Steatite in Norse Shetland

By Simon Buttler

1. Introduction

One of the more striking features of the Norse settlements in the north Atlantic area is the general absence of pottery from Viking Period sites. Various materials, such as wood and leather, were used for containers in place of ceramics but the most important substitute in Shetland was steatite. Steatite, or soapstone, is a soft rock with talc as its primary constituent and carbonate minerals making up most of the remainder. The talc component makes it easy to carve with metal tools or tools of harder rocks, and gives it a high resistance to heat. Steatite is thus an ideal raw material for the manufacture of cooking utensils. This paper aims to provide an overview of the steatite industry in Norse Shetland (1). Fig. 1 shows settlement and quarry sites mentioned in the text.

2. The history of the Norwegian steatite industry

Steatite was used in the Neolithic period in Norway in carvings and as temper for pottery, and in the Bronze Age as a raw material for metal workers' moulds, but it was not until the Celtic Iron Age that vessels were first made from the rock. Steatite vessels of the Celtic and Roman Iron ages and the Migration Period generally copy the forms of contemporary pottery (2) and differ from the later Viking Period bowls (3). Little is known about the organisation of these early industries, al-

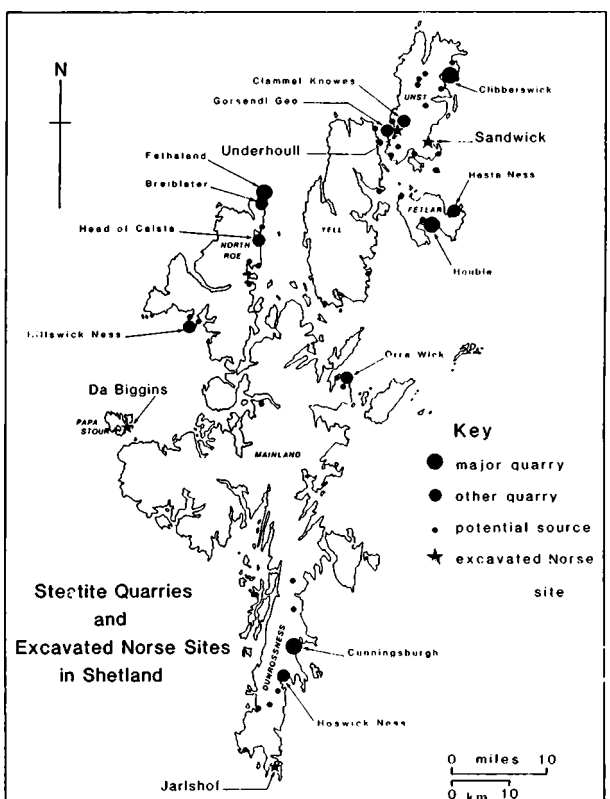

Fig. 1. Distribution of steatite quarries, potential steatite sources and excavated Norse sites in Shetland. (Drawn by Mr. D. T. Moffat).

though one Celtic Iron Age quarry has been identified by excavation (4).

In the Viking Period, the steatite industry flourished and steatite wholly supplanted ceramic pottery in most parts of Norway for several centuries. According to Hougen (5) the only potting in Viking Age Norway was on a limited scale in Rogaland. In eastern Norway, pottery finds from this period are of imported wares, from the Rhineland, the Slav countries and other parts of northern Europe.

The reasons behind the shift from pottery to steatite are not understood. However, once potting was abandoned there seems to have been little interest in a revival, as nearly all the pottery used in the Middle Ages was imported (6). The use of steatite gradually declined in the Mediaeval Period, while pottery became more common. In towns, steatite does not seem to have been used much later than the eighteenth century but in some rural areas steatite vessels were made almost up to modern times (7).

3. The prehistoric use of steatite in Shetland

Steatite was exploited on a small scale in Shetland from the Neolithic Period for a variety of artifacts such as vessels, whorls beads and lamps. Finds of prehistoric steatite objects have also been made in Orkney, where the rock does not occur naturally. The most probable source of these artifacts is Shetland, though it should be stressed that they are few in number and do not provide evidence for a significant traffic in steatite between the island groups.

Another use of steatite in prehistoric Shetland was as temper for pottery. Steatite tempering occurred at all periods to some degree, although never to the exclusion of non-steatiferous fabrics.

A full summary of the sources relevant to the study of steatite in prehistoric Shetland may be found in an earlier work by the author (8). The main point as far as this paper is concerned is that in terms of the numbers of artifacts produced, the most important use of steatite was as an additive to pottery. Even this use appears to have declined in the late Iron Age, as shown at Jarlshof and Clickhimin (9). A late Iron Age midden at Clibberswick, Unst, contained little steatite tempered pot, despite being adjacent to one of the most important sources in Shetland (10). This is in marked contrast to the boom in the Shetland steatite industry in the years following the Norse colonisation.

4. Steatite and the Norse settlement of Shetland

Orkney and Shetland are thought to have been settled by the Norsemen in the years around the beginning of the ninth century. The exact date and manner of the colonisation have been much debated but the most thorough analysis remains Wainwright's (11) and Crawford (12) argues that more recent alternative explanations fail to account for all the available data. The reader is therefore referred to Wainwright for a full discussion of that turbulent period.

It is striking that very little of the culture of the pre-Norse inhabitants survived the invasions of the Northern Isles. The best indication of this comes from placenames, almost all of which (99% in Orkney, according to Marwick) are of Norse origin (13). The material remains found at Viking Period sites are also distinctively Norse, with continuity of indigenous Iron Age artifact types being exceptional. In other words, the Scandinavian settlers brought their own ways with them and maintained strong links with their homeland. This included a preference for steatite over pottery, despite the fact that there must have been opportunities to absorb the ceramic traditions of the

natives. The only Viking Period site in the North Atlantic area where this prejudice was quickly overcome is the Udal, North Uist, in the Outer Hebrides, where the colonists adopted the pre-existing pottery tradition (14). In all the other Norse colonies, pottery is absent from Viking Period settlements. Steatite was used where locally available – in Shetland and Greenland – and was exported to other areas in small amounts. Otherwise, domestic vessels must have been made from perishable materials.

5. Steatite artifacts

This section summarises a more complete treatment which may be found in Buttler (15).

Lamps

Several types of steatite lamp are known from Norse Shetland. Some are no more than hollowed vessel sherds or fragments of line sinkers. Another group comprises flat rectangular dishes. However, the most characteristic lamp of the Norse Period is a shallow oval, perforated at each end for suspension and varying in size between 10 and 20 cm long, 8 and 10 cm broad and one and two cm deep. (fig. 2).

There are few parallels between Shetland Norse lamps and those found in the other colonies and Norway. Handled lamps are common in Norway (16) and another group from Oslo and Bergen consists of well made, freestanding lamps, usually rectangular. A lamp of this type was found at Bragista, Papa Stour, and is now in the Shetland Museum on loan. A third Norwegian group includes several varieties of hourglass-shaped lamps, which are well known from twelfth and thriteenth century deposits in Bergen. An example of this group was found in a Late Norse farmstead at Sandwick, Unst (17).

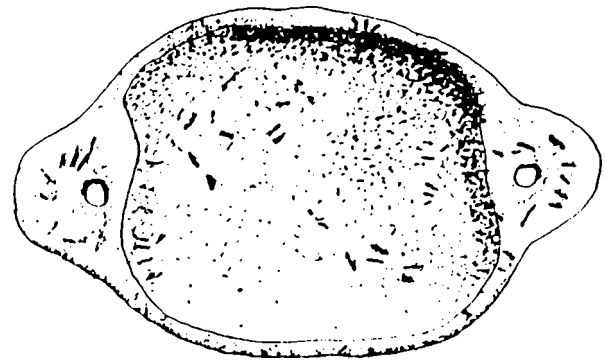

Fig. 2. Typical form of Shetland hanging lamp, x ½. (After Hamilton (1956) plate XXXI, 6).

Baking plates

Scored slabs of steatite were used as baking plates, for cooking flatbread, in the Late Norse Period in Shetland but there is no evidence for their use earlier. Similar round or oval slabs came into use in Norwegian towns around the beginning of the twelfth century (18). As well as steatite, fine grained laminar schists were also used for these artifacts. The schists are harder than steatite and petrologically quite different, although the two rock types are sometimes confused in the archaeological literature. Suitable schists occur in Shetland but no evidence has yet been found that they were exploited for the manufacture of baking plates. On the other hand, a number of such quarries are known from Kvinnherad, Hardanger, Norway (19).

Loomweights

Steatite loomweights are common finds at Norse sites in Shetland. The usual form is roughly teardrop shaped, with an apical perforation, but this varies considerably, as does the care with which they are made.

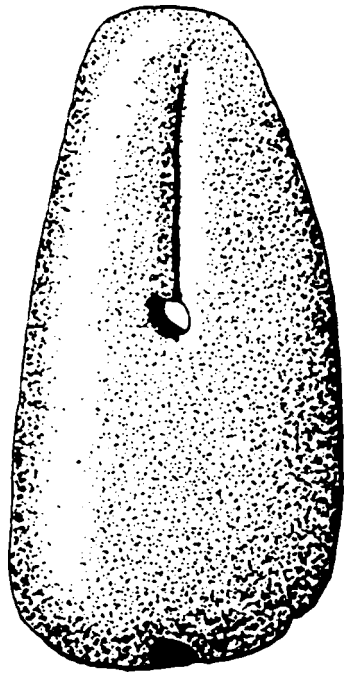

Fig. 3. Typical linesinker, x ½.

Perforated vessel sherds also appear to have been used as loomweights.

Norwegian loomweights from the Viking Period are similar to those from Shetland, although they are often decorated whereas the Shetland weights are usually plain. Petersen list over four hundred weights from Norway, mainly grave finds (20).

In the middle and later phases at Jarlshof and at the Late Norse site of Da Biggings, Papa Stour, loomweights made by piercing flattened schistose pebbles were used instead of steatite weights. This may be a response to the absence of a local steatite sourse, combined with the ready availability of easily pierced pebbles, as Hamilton suggested in explanation of the Jarlshof finds (21).

Linesinkers

Linesinkers are found at most Norse sites in Shetland, particularly in Late Norse deposits. Their shape varies but the most characteristic is an elongate teardrop, with a perforation about one third of the distance from apex to base and a groove running from this hole over the apex. The grooved side is usually convex and the reverse, concave (fig. 3). Norwegian parallels for these steatite sinkers are comparatively rare but, like the Shetland examples, they tend to be Late Norse (22).

Spindle whorls

Figure 4 shows some of the steatite whorls from Norse Jarlhof. The same range was found among whorls excavated at Underhoull, Sandwick and Papa Stour. Steatite whorls have also been found in Norse sites in Orkney and Greenland (23). According to Petersen, the commonest shape for Norwegian Viking Age spindle whorls is plano-convex, but conical, flat and other forms are known (24). As well as steatite, whorls made from other rocks, glass, lead, baked clay and even the heads of ox femurs were used in the Norse colonies.

Drill whorls

The Jarlshof steatite collection includes four large whorls between 6.2 and 9.1 cm in diameter and 194 to 636 g in weight. They are like spindle whorls in all but size. Hamilton (25) calls them weights but though they are not unlike the baked clay loomweights found in Anglo-Saxon settlements, it is far more likely that these large whorls come from a form of drill still used in Iceland, Faroe and parts of Norway in the last century. This consisted of a shaft with a bit attached to its

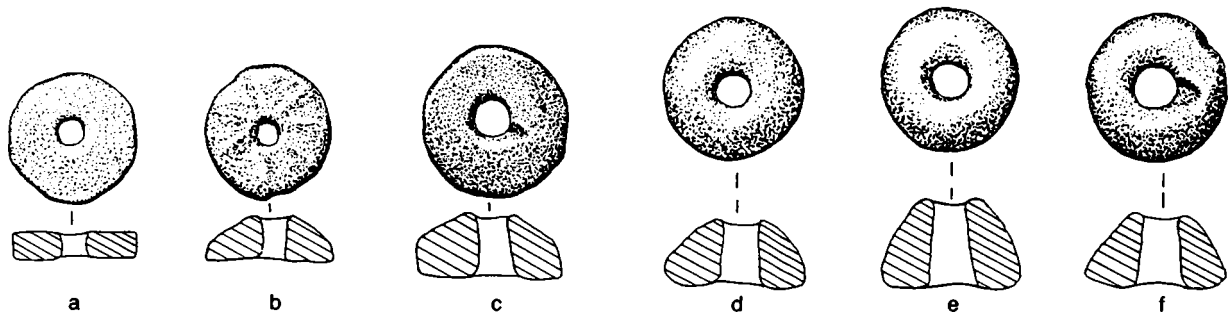

Fig. 4. Range of spindle whorls found at Jarlshof, approximately x ½. (After Hamilton (1956), various figures).

lower end and a whorl mounted just above the bit. A horizontal rod was fastened to the upper end of the shaft by two lines. By winding the lines around the shaft and pushing the rod downwards, the drill could be made to revolve with considerable speed, on the same principle as the 'whizzers' children make today with cardboard and string. (fig. 5).

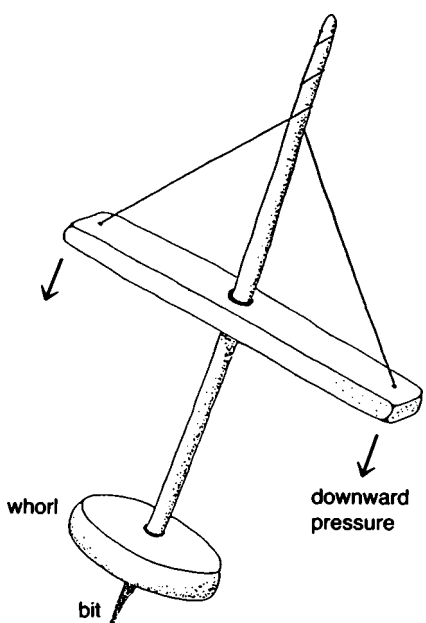

Fig. 5: Sketch showing the use of a drill whorl.

Metalworking apparatus

Steatite moulds for bar ingots, crosses and Thor's hammer amulets have been found in many sites in the Norse Atlantic colonies and at urban centres such as Hedeby and Dublin. The high thermal capacity of steatite makes it ideal for use in metalworking and it was probably greatly valued by smiths. Some moulds appear to have been purpose made but reused vessel sherds and fragments of other artifacts are more common.

Steatite was used in Scandinavia for bellows shields and tuyères (26). There is, however, no certain example of either of these artifacts from Norse Shetland.

Trinkets and toys

In addition to the above, objects such as beads, rings, bracelets, minature querns and minature bowls were sometimes made from steatite. The tiny querns and vessels are usually interpreted as children's toys and

Fig. 6. A typical Shetland vessel sherd from Jarlshof.

have been found at Jarlshof, Sandwick and Underhoull. Gaming boards were also manufactured from steatite, along with small discs which could have been used as playing pieces. Although of considerable interest from the social point of view, all these artifacts were of minor importance to the steatite industry.

Vessels

The following is largely based on an examination of the vessel fragments from Jarlshof, now in the National Museum of Antiquities of Scotland, Edinburgh. Much of this material is roughly made and coarsely finished, so that detailed classification on the basis of rim form, wall angle etc. or into well defined stylistic groups (27), as has been attempted with some success on Scandinavian finds, was not possible (28).

The Jarlshof vessels were therefore grouped as "small round", "large round", "oval", "rectangular" and "handled" types, corresponding to Hamilton's classes I to V, published in the site report (29). Visual assessment of size, thickness and quality provides at quick and effective discrimination between classes. A few rimsherds were sufficiently large to allow estimation of vessel diameter. Three small round vessels averaged 12 cm across, while twenty large round bowls averaged 38 cm. There was some difficulty in distinguishing sherds from oval vessels from those of large round and rectangular forms, but the oval type is clearly rare. Rectangular vessels were easily identified by their straight walls and the generally low standard of finishing, with toolmarks still visible at right angles to the rim on both surfaces.

All fragments of handled vessels identified included a portion of the handle. It is therefore likely that body sherds from this group have been wrongly assigned to the small round type. However, handled vessels are an uncommon artifact type, confined to the first three phases at Jarlshof (9th-10th centuries) and these errors will be of minor importance.

The quality of workmanship, as demonstrated by surface finish on the Jarlshof vessels is as follows. 46% of sherds are rough inside and out, 7% on the inside only, 20% on the outside only and 27% are smooth on

both surfaces. Small round bowls appear to have been better finished in general than other groups, while rectangular vessels tend to be worst made. Surviving toolmarks are mostly uneven, not worked in a regular pattern as may be seen on some Norwegian bowls. The majority of Shetland vessels were worked skillfully but without much attention to fine finishing, thus producing a functional object with the minimum of effort. A typical unsmoothed sherd from Jarlshof is illustrated in figure 6.

Hamilton gave the Jarlshof bowls the following broad chronology, based on the site stratigraphy. Small round vessels and handled bowls are most probably from the ninth or early tenth centuries and rectangular vessels from the late eleventh century or afterwards. Larger round vessels occurred throughout the Norse levels. These dates rest on the midden chronology, established using combs and other finds, not on direct comparisons of Shetland and Norwegian bowls.

In both Shetland and Norway, the most common vessel form is an undecorated, round bottomed bowl. Oval, or trough shaped, and handled vessels also occur in both places. Rectangular vessels, however, appear to have been a local development in Late Norse Shetland. Furthermore, the straight sided, round bowls characteristic of medieval Norway are rarely found in Shetland.

Shetland steatite bowls tend to be more crudely made and are less likely to be decorated than their Norwegian couterparts. There are a few stylistic parallels between the areas but these form a very small fraction of the total number of steatite vessels from Shetland. For example, a number of rimsherds found at Jarlshof match closely with rims excavated at Hedeby and illustrated by Resi (30). There are also a few sherds falling into the types identified by Lossius in the finds from Borgund (31). One of these is from the Clibberswick quarry in Unst and provides evidence that Norwegian styles were sometimes copied in Shetland.

7. The basic method of vessel production

Nearly all the indications at quarries in Shetland and Norway are that they were worked by removing blocks of steatite from the living rock and hollowing them into bowls. The standard method of shaping a vessel was to cut a groove around its outline, deepening and widening the cut until exterior of the bowl was complete, with the base outermost. The blank was then removed from the outcrop by wedging or cutting with a chisel or pick.

8. Quarrying in Norway

In his comprehensive survey of Norwegian quarries, Skjølsvold summarised the work of earlier authors as well as visiting and describing many sites himself (32). Since that time he has examined a number of additional quarries (33). Three broad categories of quarrying technique may be distinguished in his work, although they are not formally separated by him. These categories are not mutually exclusive – in fact, most quarries exhibit more than one – but as each represents different possibilities for interpretation they are dealt with separately here.

The first technique may be termed "open face" quarrying, in which the working takes place on the outer surface of an outcrop with a minimum of excavation. This is the simplest procedure and it is probable that most of the traces now remaining on the quarry face are from the latest phase of operations. Open face quarrying is widespread in Norway.

The second technique is "pit quarrying", in which

small pits are sunk a few feet into the rock, vessels being worked in the process. At Brennepåsen, Akershus, very little steatite is exposed at the surface but Skjølsvold found 29 pits in a region of hillside about 350 m long. Spoil had been heaped around the pits, partly refilling many of them so their depths could not be determined without excavation. Skjølsvold cleared one pit, 4.5 m long, 1.5 m broad at each end and 1 m broad in the centre. A partition 60 cm high and 40 cm (maximum) thick divided the pit into two roughly circular parts, 2 m and 3 m deep. The pit walls were covered with the marks left by vessel manufacture.

Partitions subdividing the large pit quarries have been found quite frequently at Brennepåsen and elsewhere. It seems that steatite was not being removed unless absolutely necessary, even though working space inside the pit was restricted. Skjølsvold suggests that narrow holes might be seen as the best means of rapid access to the best rock, beyond the limit of weathering.

An alternative explanation for the use of pits is that each was the domain of an individual or family, owned in the same way that present day Shetland crofts have their own peat banks. The smallness of most pits then makes sense, as only a few vessels would be produced at any one time to satisfy the needs of a single household. In these circumstances there would be no incentive to expand the pit laterally for more efficient large scale working.

The third technique involves pits deep enough to require the use of a ladder for access. An example at Østre Myre, Vegarshei, Aust-Agder is almost 7 m deep and might be better described as a mine than as a quarry. Some quarry areas include small man made caves which are essentially small adits or drift mines (34). It is probable that mining for steatite was confined to the professional aspect of the industry, rather than the domestic.

9. Quarrying techniques in Shetland

Two of the styles of quarrying mentioned above are found in Shetland. The most common is open face working, which may be seen at all known quarries with the exception of Clammel Knowes, Unst, where no outcrop of steatite is now visible. Face working is the sole method suggested by the surface evidence at all other sites except Cunningsburgh, where areas of hollows surrounded by upcast waste material occur. The hollows bear lusher vegetation than is typical on the hillside there, indicating the presence of water retaining subsoil features such as pits. Ritchie (35) considered the quantity of spoil around these pits to be too great for the size of the silted up holes now visible and speculated that shafts of considerable depth may be concealed beneath them. It is, however, unlikely that a deep shaft would be filled as completely as the Cunningsburgh holes appear to be. It is in any case impossible to assess the depth of the pits or the quantity of waste around them without excavation. A clear instance of mining for steatite is unknown in Shetland.

A few general points may be made concerning the methods used at the Shetland quarries.

Firstly, none of the larger quarries has an overall appearance suggesting that the whole site was worked systematically. Individual outcrops may show signs of logical and economic use but there is never evidence for more general organisation.

A good example of well planned working is at Breibister, North Roe, where a small coastal outcrop has been quarried intensively, undercutting the cliff. Vessels were removed from the undercut edge, allowing the groove at the back and sides to be kept to a mini-

Fig. 7. Bosses with irregular profiles where vessel blanks have been removed from one direction only. Catpund Burn, cunningsburgh.

mum width. A similar technique may be seen at Gorsendi Geo, Unst and on one of the outcrops by the Catpund Burn, Cunningsburgh. In the latter instance, the vessel blanks were detached horizontally, rather than vertically, but the effect is much the same. Figure 7 illustrates this outcrop at Cunningsburgh and shows a disadvantage of the method. The remaining boss curves sharply upward away from the direction of chiselling, indicating that an irregular blank was removed, which would have required trimming to produce an evenly shaped bowl. Working from all sides would allow greater control and reduce the frequency of this type of error.

Figure 8 shows another example of economical working at Cunningsburgh. Rectangular blocks of steatite have been skillfully cut, so that in most cases

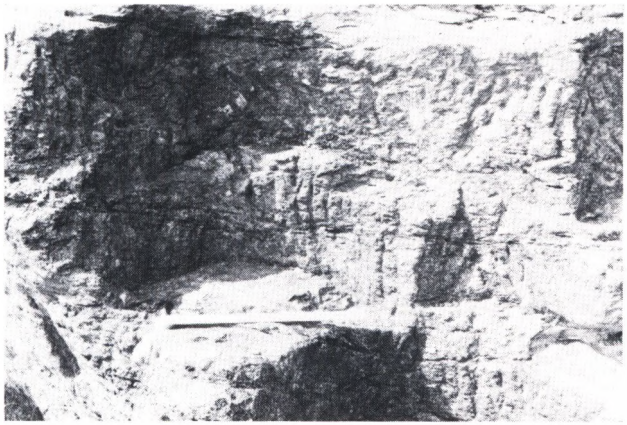

Fig. 8. Area where rectangular blocks of steatite have been removed. Catpund Burn, Cunningsburgh.

two edges of the block were at the outer edge of the outcrop. As in the above cases, this would facilitate removal of the blank. The workmanship is so neat that it is not certain whether vessels were being made or whether the blocks of steatite were for another purpose.

At Clibberswick, excavation revealed freshly preserved quarried surfaces, which provided a great deal of information on working methods (36). Of particular interest was the way in which the major foliation in the rock was used as an aid to the removal of blocks and slabs. Working in a direction normal to the foliation meant that blanks for vessels or baking plates could be easily detached by hammering sideways, parallel to the cleavage (fig. 9). Working in any other direction would have been slower and the products more likely to break during manufacture.

No tools can be directly associated with steatite working in Shetland although tools have been found at several Norwegian quarries. These are typically woodworking tools, of standard types which occur in other contexts dating from the Iron Age through the mediaeval period – picks, adzes and chisels. The waste excavated at Clibberswick, Unst, bore traces of all these implement types, and hones, presumably used for sharpening iron tools, were also found at the site.

Evidence relating to the methods by which artifacts other than vessels were made is scarce, as the bulk of quarrying was directed towards vessel production. Loomweights, the simpler lamps and spindlewhorls are probably byproducts of this process in most cases. These artifacts are also made from fragments of broken bowls. Some linesinkers might be byproducts of the vessel industry but the larger and more carefully shaped sinkers were probably purpose made at the outcrop.

Waste from the production of vessels would not be suitable for conversion into baking plates. Slabs would be deliberately cut for these artifacts, with laminar rock being chosen where available, as in the area at Clibberswick mentioned above. A fragment of a baking plate was found on one of the spoil heaps at Cunningsburgh by Dr. G. F. Bigelow. A steatite outcrop at Cunningsburgh bears a strong resemblance to outcrops at Kvinnherad in Norway where schistose rock was extracted for baking plates by working downwards and removing a series of slices as though from the top of a column (37).

10. The organization of the steatite industry

Although domestic quarrying – i.e. individuals manufacturing vessels and other artifacts for their own use – undoubtedly took place in Viking Period Norway, there was also a strong professional element in the steatite industry there. Good quality products predo-

Fig. 9. Cross Geos, Clibberswick, Unst. View along major foliation in the rock, used as an aid in detaching slabs of steatite. Scale 1 m.

minate and caches of unused, well made bowls, sometimes bearing what have been interpreted as "maker's marks", have been found. Many quarries are remote from farming settlements and, as it would be impracticable to work at these mountain sites in the winter, it seems likely that the quarrymen lived there and carried on their craft *instead* of farming during the busy summer and autumn months. Remains of buildings found at quarries in Lesjafjellene support this theory (38). There are also distinct regional variations in vessel type within Norway, which may be evidence for the existence of schools of craftsmen (39).

In Shetland, on the other hand, no quarry is so inaccessible that it would be necessary to live there while working steatite, nor is the winter so severe that quarrying could not be carried on then. It would be

quite feasible for quarrymen to farm nearby and to work steatite as the round of other tasks allowed. This could have been professional working – i.e. for exchange – but there was probably a large amount of domestic quarying as well.

It is difficult to distinguish the products of domestic and professional working in Shetland as the overall quality of the finished goods is lower than in Norway. This may be because there were fewer outlets for fine vessels in Shetland. The developing towns of Scandinavia provided a convenient market for steatite bowls but Shetland retained a wholly rural society throughout the Norse Period. Exports of steatite from Shetland are unlikely, on present evidence, to have been of great economic significance (40).

11. The problem of relating artifacts to sources

When considering trade in steatite, it would be of great interest to determine at which quarry a given object was produced. The author has applied a number of petrological and geochemical methods to Shetland steatite in an attempt to solve this problem, but without much success (41). The difficulty is that the bulk mineralogies and major element chemistries of Shetland steatites are very similar, while detailed petrology and trace element chemistry vary as much within some individual sources as among them all. It is therefore not at all easy to "fingerprint" sources of Shetland steatite, either by a single method or a combination of methods. The most promising approach is by the use of hand specimens, comparing the overall appearance of the rock. This reduces sampling error due to variability within the rock, is cheap and non-destructive. Some quarries, though not all, can be identified with reasonable certainty through the use of reference specimens and it is hoped that the technique will be of some practical value in the future.

12. Conclusion

The Norse steatite industry in Shetland was the direct result of a preference of steatite vessels over pottery, a preference which the Scandinavian settlers brought with them from their homelands. Steatite was important in most areas of life: fishing, baking, the manufacture of thread and cloth and the provision of light, as well as being the main material used for cooking and storage bowls. The rock was also used for gaming boards, ornaments and children's toys.

The use of steatite and the methods by which it was quarried are broadly the same in Norway and Shetland. There is, however, a marked difference in quality between the products of the two industries. This may be due to the differing markets available for steatite goods in the two areas.

The central position of steatite in Shetland life was eventually regained by pottery, which reappears in the archaeological record in the Late Norse Period. Locally produced and imported pottery was found together with steatite vessel fragments in Late Norse deposits at Jarlshof, Sandwick and Papa Stour. By the time of the mediaeval farmstead at Jarlshof, both steatite and Shetland pottery had gone out of use, although locally made ceramics were found in close association with fifteenth century stoneware in the Papa Stour excavations (42). The transition away from steatite is poorly understood, but may be due to a change in fashion linked to the increasing accessibility of imported pottery with the rise of the Hanseatic trade network in the North Sea. It is certainly a worthwhile field for future research.

Notes

1. This paper is based on a wider ranging study of the steatite industry in Norse Shetland, where descriptions of quarries and other potential steatite sources may be found (Buttler 1984). Ritchie (1984) has independently described some of the major quarries. Accounts of excavated Norse settlements in Shetland may be found in Hamilton (1956), Small (1967), Bigelow (1985) and Crawford (1985).

   In subdividing the Norse Period in Shetland, this work follows Bigelow, placing the Viking Period between 800 and 1100 AD, succeeded by the Late Norse Period from 1100 to 1500 AD. The term "Norse" is used to cover both peirods.

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18. Birthe Weber, pers. comm.
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23. e.g. Curle 1982, Roussell 1936.
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27. For a full discussion of typological studies of steatite vessels see Buttler 1984.
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