeggesnes, Alstahaug, Helgeland, Nordland, Norway. It contained the skeletal remains of two human beings, a pottery vessel, a bronze pin and a bronze razor with a horse headed handle (Binns 1985: 165-168; Rønne 2011: 62). The cairn is part of a larger cairn cemetery with more than 16 cairns, most of them situated on a

low ridge close to the coast. Even though this cairn is the only one that has been excavated, it is presumed that the others should be dated to the Bronze Age as well. This cairn cemetery, in its landscape setting can easily be compared with similar sites further south. From most of the cairns there is a fine view over the sea, and on the inland side the best agricultural land can be seen (fig. 10). The fields are found in a sheltered position between low ridges dotted with cairns. Due to the mild climate caused by the Golf Stream, even less than 100 km's South of the Arctic Circle, the fields are well suited for growing barley, though hay harvest is preferred today.





The razor from Skjeggnes is not the only Bronze Age find from this rich agricultural area. Not far away, and also situated in a rich agricultural landscape, close to arable fields of today, we find the rock carving fields on the islands of Tro and Flatøy, evidence of Nordic Bronze Age tradition (Sognnes 1985; 1989). Let us here shortly consider the rock carvings of Flatøy with ships, horses and footprints.

Two of the ships on the rock carving are equipped with high, in-turned, stems. The stem-shape, with high in-turned stems, indicates an Early Bronze Age date – the centuries around 1400 BC. This date may seem to be contradicted by the highly raised keel extension at the prow – a fea-



Fig. 10: Skjeggnes, Helgeland, Norway. View over the agricultural landscape seen from the cairn cemetery and close to the cairn, where the northernmost razor was found. F. Kaul photo.

ture characteristic of Late Bronze Age ships (Kaul 1998: 87 ff.). However, a closer examination of the two ships in question demonstrates that the upper part of the keel extension is a later addition. At a certain point there is almost a break in the line of the keel extension, and above this point the technique of pecking has changed. In other words, an Early Bronze Age ship was reshaped into a Late Bronze Age ship (Kaul & Rønne 2011; Kaul 2012). A ship with stems in the shape of low out-turned horse's heads has likewise got a heightening of the keel extension fore. Ships with stems carrying these low horse's heads should be dated to the second half of per. II and per. III of the Nordic Bronze Age (1400-1100 BC)

(Ling 2008: 79 ff.; 2013: 53 ff.). In any case, here we also are dealing with an 'upgrading' of an older ship image. Such observations are of importance on different levels. Firstly, we are informed that there was rock carving activity in both Early and Late Bronze Age. Secondly that rock carving continued also here, among the northernmost rock carvings of the Bronze Age tradition, and the carving respected the old rock carvings just renewing the ships, so that they could be in accordance with the latest fashion or tradition.

On Flatøy two horses are depicted. With their long forward-stretched necks, almost straight bodies, and forelegs turned forward, a dating to the Early Bronze Age, per. II or per. III is most likely. A number of parallels to this horse shape have been found in South Scandinavia in Scania Kivik, Villfara, Tågaborg (Kaul 2004: 291 ff.). Perhaps this particular shape or style of the horse figure's neck and head could be seen as a transmission of the style of shape of the horse's necks from the early Nordic razors?

When going to Sweden the largest density of finds of razors with a horse's head is in Scania, the southernmost Swedish province and part of the core area of the Nordic Bronze Age culture. Here they appear in large barrows situated on high ridges in the landscape often overlook-

Fig. 11: Two horse renderings from the rock carving on Flatøy, Helgeland, Nordland, Norway. With their low, stretched necks a date to per. II or per. III is most likely. Rubbing by G. Milstreu.

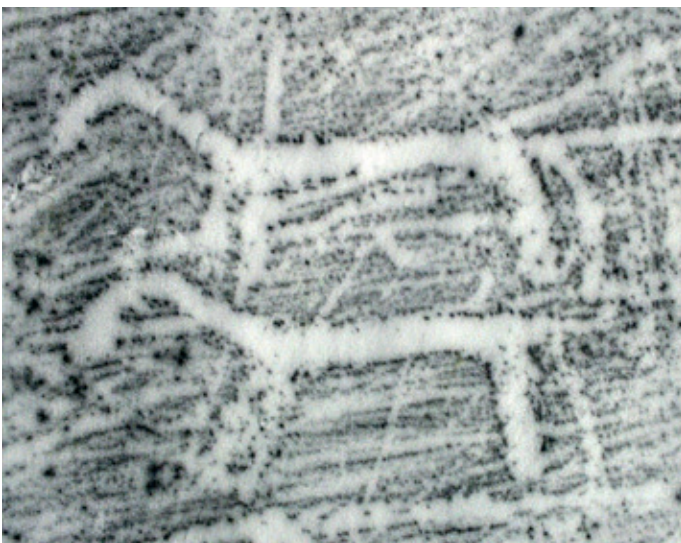




Fig. 12: The razor's handle in the shape of a horse's head, Skivarp, Scania, Sweden. F. Kaul photo.

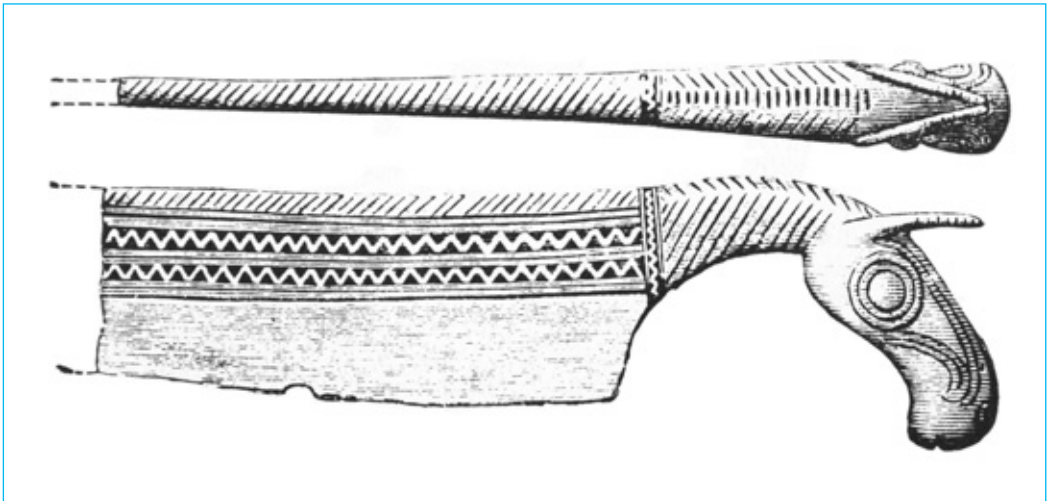
ing the cost. A beautiful razor with a well modelled horse head from Skivarp at the Scanian Baltic south coast provides a good example (fig. 12) (Oldeberg 1974: 106).

In a cairn at Valsta, Närke, Middle Sweden, west of Stockholm, a typical example of a Nordic per. II razor has been found (Montelius 1917: No. 927; Oldeberg 1974: 342) (fig. 13). Together with the razor from Todness in North, Trøndelag, Norway it demonstrates how soon the early razors, from per. II, reached the border zone of the Nordic Bronze Age culture.

### Late Bronze Age razors

The horse's head remained a dominant feature of the Nordic razors until c. 1100 BC, but it still retained its general shape. At the beginning of per. IV, c. 1100 BC, something happened. The handle of the razor in the shape of a horse's head was replaced by a handle in the shape of neck and head of an aquatic bird, this due to influences from the Central European Urnfield Culture (Kaul 1998: 67-68). At first glance it could look as though the dominating role of the old sun horse was seriously challenged. But since both the

Fig. 13: Razor, per. II, from Valsta, Närke, Sweden. Preserved L: 4.5 cm. After Montelius 1917.



horse and the aquatic bird should be considered as somewhat homologous symbols or helpers related to the voyage sun, this change should not affect any serious change of the world view. The horse was not forgotten, it appears still in many iconographical contexts, and in the following period, per. V (900-700 BC), it reappears with certain strength as the handle of the razor.

Of even greater importance is the fact that at the beginning of per. IV the blades of the razors became the canvas for figural decoration, for instance ships, horses, fish, snakes and human-like creatures. The razor became a principal medium for religious art. Here we find what could be considered as a real creative process of the Bronze Age. But still one could pose the question whether this process was fully independent. Perhaps the sur-

face decoration of the Urnfield culture Bronze buckets with the *Vogel-Sonnenbark* motives gave inspiration for utilizing the surfaces of the razors.

It should be underlined that the majority of the razors from the Nordic per. IV and V do not carry any detailed iconography on their blades (except for the handle). The richly decorated razors do not go as far north as the 'more common' razors. The only richly decorated razor from Norway has been found in a cairn in Oppland, Østlandet, South Norway north of Oslo. It is decorated with a ship image, a fish and a bird of prey (Johansen 1981: 50). With its aquatic bird's head handle it belongs to Nordic per. IV, 1100-900 BC. A razor with an almost identical decoration has been found at Farsø, Himmerland, in the Limfjord area, Northern Jutland (Kaul 1998: 244 & kat. No 205.). This

similarity is worth noting, since pairs of almost identical razors are virtually unknown – when the motifs are rather complicated, as in this case (Kaul 2004: 246). Consequently the two razors from Oppland, Norway, and Farsø, Himmerland, could indicate close connections, probably a family relationship. The two men buried on either side of Skagerak may have been brothers. A bit further south in relation to Norway, in Bohuslän, Sweden, a few decorated razors are known.

Probably the northernmost of the Swedish Late Bronze Age is richly decorated razors comes from Rönninge in Salem Parish, Södermanland, WSW of Stockholm (Althin 1945: 225; Johansen & Johansen 1984: 92-94; Kaul 1998: 244). The razor is roughly the same type as the middle Swedish Mälar-lake region per. II razor from Valsta (see above). By its spiral handle, this razor should belong to per. V of the Nordic Bronze Age, but probably very early in that period, c. 900 BC. It is quite curious that the motif on this razor is somehow similar to what is seen on the razors from Oppland and Farsø. Even though probably a little bit later, there might be some sort of a connection?

Finally a recent find of a razor excavated in a burial cairn at Tåby Skola, at Norrköping, Östergötland, should be highlighted (Hörfors 2006). On the blade of the razor two facing snake-horses with

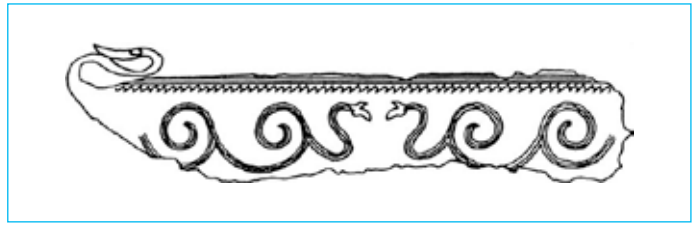


Fig. 14: Richly decorated Late Bronze Age razor, per. IV/V, Tåby Skola, Östergötland, Sweden. Length: 9.5 cm. After Hörfors 2006.

spiralling bodies are seen, to be dated to the border between per. IV and per. V – c. 900 BC. We could also be dealing with two sun-horses, their bodies being spiralled, like snakes. But their heads are definitely that of horses.

In the eastern Baltic area there is at least one Late Bronze Age razor from per. IV or per. V decorated with a ship image, found in a stone cist grave, Jöeläthme and Kongro, Vão, Estonia (Lang 2007: 142 & 159).

### Concluding remarks

The northernmost of all one-edged razors with the handle in the shape of a horse's head comes from Skjeggesnes, North Norway. The southernmost of all one-edged razors with a handle in the shape of a horse's head comes from the Dicte Cave in central Crete, Greece. Even though the Dictean 'razor' was a votive razor for no practical use, it evidences the full shape of the real razor of Late Minoan Crete. So far away from the eastern Mediterranean Skjeggesnes may seem this razor

demonstrates the wide connections and cultural influences of Bronze Age Europe. When the man was buried in the cairn at Skjeggnes between 1300 and 1100 BC the story of the razor's relation to warrior ideals far south had probably been forgotten. Now the razor was customized in a Nordic cultural setting, and new stories as to mythology and ideology became related. During the following centuries the Nordic razor maintained and developed its 'Nordic identity', the surfaces of the blades becoming an important canvas for the pictorial narratives of the mythology of the eternal voyage of the sun.

But still – from the Dicte Cave to Skjeggnes, lines of communication stretched through Europe. Not as direct or unbroken lines, but along a number of places and points, where travellers met. Probably no one from southern Scandinavia ever did visit Knossos or Mycenae personally ... or?

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# The earliest agriculture in central Norway

## – an overview of indications from the Steinkjer area in North Trøndelag

*Frank Asprem*

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There are occasional indications of farming within Middle Neolithic A and Middle Neolithic B (MNA and MNB), as well as Late Neolithic (LN) in central Norway. The indicators consist of more or less vague traces in the pollen diagrams and stray finds of Neolithic axes of funnel beaker and battleaxe types. The most reliable traces of early agriculture are found in the Steinkjer area. Steinkjer is situated by the Beitstadfjord, which is the innermost part of the Trondheimsfjord (fig. 1). Pollen diagrams from this area show grazing indicators already from the Middle Neolithic A (MNA) period, and a double edged battle axe from the same period is also present. From the Middle Neolithic B (MNB) and into the LN and Early Bronze Age (EBA) these traces are, however, something more than just indicators, and one may sense

the contours of a society, where agriculture plays a more significant role.

### **Vegetation history**

The majority of the data concerning vegetational history in central Norway are by-products of studies, where the identification of early agriculture has not been among the main issues. However, there are indeed some interesting results from the Trøndelag region. From *Vassaunet* we have a diagram showing proven pollen of *Rumex*, *Ranunculus*, *Cichoriaceae* and *Urtica*. These species are known to appear in combination with grazing, and the date of Vassaunet diagram's evidence is c 3370-3100 cal BC (Jevne 1982; Sandvik & Selvik 1993). Occurrence of these species proves a more open landscape that *might* be caused by clearing of fields and grazing livestock.

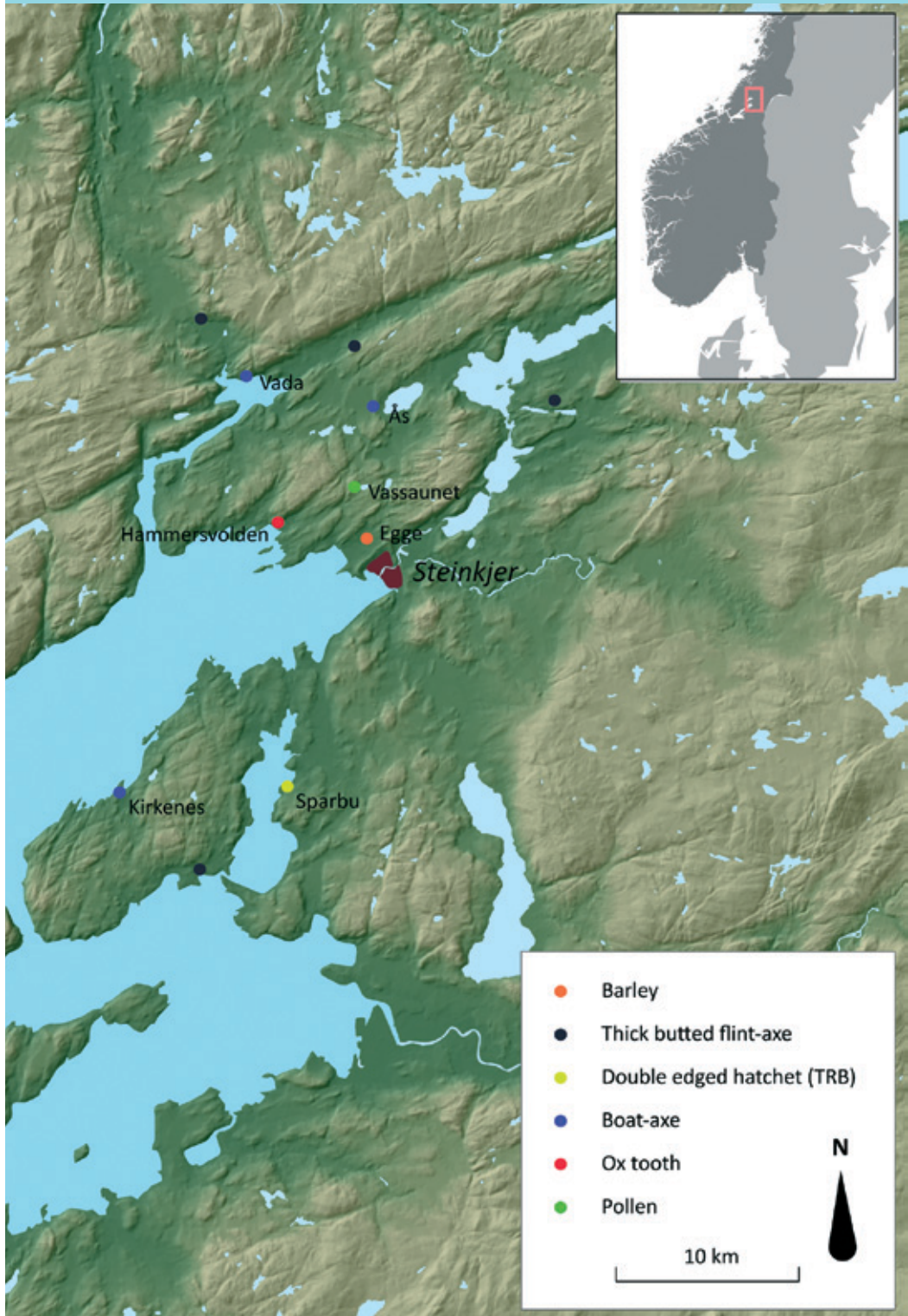


Fig. 1: The sites mentioned in the text.

Vassaunet is situated a couple of kilometres further northwest from *Egge*. The oldest barley grain from central Norway has been found at *Egge*, which is located northwest of the city of Steinkjer. *Egge* is particularly rich in finds from most periods of the Iron Age, and is also mentioned in the Sagas, which describes how powerful chieftains kept house here in the Viking Age (Snorre 1975). The area is interesting, however, also further back in time. Recently, a new main road – the E6 – has been built through the area and the archaeological survey and trial excavations prior to road construction revealed among other things plough marks. In samples taken from the plough marks, the barley grain mentioned was found, and the  $^{14}\text{C}$  date indicate an age of c 1745-1520 BC (Solem 2002; Stenvik 2012). Unfortunately, there are neither drawings of these plough marks and the barley grain, nor photos. However, one should take into account that the date is based on coal fragments from one of the plough marks. The relation between the cereal grain and plough marks is therefore indirect and the date must be treated with caution.

Still, the macro fossil survey and pollen analysis outlines a landscape where the barley field has been situated close to a meadow, well suited for pasture exploitations. There have also been areas with bog vegetation and groves of birch trees.

The pollen analysis describes a mosaic landscape, where different vegetation types have covered relatively small areas (*ibid.*).

### **Domestication**

Not far from *Egge* lies the site *Hammersvolden*. This is a kitchenmidden which was excavated in the years 1910 and 1911. In the midden some highly weathered animal bones were found, including an ox tooth (Rygh 1910; Petersen 1912). The tooth has recently been dated to c 2460-2290 cal BC. This is the earliest proof of domesticated animals in central Norway (Asprem 2012: 161). The bones were determined by Herluf Winge at the Zoological Museum, University of Copenhagen, but most of the material was too decomposed to be identified. Some of the bone material was determined to originate from large mammals, which could either mean ox or moose (Topark dok. nr. 004601).

### **Archaeological finds and future perspectives**

In central Norway we have traces of domesticated animals during the MNB/LNI, and grain in the transition between LNII/EBA. Both results have been recognized within the last few years and correspond to the changes in material culture, which can be observed within the MNA to MNB/LN transitions. At *Sparbu*, in what must be described as the immediate

nearby area, a double edged battle axe was found (T 3160). It was typologically dated to MNA I-II (Østmo 2000: 86-87). On the farms *Vada* and *Ås* in Beitstad, two boat-axes were also found (T 3091 and T 19409), one of which is likely to be made locally (T 3091). A third boat-axe is also likely to be locally produced (T 3195). The latter was found on the farm *Kirkenes*, Inderøy. One does not have to go far beyond these sites to find locations where other boat-axes have been found. A total number of 71 boat-axes are known from Central Norway (e. g. Asprem 2005). Additionally, five thick-butted flint axes are known in Egge/Beitstad's neighboring areas (e. g. Kalseth 2007). The distribution of these axes is concentrated in areas with easy arable land still in use today, thus giving some indication of a changing settlement pattern already during the MN. In this short overview, however, it is not possible to go into detail on all the archaeological finds indicating early agriculture. Such a project would be interesting, and should in addition to axes also include the rich occurrence of both hunter's and agrarian's rock art found in the Beitstad area. For instance the well-known rock-carvings at Bardal is situated only a few hundred meters away from the Hammervolden kitchenmidden, where the ox tooth was found (e. g. Sognnes 2007).

At present the archaeological evidence casting light on early agriculture in central Norway is still relatively sparse. The source material is, however, growing (cf. the barley grain and the ox tooth). Although the barley grain from Egge is indirectly dated to the transition LN/EBA, it clearly demonstrates a strong indication of grain-growing at this early stage. Furthermore, the ox tooth from Hammervolden kitchenmidden show the existence of domesticated cattle in central Norway during the early to middle part of the third millennium BC. During the transition between the Middle and the Late Neolithic we thus have archaeological evidence of both crop cultivation and husbandry in central Norway, though sparse. Hopefully more evidence will come to light in the future.

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# The empirical basis for research on farming settlements in northern Norway 1200 BC – 0

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The warm Gulf Stream makes northern Norway milder than the latitude would otherwise suggest. Even though the winters are dark and long, agriculture and livestock husbandry is possible along large parts of the thin coastline. Northern Norway also marks the northernmost extension of the Nordic Bronze Age complex.

## **Introduction**

Both archaeological and botanical data suggest that the period 1200 BC – 0 marks the definitive adoption of agriculture and husbandry at least up to the Lyngen area in northern Troms (e. g. Johansen and Vorren 1986, Johansen 1990, Sjögren and Arntzen 2013). If one follows M. Zvelebil's model of the gradual adoption of farming among hunter-fisher-gatherer societies, this time period both encompasses the end of the "substitu-

tion phase" as well as the entirety of the "consolidation phase" (Zvelebil 1986).

The primary aim of this paper will be to re-evaluate a number of sites along the northern Norwegian coastline where asbestos tempered ceramics and thin-walled soapstone vessels have been found. Linking these finds to recently excavated settlement sites with house structures, cooking pits and ancient fields, it is argued that the asbestos tempered ceramics and thin-walled soapstone vessels sites represent the key to understanding the geographical extent as well as the significance and cultural affiliation of the early farming communities of the region. Engeløya, which is an island with a particular concentration of Nordic Bronze Age finds, will also be briefly presented.



Date (approximately)	Agrarian activity	Period	Agrarian development
AD 800-1050	••••	Viking Age	Expansion
AD 550-800	••	Merovingian Period	Abandonment
AD 400-550	••••	Migration Period	Expansion
AD 150-400	•••	Late Roman Iron Age	Expansion
100 BC - AD 150	•	Late PRIA / Early RIA	Abandonment
300-100 BC	••○	Late Pre-Roman Iron Age	
600-300 BC	••	Early Pre-Roman Iron Age	Expansion
1000-600 BC	•	Late Bronze Age	
2300-1000 BC	○	Late Neolithic / Early Bronze Age	Expansion?

Fig. 1: Agricultural expansion and abandonment phases in North Norway during the Bronze- and Iron Age (Sjögren and Arntzen 2013: Table 5, freely based on palynological studies, i.e. Vorren and Alm 1985; Johansen and Vorren 1986; Nilssen 1988; Vorren et al. 1990; Vorren 2005, 2009; Sjögren 2009). Relative agrarian activity is: ○ uncertain; • low; •• moderate; ••• high; •••• very high.

### Palaeobotanical studies

From the early 1970s onwards a considerable number of palynological investigations from lakes and mires have played an important role in the research on early north Norwegian agriculture. The most prominent researcher in this area has been the botanist Karl-Dag Vorren, who through several years had a fruitful cooperation with archaeologist Olav-Sverre Johansen (e. g. Johansen and Vorren 1986). Fig 1 shows a summary of the main trends summarized from a number of these studies. The first clear expansion phase can be documented at c 1000 BC with a following phase at c 600 BC. A third and possibly more intense expansion appears between c 300 – 100 BC. With the excep-

tion of the recently excavated Kveøy site, archaeobotanical, osteological and macrobotanical evidence is scarce and without a reliable context within the region (e. g. Sjögren and Arntzen 2013:2, Fig. 2, Arntzen in press).

### Stray finds and rock art indicating the presence of agricultural settlements

Bronzes or moulds of Nordic Bronze Age type have been found at 15 sites in the region (fig. 2). With the exception of one fragment of a soapstone mould for a Bronze Age per. V-VI celt from Sandvika in Tromsø municipality, all of the finds are located from the southern Troms region and southwards. Although the exact de-

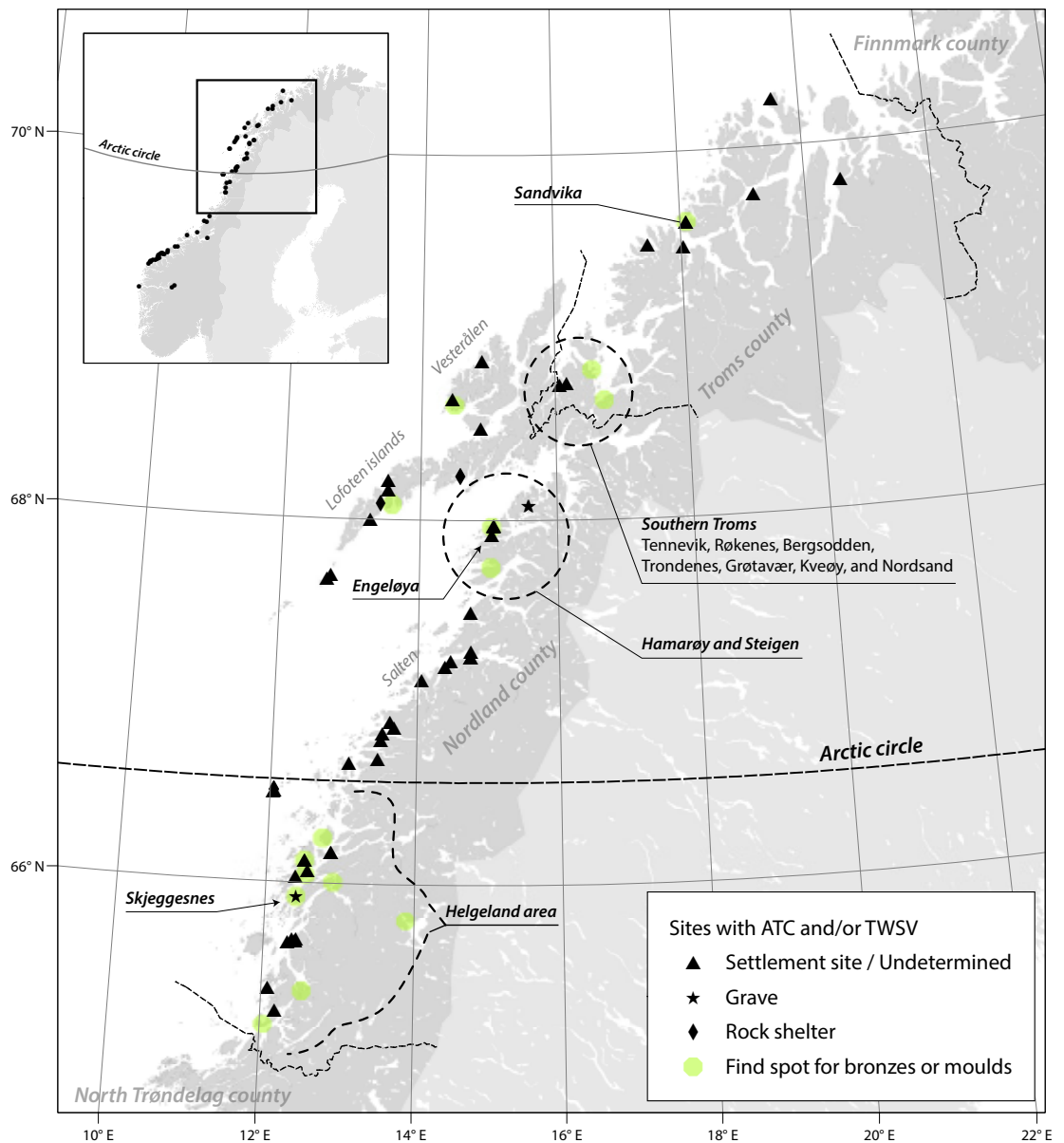


Fig 2: Map of northern Norway showing the distribution of asbestos tempered ceramics and thin-walled soapstone vessels sites along with find spots for bronzes or moulds. Important regions and place names that are mentioned in the text are marked on the map. The upper left overview also shows the distribution of asbestos tempered ceramics sites in middle and western Norway. Data from northern Norway is based on Jørgensen and Olsen 1988, Andreassen 2002, Valen 2007 and own studies. Data from middle and western Norway is based on Ågotnes 1986.

tails surrounding the find context for most of these objects are limited, as many as 12 of the localities can be interpreted as votive finds. Two other finds stem from graves, while the above mentioned mould is the only one that can be directly linked to a settlement site.

A total of 19 sites with artifacts of late Bronze Age type ceremonial stone axes should also be mentioned. The northernmost is located at Tana in Finnmark at over 70° latitude (cf. Marstrander 1983). The common denominator of this group of objects is unfortunately that they all lack a reliable context.

Bronze Age type rock art is found at 12 sites in northern Norway (Valen 2007). With the exception of the two northernmost examples, Kåfjorden and Apana Gård in Alta, all the sites north of the Arctic Circle consist of very few individual depictions. With the exception of the cup mark stone in Steigen municipality, which will be discussed later in this paper, none of the sites north of the Helgeland district can be directly linked to documented agrarian settlements. The neighboring Tro and Flatøy localities within Alstahaug municipality, well south of the Arctic Circle, are as such the northernmost rock art localities that truly mirror those further south in Scandinavia (e. g. Sognnes 1989).

### **The advent of mechanical top-soil stripping**

With the introduction of mechanical top-soil stripping as a method of both archaeological excavation and survey in the early 1980s, 20 years after the method was established further south in Scandinavia, the empirical basis of the study of early farming settlements in Norway has been greatly increased (e. g. Løken et al. 1996). This excavation method was first adopted in western and southwestern Norway inspired by the methods used in South Scandinavia and on the Continent. In northern Norway, however, the first full-scale mechanical top-soil stripping excavation did not take place until 2008 at Kveøy in southern Troms (Arntzen and Sommerseth 2010). Trial trenching as a method of field surveying has however been in use by the county archaeologists of Nordland and Troms since the early 2000s. Following the organization of cultural heritage management in Norway, the county archaeologists are responsible for doing surveys prior to full scale excavation, which in turn are the responsibility of the regional museums. Quite often small scale surveys resulting in finds with great research relevance do not lead to full scale excavations. Survey reports from the counties often end up hidden in an institutional archive as there are no routines for disseminating them amongst scholars. As a considerable number of surveys done

by trial trenching have brought forward remains of prehistoric agricultural settlements, re-evaluating these lesser known sites is an important step to understand the development of early farming in the region further.

### **Results from recent excavations and surveys**

In the following a few relevant excavations and surveys from recent years will be briefly summarized. This is in no way a complete review, but the following sites might provide some insight as to what can be expected when mechanical top-soil excavations are conducted within the North Norwegian farming landscape.

The shortest summary possible concerning the Kveøy excavations is that the results in many respects mirror sites from southwestern and western Norway. Remains of fossil field-layers were documented from the transition between early to late Bronze Age c 1200 BC, and from the late Bronze Age both a three-aisled longhouse and remains of a possible slash-and-burn field were uncovered dated to c 900 – 700 BC. Archaeobotanical investigations, both macrofossils and pollen, show that the crop production during the Pre-Roman Iron Age was more diverse and intense than during the Bronze Age. At Kveøy both a longhouse over 20 meters in length, a utility building of some sort, and several graves dated to c 300 BC

were documented. The remains of fossil arable field of a completely different character than the Bronze Age field were also documented (Sjögren and Arntzen 2013, Arntzen in press).

Nearby the Kveøy site, several county surveys where trial trenching has been used demonstrate that these types of settlement remains are not unique for the region. The Nordsand site, located on an island nearby the city of Harstad, revealed a cooking pit dated to c 1200 BC along with ard marks and possibly also traces of post-holes and fossil field-layers that can be contextually linked to the same phase of settlement (Bunse 2012). The results from this survey are difficult to interpret because the site is located within a drift-sand area. A smaller excavation of a farm mound at Bergsodden in the same region also yielded a cooking pit dated to c 1000 BC (Olsen 2012). <sup>14</sup>C-dates from the Bronze Age are however rare throughout the region. Sites dated to the Pre Roman Iron Age are on the other hand the rule rather than the exception as results from trial trenching surveys. At Berg nearby Kveøy both cooking pits and field-layers dated to the Pre Roman Iron Age have been documented. Similarly Pre Roman Iron Age field-layers have also been documented at the Røkenes farm, just outside of Harstad. Further south, throughout the County of Nordland, many surveys have yielded the

same type of results. These include massive fossil Pre Roman Iron Age field-layers and ard marks that have been documented at Morfjorden in the Vesterålen area (Bjørkli 2009). <sup>14</sup>C-dates to the Bronze Age however, are so far lacking outside of the southern Troms region.

Summing up these results, it is important to highlight the dubious representativity they provide when assessed outside of the context of other data categories. What is reflected is obviously the geographical location of recent economical investments in the region, including everything from the building of new roads, housing projects and not the real distribution of prehistoric agricultural settlements. It is however clear that Pre Roman Iron Age agricultural settlements can be expected all along the coast, at least from the South Troms area and southwards. The Bronze Age settlements are of a somewhat different character than the Pre Roman Iron Age settlements, possibly including a completely different approach to manuring practices and field cultivation, and as such might be harder to document through trial trenching.

### **Sites with asbestos ceramics and soapstone vessels**

Asbestos tempered ceramics have for many years been discussed as a possible link between the northern border of farming and the Nordic Bronze Age com-

plex (cf. Munch 1962, Bakka 1976: 29-38, Jørgensen 1986, Ågotnes 1986, Jørgensen and Olsen 1988, Andreassen 2002). It is important to note that ceramics with asbestos tempering are found within the context of hunter-fisher-gatherer societies in northern Fennoscandia from around 2000 BC and being present until the first centuries AD (e. g. Carpelan 1979, Jørgensen and Olsen 1988). Within this complex technological tradition only one particular type seems to be linked to agricultural settlements. In northern Norway this variety is referred to as “Risvik ceramics”, named after a site in the Helgeland area, while a very similar variety appearing within the same types of contexts in middle and western Norway simply is referred to as “asbestos ceramics”. It should be pointed out that the typology most certainly can be debated and that the internal variation is considerable (Ågotnes 1986:108-114, Andreassen 2002: 50-62). Such a discussion is nevertheless outside the scope of this paper, and both the northern and southern type will in the following be referred to as asbestos tempered ceramics.

Another find category that shares many of the contextual qualities of the asbestos tempered ceramics is the thin-walled soapstone vessels. This type is clearly discernible from later medieval types, and can in general be dated to the late Bronze Age and the Pre Roman Iron Age. Context-

tually this particular kind of soapstone vessel also has a tendency to appear at the same sites as the asbestos tempered ceramics (Møllerup 1960; Pilø 1989).

### **Contexts**

At present 40 different sites with asbestos tempered ceramics and 20 sites with thin-walled soapstone vessels are known within northern Norway, fig. 2. On eight of these sites both categories of finds have appeared together. When it comes to the asbestos tempered ceramics especially one grave find is of special importance when it comes to a possible affiliation with Nordic Bronze Age. A professionally excavated burial mound of 20 meters in diameter at Skjeggesnes in Alstahaug municipality, contained the remains of two persons, as well as asbestos tempered ceramics, a razor with a horse head handle and a bronze pin that probably should be dated to Bronze Age per. III (Bakka 1976:26). The only other grave find with both asbestos tempered ceramics and dateable Nordic bronzes is from Røkke in North Trøndelag and can most likely be dated to Bronze Age per. II (Bakka 1976:30-31). In addition to these graves there are at least four burials south of Nordland, where asbestos tempered ceramics have been found and the burial customs clearly indicate Nordic Bronze Age. One burial of this type is also known from northern Norway. A cairn with a stone cist that was excavated in the late 1960s

at Uteid in Hamarøy municipality contained nothing but a few shards of asbestos tempered ceramics (Helskog 1967).

Anne Ågotnes (1986) noted in her review of the asbestos tempered ceramics from middle and western Norway that the finds have a clear connection to agriculture. Out of her 30 sites, of which five overlap with the present study, thin-walled soapstone vessels were present at 12 and ard marks were found at four. In addition to this she noted that the sites in general were located near arable sandy soils, and that Bronze Age burials were in close proximity throughout her research area (Ågotnes 1986:115f).

The results from surveys and excavations that have taken place the recent years clearly indicate that also the northern Norwegian sites can be directly linked to agricultural settlements. Of the northernmost sites this includes Kveøy where asbestos tempered ceramics were found in two post-holes belonging to the largest Pre Roman Iron Age longhouse. Just a few kilometers away, at Hemmestad, excavations of an early iron smelting site, possibly dated as far back as 600 BC has also revealed asbestos tempered ceramics (Jørgensen 2011:99-107). Although a very limited excavation area, the presence of several cooking pits supports an interpretation as a settlement site. During a similarly small scale excavation in the

Vesterålen area, just south of southern Troms, asbestos tempered ceramics have been found in context with cooking pits, post-holes and ard marks, although it should be noted that no <sup>14</sup>C-dates exist (Schanche 1990). At the Skålbunes site, further south in the Salten area, asbestos tempered ceramics were uncovered in the wall ditch of a Pre Roman Iron Age house and in relation to both a fossile field and cooking pits (Arntzen in press). Close to Skålbunes, in connection with a survey at Ilstad, asbestos tempered ceramics were found in an area with cooking pits and post-holes dated to the late Pre Roman Iron Age (Johansen 2002). Also at Nordtun in Meløy municipality asbestos tempered ceramics have been uncovered in an area with post-holes, ard marks and cooking pits (Herstad 2009). No <sup>14</sup>C-dates exist for this site, but the presence of a flint scraper might indicate Bronze Age.

In addition to these seven sites, the context for nine finds can be described as “drift-sand areas with fireplaces”. The same description is also given for 12 of the 30 southern sites (Ågotnes 1986:106). The asbestos tempered ceramics and thin-walled soapstone vessels from most of these sites have come to light from amateurs. The nature of drift-sand areas is obviously that the local topography changes rapidly. The shifting sand also complicates sites with multiple period settlements. The observation of fireplaces

that very often follows the amateur’s description of the drift-sand sites is probably significant in their interpretation. It should also be noted that the discrimination between cooking pits and fireplaces can be difficult for professionally trained archaeologists, and probably even more so for amateurs.

During field work in the summer of 2012, I visited a number of the drift sand areas in Nordland that hadn’t been subject to professional excavation. When it comes to landscape, the striking common denominator for most of these sites was indeed their location within areas nicely suited for agriculture. One such site at Fjære in Bodø municipality, was located in the middle of a present day grass field. Although the area was quite disturbed following the modern clearance of the fields, two test pits were dug. No finds were uncovered, but charcoal particles were evenly distributed within the sandy subsoil, possibly indicating prehistoric cultivation. Just south of the city of Bodø two similar sites were visited, Seivåg and Seines located on the island Straumøya, both with a striking location on the best arable land within an otherwise swampy area.

### **Engeløya in Steigen – A focal site during the Bronze Age?**

Engeløya in Steigen municipality is particularly interesting when discussing the

**The "Cup mark stone" at Sandvågmoen, Engeløya**  
 Laskestad Prestegård (farm no. 747), Steigen municipality, Nordland county, ID 57107  
 Original tracing by C. Nordby and B. Høiberg 18.09.2001.  
 JEA, Tromsø University Museum - University of Tromsø

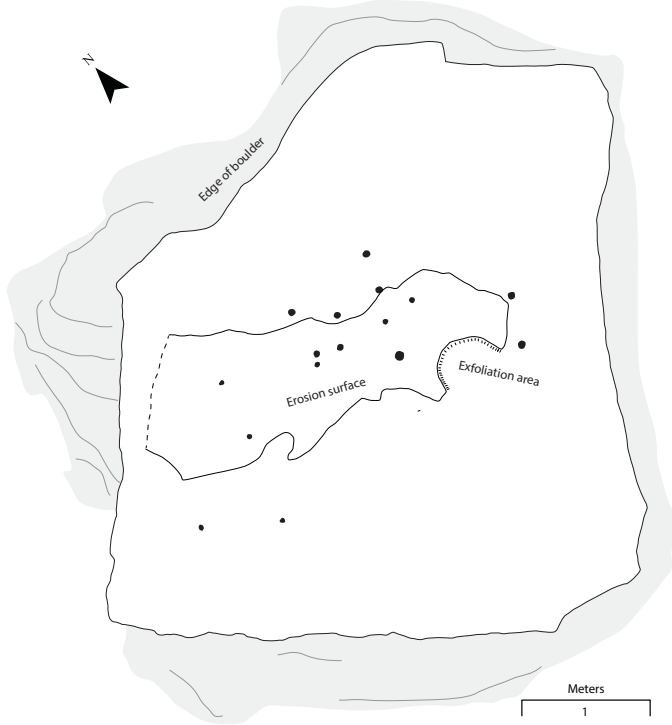


Fig. 3: Tracing of the cup mark stone at Sandvågmoen.

Bronze Age settlements in northern Norway. The island, which has an area of c 70 km<sup>2</sup>, represents one of the densest and richest find areas for early to late Iron Age graves and settlements north of the Arctic Circle (Moltu 1988). The local climate is mild for the region; in fact the world's northernmost hazel forest is located on the southern side of the island. Of all the find categories that so far have been mentioned concerning early agricultural settlements, bronzes, rock art, asbestos tempered ceramics and thin-walled soapstone vessels are all present at Engeløya. The only thing that is miss-

ing from the equation is a complete settlement site.

The cup mark stone, located at Sandvågmoen at the outskirts of a present day infield on the southern side of the island, is clearly within the Nordic Bronze Age tradition. The boulder itself has a completely flat surface and measures c. 3,8 x 4,6 meters (fig. 3). The 16 cup marks that are carved into the surface vary from six to four centimeters in diameter, while their depth ranges from c. two to half a centimeter.

In the Bø area on the northern side of the island we find the rest of the sites that can be linked to Bronze Age agricultural settlements. This includes the only certain burial mound with Nordic bronzes north of Skjeggnes. The finds came to light by the hands of a farmer in 1903 while he was excavating a cairn that previously had been converted into a potato cellar (fig. 4). The find consists of some undecorated tweezers as well as a double stud probably belonging to Bronze Age per. IV (Engedal 2010:47, 49). Another grave that possibly can be dated to the Bronze Age is a monumental ridge placed cairn of 20 meters in diameter, located strategically at Grådusan on a height with outlook towards the Lofoten Islands in the west (fig 5.). The cairn has never been excavated, and was somewhat damaged in the top when turned





Fig. 4: Above: Photo showing the view from the now removed Bronze Age burial cairn at Bø. The drift sand area at Bøsanden is located behind the red barn, just below the mountain. J. E. Arntzen photo. Below: Photo dating to the early 1900s showing the location of the Bronze Age cairn / potato cellar. It can be seen left of the white building in the middle of the photo. Courtesy of Rolf Lossius.

into a machine gun post during the Second World War. Its proximity to other Bronze Age finds as well as its general resemblance to middle and western Norwegian Bronze Age burial customs nevertheless suggests that the cairn could be of Bronze Age origin.

The most interesting site when it comes to actual settlement remains is the Bøsanden drift-sand locality situated near the seashore north of the above mentioned burials. Here both asbestos tempered ceramics and thin-walled soap-

stone vessels have been found, as well as large amounts of fireplaces, or perhaps more likely cooking pits. During the summer of 2012 I visited this locality to try to establish whether it could be possible to document intact cultural layers or not. Unfortunately the results were negative, as the area in recent years has been completely lacking turf cover. The

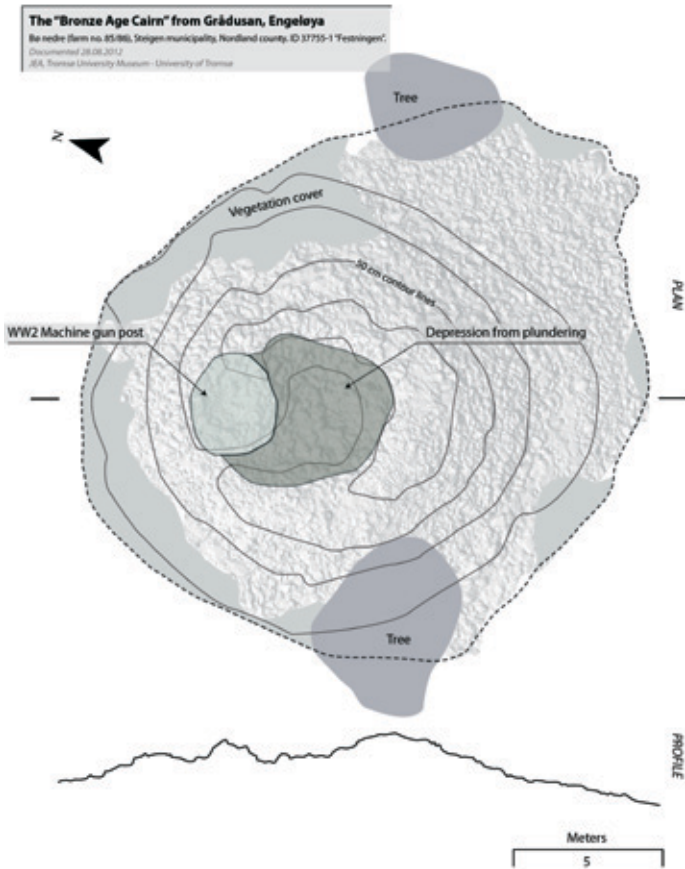


Fig. 5: Plan and profile drawing of the ridge placed cairn at Grådusan.

local topography was therefore totally transformed since the last observations of fireplaces were done in the 1980s. Nevertheless it seems clear that this site represents a settlement site that can be linked to Bronze Age and Pre Roman Iron Age agriculture. As an anecdote it should be mentioned that during the field survey a local farmer, Thor Holand, took me to see his ripening barley field, located just above the Bøsanden locality. The weather of this summer was terrible with above average rainfall and far be-

low average temperatures. Nevertheless, during my visit in the end of august the barley seemed to do far better than the other crops.

## Conclusions

When seen in connection with the recent results from excavations and surveys it is clear that the asbestos tempered ceramics and thin-walled soapstone vessels sites in many cases should be interpreted as indicating agricultural settlements. However, many nuances concerning these localities have been left out in this paper. There is a definite variation between how the sites are located throughout the region, and without further investigations it is difficult to assess to how large a degree these settlements truly mirror southern Bronze Age and Early Iron Age settlements. Another factor that has not been discussed is the presence of both slate artifacts and ceramic types linked to northern and eastern hunter-fisher-gatherer societies at several of the sites. The present study must merely be understood as a preliminary overview as to what kind of empirical basis actually exists for investigating these early agricultural settlements further. It is clearly possible to get beyond the stray finds and their limited context.

The next step in this research will be to excavate one of the most marginal asbestos tempered ceramics and thin-walled

soapstone vessels site within the study area, namely the Sandvika site in Tromsø municipality (Arntzen 2013). This site includes, in addition to finds of asbestos tempered ceramics and thin-walled soapstone vessels, a fragment of a mould for a Nordic Bronze Age celt as well as at least one fireplace. It is located within a marginal area for agriculture, but pollen analysis confirms that arable fields were present in the area during the late Bronze Age.

Compared to areas such as Engeløya, which might be considered to be more closely connected to the Nordic Bronze Age tradition than the northernmost sites, it must be expected that the marginal localities have closer ties to hunter-fisher-gatherer societies to the north and east.

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Heel shaped chambered cairn at Punds Water, Shetland. D.L. Mahler photo 2011.



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Part of Jarlshof, South Mainland, Shetland. Photo D. L. Mahler 2012.

**The Border of Farming  
– Shetland and Scandinavia  
Neolithic and Bronze Age  
Farming**

Backcover:

Participants in the excursion during  
September 2012 in front of the Øm  
passage grave:

From left Val Turner, Johan E. Arntzen,  
Flemming Kaul, Carol Christiansen,  
Søren Diinhoff, Matti Leino, Jenny  
Murray, Alison Sheridan, Joakim  
Goldhahn, Lauren Doughton, Karen  
Margrethe Hornstrup, Ditlev L. Mahler



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– Shetland and Scandinavia**

**Papers from the symposium  
in Copenhagen  
September 19<sup>th</sup> to the 21<sup>st</sup> 2012**