3. WEAPON PRODUCTION IN TELEMARK IN A WIDER CONTEXT

3.1 THE FUNCTIONS OF THE SWORDS

Swords had several functions beyond merely being a weapon: they were a means of power and they were status symbols. In most countries and periods, swords are less numerous than spearheads and other kinds of weapons, a fact which identifies the sword as the weapon of the leading classes in society. This is not the case in Norway in the Viking Age, where swords were at least equal to spearheads in number, and in several regions more numerous (Martens 2003; Petersen 1919:6).

Viking Age swords have come to light in all parts of the country. Most of them are from the inhabited fjord, lowland and valley areas, but even mountain areas have yielded finds, both in the form of graves and stray finds (Skjølsvold 1980:Table 1; Martens 1988).

Their distribution within Norway (see below for Telemark) indicates that a considerable part of the male population had the right to carry a sword and that swords were markers of men's general status, for example that of freeholding, land-owning farmers (Martens 2003). This is expressed in the medieval Gulathings Law. The oldest part of the law, dating back to the Viking Age, states that every free man should have a set of weapons: spear, shield and axe or sword (GL 309; Hofseth 1982).

Swords were also most likely used as gifts, for instance as part of long-distance exchange. Two inland rural districts, Vågå in Oppland and Tinn in Telemark, stand out because of the unusually high number of swords with decorated hilts that were found there, most of them coming from a few centrally situated farms. We have interpreted these sword finds as indicators that these farms held prominent positions in long distance exchange connections (Martens 2009).

3.2 THE ORIGIN OF THE SWORDS

As this investigation is focused on swords made by Norwegian blacksmiths, it is appropriate to briefly outline some important factors in the debate on the origin of sword types. This question is certainly complicated, and one must always keep in mind that hilts and blades were often made separately, and in many cases far apart. Imported hilts were obviously fitted onto indigenously made blades and vice versa.

One problem is the lack of objective criteria for deciding the origin of the swords, which has often resulted in turning to belief – including wishful thinking. Recent scientific investigations on the provenance of iron are very promising, but it is beyond the aim of this brief survey to deal with this complex topic (Charlton 2015; Rose, Télouk, Klein and Marchall 2019).

Some sword types were undoubtedly of indigenous origin and production. The C-types have the upper guard and pommel in one piece, while the M, Q and Æ types lack pommels, a feature not found on international types. The C, M and Q-types were numerous in Norway, but hardly ever found outside the country.[4]

The five double-edged blades found together at Hulterstad in Öland, Sweden, are of great interest. They all have ULFBERHT inscriptions or inlaid signs (Arbman 1937:232; Thålin-Bergman 2005:50–51; Modin and Modin 1988:100–01), and have been interpreted to be imported blades intended to be equipped with hilts in Sweden.

Blades with ULFBERHT and other inscriptions have attracted the interest of archaeologists and metallurgists. One of these is Anne Stalsberg (2008) who presents a table comprising all the ULFBERHT swords she has been able to collect from the available literature. The table presents the systematic variations in inscriptions, and their combinations with variations of marks on the rear side of the blade. It is, however, the hilt types that are of primary interest here. These are varied, covering a vast timespan, and her division between the middle and late Viking Age is not correct, since several types placed separately are contemporaneous. The point to be stressed here is the difference in hilt types between Germany and Northern and Eastern Europe in general (finds from Belgium and

4 All letter designations refer to Petersen's (1919) typology.

Switzerland, numbering two and one swords respectively, are too few to be significant). In Germany the X-type dominated, with seven or eight out of twelve type-determined specimens. Most belong to Geibig's combination type 12, dating back to at least the early 10th century. In the north and the east of Europe, where the relevant swords together completely outnumber the German ones, the hilt types S, T, V and Z were the most common, besides the H-type and a few X-types. In Norway, five swords have R-type hilts, as well as one find from Hamburg (Müller-Wille et al. 1970). According to Geibig's map Abb.44, the R and S-types, his combination type 10, and U/V/W combination type 11, were found solely in the northernmost part of Germany, mostly in Schleswig in or near Hedeby, while types T and Z are not included at all in his typology (Geibig 1991).

Even though the number of German finds is small and the representativity is problematic, these differences are considered significant, and they must be taken into account in future studies on sword production and distribution. Another difference is also worth mentioning: The R, S, T, V and Z-type hilts have fine inlay decorations, while the X and Y, as well as other late types, were undecorated (as seen in Figure 3.3). There are actually no hilt types with inlay decorations in western continental Europe later than Petersen's O III, Geibig's combination type 6. Geibig states that from the early 10th century, sword hilts made in the Frankish area are void of inlay decorations (Geibig 1991:138). Swords of the English L-type were decorated, and Vera I. Evison has identified a typological series from Petersen's L-type to a sword from Wallingford Bridge (Evison 1968).

What are the consequences of these specified differences? First of all one always has to be very careful when discussing the origin of swords. Strictly speaking, one should always keep hilts and blades apart, considering that they both can be made at a great distance from one another.

Opinions on indigenous versus imported swords have often been centred on pattern welding and blade inscriptions. Did Norwegian weaponsmiths master pattern welding or are all pattern-welded blades imported? This problem remains unsolved. A point in favour of indigenous pattern welding is the existence of some pattern-welded, single-edged blades. The number is unknown, though certainly small and not indicative of a widespread practice (see Chapter 7). Further, one cannot exclude the possibility that twisted blanks for pattern welding were imported and processed into sword blades and spearhead blades in Norway.

Although double-edged blades are certainly the most common with hilts of undoubtedly foreign make, such hilts were also fitted onto single-edged blades in a not insignificant number. This holds true even for the ones dated earliest, going back to the middle or late 8th century (Martens 2006a). And of course, double-edged blades of indigenous make can just as well have been fitted onto imported hilts.

Solberg has maintained that the spearheads' European distribution is a good indication of their origin (1991:247). Spearhead types with a wide distribution outside Norway most probably originated elsewhere. This is certainly also the case for sword hilts. This does not mean, however, that production did not exist in Norway. Petersen's H/I type is the most numerous one in Norway, as well as in Sweden (242 specimens) and Finland (Androshchuk 2014:List 1; Kivikoski 1973:112, Tafel 94:831–2). They have hilts with inlay decorations in geometric patterns. The H/I types are definitely of continental origin, but was there also production in Norway? Petersen states that 73.1% have double-edged and 26.9% single-edged blades (19 blades were indeterminable) (Petersen 1919:94). Were the single-edged blades fitted onto imported hilts? These questions cannot be answered without a detailed investigation (Martens 2004, 2006a).

Further, we must not forget that several continental hilt types were undecorated. Two good examples are Petersen's type B, corresponding to Geibig's combination types 1, I–VI and 5, II–VI, and Petersen's type X, Geibig 12, I and 15, III (Geibig 1991:16). Petersen's B was the model for the C-type, the earliest of the most common indigenous ones.

3.3 NORWEGIAN SWORD TYPES AND SWORD PRODUCTION

Sigurd Grieg's idea of community blacksmiths, unspecified but tacitly understood as a high number of independent smiths distributed all over the country, was based on the premise of a self-supporting economy with little exchange of goods, which was the dominating view at that time. This view is no longer viable since a comprehensive surplus production of iron has been well documented (Grieg 1922:92–93; Martens 1988). Considering the role weapons played in society, not least in social relations – both horizontal and vertical – it is likely that weapon production was subject to certain set regulations. Norway was not, however, such a well-organised society that a strict level of control was possible.

The most skilled weaponsmiths were probably attached to royal or chieftains' farms, and eventually

towns in Norway, such as Kaupang, which was under royal control (Skre 2007:Chapter 20). These were the sites where new techniques were introduced, and where silver, copper and other metal alloys used for decorations were most easily obtainable.

Background

At the beginning of the Viking Age an unknown number of weaponsmiths were at work in Norway. The activity was decentralised, and in general without the use of advanced techniques. Iron itself was readily available, not least in Telemark, where it was produced at numerous sites in the mountain and valley regions (Martens 1988; Larsen 2009; Loftsgarden 2020). There were marked differences in skills between those who worked with iron and iron producers, unfortunately often named smiths, and experienced weaponsmiths.

During the Viking Age the number of finds increase considerably. Double-edged blades came into use with gradually increasing frequency, nearly taking over completely during the 10th century.

From the late 8th century, iron hilts are fitted onto both kinds of blades. There are some early examples of foreign hilts mounted on single-edged blades, for example the specimen from Ytre Kvarøy, Nordland (Vinsrygg 1979:67; Martens 2006a:224). It is likely that hilts of Petersen's type A were made in Norway prior to 800 AD, while the earliest indigenous type found in larger numbers was type C, occurring around 800 AD, with a very wide distribution.

The most important indigenous sword types are Petersen's types C, M and Q; other types were found in smaller numbers. The M and Q-types are closely related. Both types, as well as the later Æ-type lack pommels, a trait which, as far as observed, occurs solely on Norwegian hilt types. Most likely hilts and blades were made as a unit for these swords, and thus their blades, both double and single-edged ones, were made by Norwegian blacksmiths.

These sword-types' extensive distribution in Norway is important in trying to estimate the number and location of weaponsmiths at work here at the same time. Still, it is far from clear what decentralised production means. An approach to these issues rests on several assumptions. First of all, the Viking Age was a dynamic period when new techniques and skills were introduced to and spread from a small number of "innovation centres" to a greater number of more widely distributed weaponsmiths. What determined their localisations? And did independent craftsmen who produced weapons exist?

3.4 DEGREE OF SPECIALISATION

Weaponsmiths were specialists. Elizabeth M. Brumfiel and Timothy K. Earle give a very simple definition of specialisation: the existence of individuals who produce goods and services for a broader consumer population (Brumfiel and Earle 1987:5). Generally there is a wide range of specialists: from the full-time, highly skilled ones employing the most intricate techniques; to the part-timers mostly producing raw materials, like specialised hunters or iron producers. The definition of specialisation used here is: production of raw materials and further processing of them using knowledge and skills mastered only by a minority of the population (Martens 1995:176). For the weaponsmith, it can be added that he could deliberately choose between different steel qualities and combine them in special ways. He was able to improve steel quality by means of carburisation and other heat treatments (Martens 1995:178). No doubt, the skills and degrees of professionalism varied among weaponsmiths.

The training of professionals involves several intricate processes. Weaponsmiths obviously learnt their skills as apprentices to experienced professionals, probably often sons to fathers. Adopting new and advanced techniques needed something more, by way of social/professional contacts between smiths working in different places.

This investigation concerns sword blades and the techniques and skills needed to produce different blade constructions, but spearheads also need to be considered. Solberg (1984, 1991) characterises spearheads produced in highly specialised and specialised workshops. She also claims that uniform shapes for spearheads found dispersed over large areas demanded a limited number of workshops, while greater variations in shape indicate more widespread production. She also finds differences in distribution among her three investigation areas. Her type group VI consists of both kinds: the first ones, which she defines as imported, are mostly found in coastal areas and often in combination with swords of foreign origin; the others dominate her region 3 covering the inland of Eastern Norway, and are mostly found with indigenous swords (Solberg 1991:246, 250ff). Region 3 is very large and heterogeneous, with several communication lines to central coastal areas. She offers no information on local differences within this region.

The crucial point however, is the level of specialisation in weapon production found in Norway in the Viking Age.

The problem of specialisation involves several other factors too, such as the question of whether weaponsmiths made only weapons, and if so how many

different kinds? There have also been questions raised about continental weapons, as to whether decorated hilts were made by the same blacksmith who made the blade, or by separate craftsmen.

3.5 INLAY DECORATIONS

Sword hilts and spearhead sockets have decorations utilising the same techniques: forged patterns or inlay/encrusted decorations in silver, copper alloys and niello. The two inlay kinds have been found on different sword hilt and spearhead types (for a description of the two techniques see Blindheim 1963:38–9; Fuglesang 1980:Appendix 1).

It has generally been accepted without discussion that inlay/encrustation techniques, frequently used on sword hilts and spearhead sockets, were employed in Norway from the beginning of the Viking Age. This view is connected to the idea that the H-type swords were an indigenous type (Petersen 1919:101; Blindheim 1999:75). This is highly questionable, and it is more likely that these techniques were introduced to Norwegian blacksmiths some time during this period. Thus a simplified study of the patterns, in order to shed some light on this question has been necessary.

There are indications that sword hilts with inlay decorations were made in Norway from around 900 AD. The relevant hilt types O II, R, as well as the S and T-type hilts with Jellinge-styl decorations were widely distributed in the Nordic countries, while S and T-type hilts with other decoration patterns had an even wider distribution. Together with V and Z-type hilts they have been found around the Baltic Sea as well, with some examples even further south. However, they are not included in Geibig's typology because they are not found in his investigation area, the former West Germany. R-type swords were found in the vicinity of Hedeby.

Inlay/encrustation decorations on spearhead sockets is a new element introduced with Petersen's I/K types, Solberg VII.2A-B, VII.2C around 900 AD. In some areas such decorations were also found on E-type spearheads (Solberg's VI.4) from the early 10th century. The patterns are, with a few exceptions, geometrical including fishbone (see below), while decorations in the Ringerike or Urnes style were found on other, later spearhead types. This survey has been limited to earlier patterns.

The Byggland find (C.27454) contained three spearheads with inlay decoration (catalogue f, g, and h):

Figure 3.1. *Spearhead sockets from Byggland, Kviteseid. Photo: O. Holst, KHM (CC BY-SA 4.0).*

two with well-preserved sockets of types VII.2A, B and C respectively, depicted in Blindheim (1963: Figures 5–7), here Figure 3.1. The decoration patterns, which Charlotte Blindheim named Aa, consist of horizontal fishbone lines combined with plaited ribbons, triangles, and on spearheads h and g step-ribbons on the top. Six more spearheads with similar decorations found in Telemark caused Blindheim to interpret these as items made by the Byggland smith (l.c.48). Since 1963, four more decorated sockets from Telemark have been recognised (C.20129 Notodden, C.29700c Tinn, C.27051 Nome and C.28440 Hjartdal). On three of them the patterns were badly preserved, but they are most likely fishbone (Ge 1). C.29700c was found in the same grave as one of Blindheim's examples (Blindheim 1963:Figure 15).

There are some other concentrations of inlaid sword hilts and spearhead sockets, in two cases (By, Løten, Hedmark, Vik, Sogn and Fjordane) found in a grave rich with blacksmith tools. Both the Byggland and By graves contain draw plates for making wire; the Byggland find has a mould for an ingot as well. There is also strong evidence of working with silver and copper alloys. These concentrations have been interpreted as signs that other blacksmiths/workshops employed the inlay technique (Martens 2002). The By concentration dates from the late Viking Age, around 1,000 AD. In order to support these implications, a study of pattern types based on available literature was carried out.

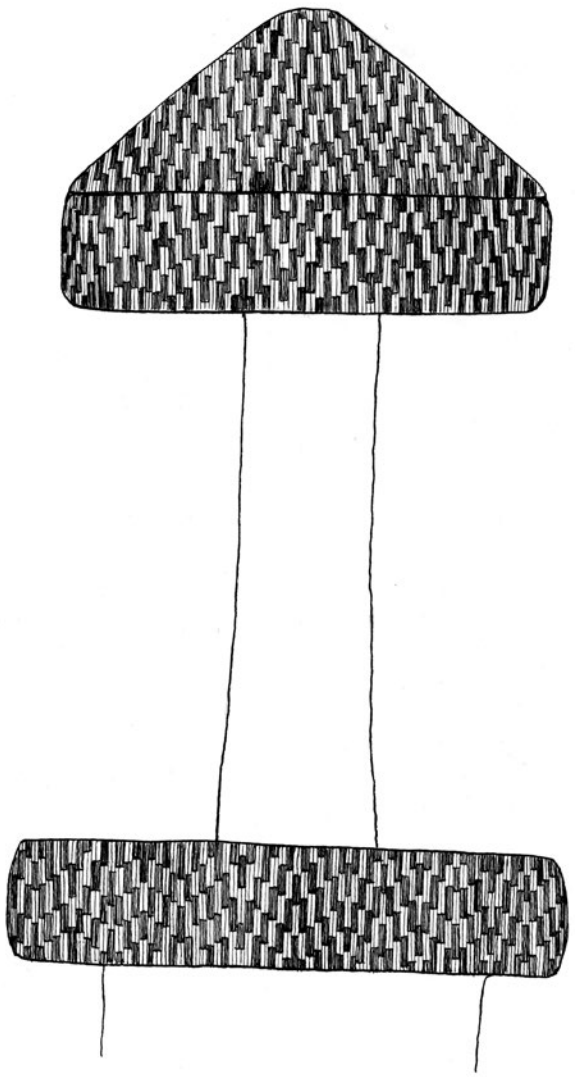

Figure 3.2. *The H-type hilt C.21325 from Killingtveit, Vinje, (reconstruction). Drawing: Unknown, KHM (CC BY-SA 4.0).*

Inlay patterns

Little attention has been paid to these patterns, their variations and distribution. One problem is the small number available in publications. In many cases only faint traces of the decorations are visible, moreover more decorated sockets are frequently discovered on X-radiographs or during laboratory treatment. Another obstacle is the low quality of some published photographs. In addition, as they were made by specially qualified smiths, one must always bear in mind that some may have had an individual touch.

The simplified study of the inlay patterns presented here does not include the classification of interior patterns, and while other details are included, a more comprehensive study would certainly be rewarding. Likewise no classification of Early Viking Age decorations has been made, as this would demand a comprehensive special investigation. Vertical stripes are most common on the H-type hilts, though more intricate patterns occur, as seen on the Killingtveit hilt (Figure 3.2), probably in the later part of the production period. It is worth noting that a pattern with narrow, stepped rhombi (Ge 3) was found on I-type hilts, for example the sword C.23127 from Oppland, Norway. No Z-type specimens with well-preserved decorations suitable for classification are available.

Blindheim divided inlay patterns on spearhead sockets into Aa and Ab. Blindheim's group Ab needs further division, and Aa and Ab are renamed to Ge, meaning geometric. Here, five such patterns Ge 1–5 are identified, where Aa fishbone pattern is Ge 1, and patterns dominated by holes, often surrounded by silver rings (Petersen's type T), is Ge 5 (Figure 3.3). It is important to be aware that the pattern on a sword hilt or a spearhead socket is classified according to the dominating pattern element, as two pattern types can be combined on the same item, for example Ge 5 with its indistinct animal elements.

There are two distinctly different patterns with rhombi being the dominating element. These are Ge 2

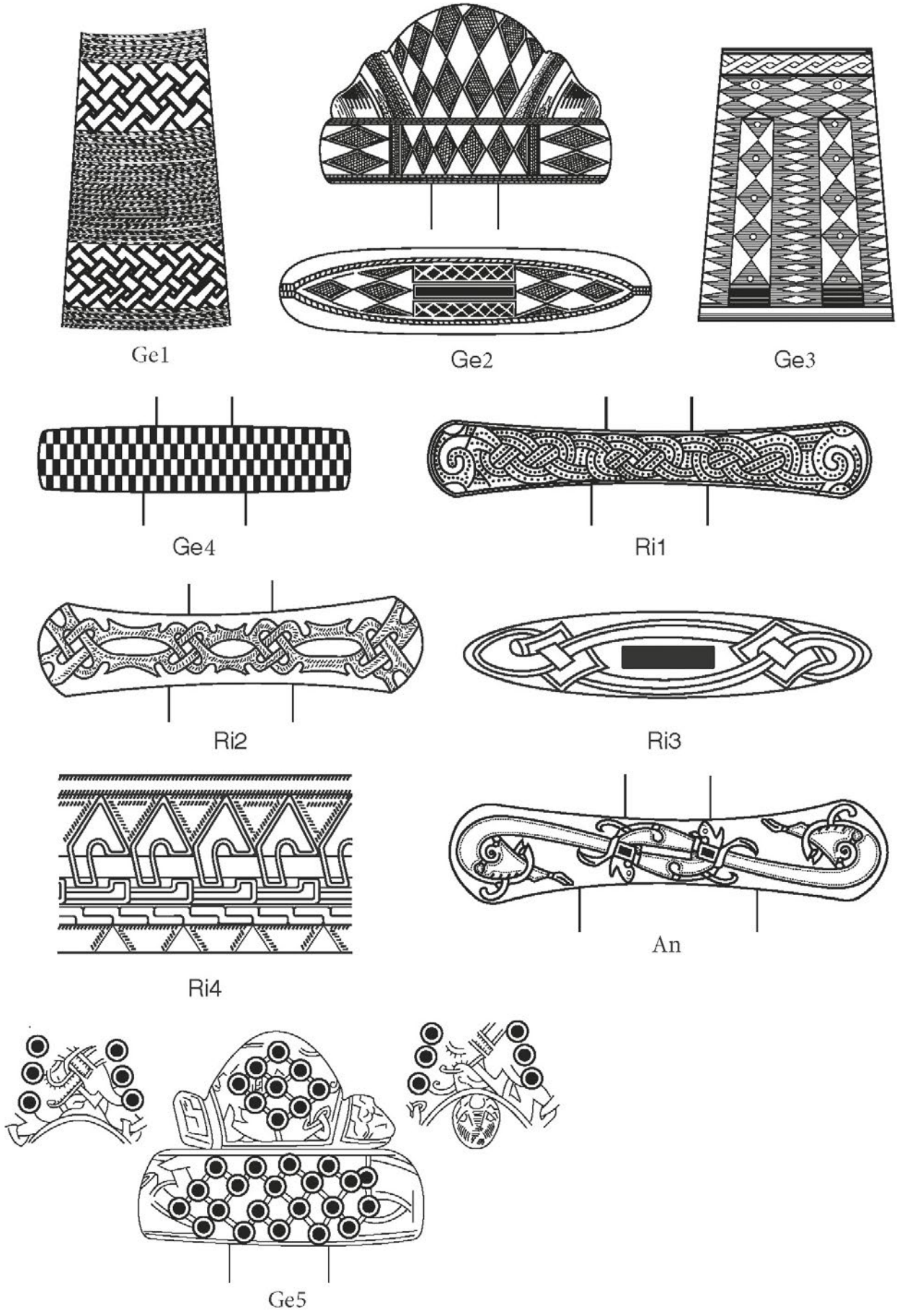

Figure 3.3. *Inlay pattern types found on sword hilts and spearhead sockets. Drawing: J. Kreutz. The image is not covered by the CC-BY license and cannot be reused without permission.*

with relatively wide rhombs and straight outlines, and Ge 3 with narrow rhombi and stepped outlines. The two patterns can, however, be combined.

A second group has ribbon decorations, and four distinct patterns have been discerned, differing in design, interior patterns and background, named Ri 1–4. It is important to note that the Ri 1 pattern is found on O and R-type hilts, while Ri 2 is most common on S-type hilts. Another point worth noting is that Ri 1 patterns coincide with Ri 3 ones on the over and underside of the guards, while the Ri 2 patterns are combined with Ge 2 ones.

Several S and T-type hilts have Jellinge-style ornaments (Petersen 1919:Figures 115,120; Müller-Wille 1973). A large number of spearheads have ornaments in Ringerike and Urnes styles (Fuglesang 1980; Creutz 2003), and there are probably ornaments in other animal styles as well. Therefore, they form a third pattern group named An, but no subdivisions are made.

The closest parallels to Norwegian Ge 1 patterns come from the graves at Birka (Arbman 1940:Tafel 9). The patterns on two of them, Tafel 9, 5 and 9, 6, have a different, open pattern on the upper part of the socket. Their blade construction is not specified in the tables presenting the results of the X-radiograph examinations by Thålin Bergman (Birka spearheads, Table 12), but rather on the sketched drawing, Figure 43, No.2 from the right, and another spearhead with a socket decoration most probably has a welded-on strip (Thålin Bergman 2005).

Anne Pedersen depicts three Danish spearheads with Ge 1 patterns, but the pictures are too small for detailed investigation and the number is too low to be significant (Pedersen 2014:Plates 11, 4, Plates 43, 2 and Plates 45, 2). Lena Thunmark-Nylén (1998) depicts one specimen from Gotland having dense fishbone combined with a horizontal ribbon of Jellinge style animals. It has even got a runic inscription (Thumark Nylén 1998:Tafel 241).

Spearheads with Ge 1 decorations on the socket have not been found outside Scandinavia, where another pattern type dominates: a geometric one with narrow, horizontal rhombi, alone or in combination with other elements (Ge 3). There are depictions of pattern type Ge 3 on items from Gotland (Thunmark-Nylén 1998:Tafel 238, 243–44), Finland (Lehtosalo-Hilander 1985:Figure 1, 1), Estonia (Mägi Loûgas 1993:Figure 1, 1) and from the Russian Kaliningrad enclave (Mühlen 1975:Tafel 18, 8–9). It is difficult to determine whether such rhombi occur alone, e.g. on Thunmark-Nylén (1998:Tafel 238,2). More commonly the socket has a vertical division where the rhombi alternate with wider Ge 2 rhombi (Thunmark-Nylén 1998:Tafel 238, 3 and 244, 1).

In Norway such spearheads are rare. The author is only aware of three specimens, but there are probably more. One is the K-type C.28015, a single mountain find from Kalhovd in Tinn, the second from the well-known Gjermundbu find, discovered after Grieg's publication (Grieg 1947:Plate IV,10; depicted in Martens 2002:Figure 2, 2004:Figure 7). The sword in the grave is of the S-type with Ri 1 decorations. A third specimen comes from Nesna, Nordland, C.5613, depicted as R 531, possibly found in a grave with an M-type sword (Sjøvold 1974:285). The pattern does occur on spearheads from Denmark and Gotland (Pedersen 2014:Plates 8, 2 and 5; Thunmark-Nylén 1998:Tafel 243), but the distribution of this pattern type is otherwise uncertain.

The narrow rhombus pattern, Ge 3, is common on sword hilts as well, and Ge 2, 3 are the only pattern types common on both kinds of weapons, though new finds may of course alter this. The Ge 3 pattern is found on I-type swords (Arbman 1940:Tafel 1, 2) and is perhaps the most common on V-type hilts. The pattern stands alone on the side panels of the guards and the central part of the pommel, while the sidepieces have other ornaments.

The Ge 2 pattern with T-type hilts had a very wide distribution. Petersen (1919:Figure 121) is from Utgarden, Seljord, while the specimen depicted as Ge 2 in Figure 3.3 is found in Slovakia (Ruttkay 1975:Figure 8, 2). The T-type hilts with such decorations are rare, and Fedir Androshchuk (2014:77) lists only one uncertain specimen from Sweden. There are no finds in Denmark, and we do not know any from around the Baltic.

The V-type hilts with Ge 3 decorations were more numerous and had a very wide distribution. Petersen lists six examples (Petersen 1919:155), all with a Western Norwegian provenance, though more recent finds have been made in southern Vestfold and Telemark (Blindheim 1999: KXXV, Plate 36) and at least two in Trøndelag (Stalsberg 2008: N 38 and N 42). C.20955a from Seierstad, Larvik, was found with a fragmentary spearhead with Ge 1 decorations depicted in Blindheim (1963:Figure 20). Last but not least, there is sword C.35841a from Ballestad, Skien. There are sixteen V-type swords in Sweden and eight to ten specimens in Denmark (Androshchuk 2014; Pedersen 2014:79). The inlay Ge 3 patterns of the V-type swords display only small variations. These were widely distributed in the Nordic countries and the Baltic. Vytautas Kazakevicius provides the number fourteen, while

one is depicted (Kazakevicius 1996:Figure 69), but nothing is said about patterns on the others. Bernt von zur Mühlen states, "Nach ihrer Verzierungsweise sind die eben angefürten Schwerter sehr gut mit denen aus Westeuropa und dem frankischen Reich zu vergleichen" (Mühlen 1975:36). No V-type swords in Poland or Hungary were found in the relevant literature.

The great similarities in patterns on V-type hilts indicate that their production was not widespread, and the marked distribution of spearheads with similar patterns suggests an eastern location of smithies. However, the wide distribution of weapons, both sword hilts and spearheads with Ge 2, 3 decorations leaves the production areas uncertain, although Scandinavia cannot be ruled out. For weapons with Ge 3 decorations the most striking trait is the difference in distribution between swords and spearheads. Most probably, these sword hilts were not made in Norway, however an indigenous production, for example in southern Vestfold and in northern Rogaland/Hardanger, cannot be excluded. These examples illustrate the complexity of origin and distribution studies.

Another very different and distinct ribbon pattern, Ri 4, was found on Gotland spearheads (Thunmark-Nylén:Tafel 239, 1 and 244, 2). A similar one comes from Skåne, as well as one from Brandenburg, Germany (Strömberg 1961:Tafel 66, 7).

The examples given above should not in any way be taken as a complete list, but they are considered sufficient to demonstrate regional differences in the distribution of inlay patterns. This obviously means a

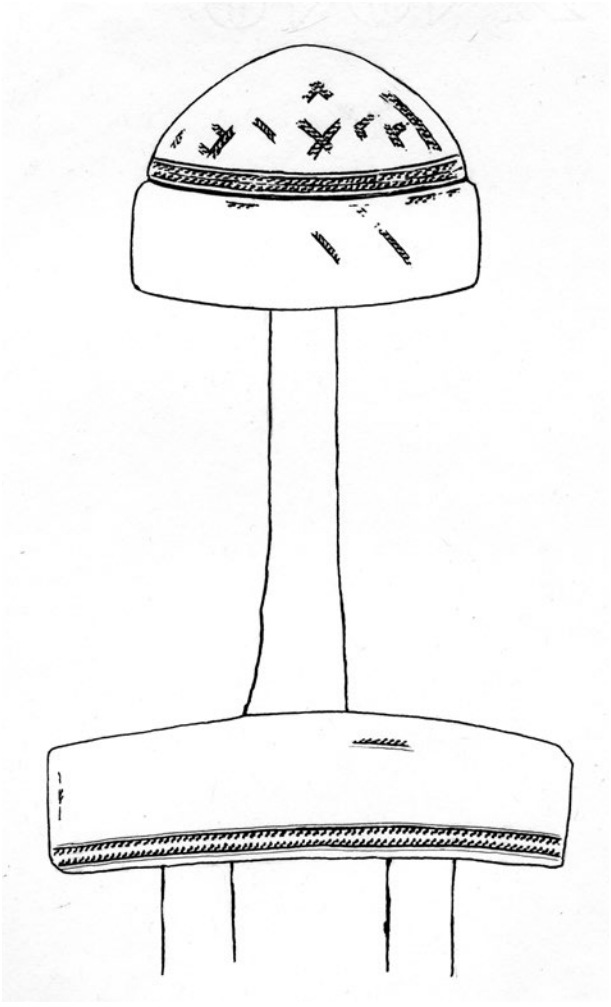

Figure 3.4. *Sword hilt C.23364 from Bøen, Tinn (reconstruction). Drawing: Unknown, KHM (CC BY-SA 4.0).*

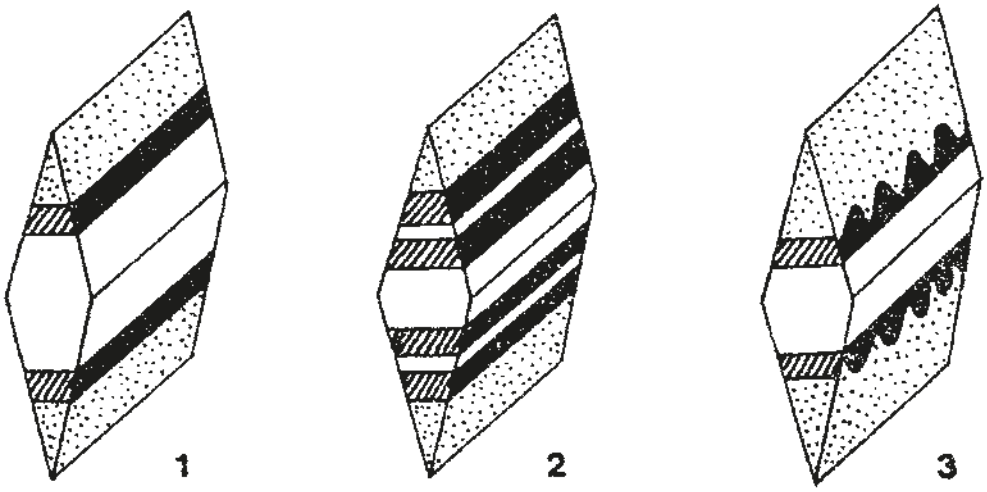

Figure 3.5. *Narrow and serrated strips forged into spearhead blades (pattern welding 1–3) (after Solberg 1984, Figure 19; Selirand 1975). The image is not covered by the CC-BY license and cannot be reused without permission.*

decentralised, regional production of spearheads with inlay decoration, starting c. 900 A.D. This conclusion also includes blade constructions with plain and serrated strips (see below Chapter 7).

The sword hilts of Petersen's type P support the view of indigenous production of inlay decorations. The P-type lacks a pommel, a feature otherwise restricted to the indigenous types M, Q and Æ, and no P-type swords are known outside Norway. Several of their hilts have inlay decorations with a dense vertical fishbone pattern, which is unique to this type. They are dated to the early 10th century (Petersen 1919:Figure 109).

Two such swords were found in Telemark, both in Tinn (C.36841 Åpålen, C.54843/1 Bøen, Rjukan). From the same farm, namely Bøen, came the X-type sword with a unique inlay decoration: narrow diagonal ribbons forming open rhombi (Met. 14, Figure 3.4) and a spearhead with Aa decoration on the socket (C.10899). This rhombus pattern is distinctly different from Ge 2 and 3 with rhombi.

Contemporaneous with the early decorations on spearhead sockets, a new smithing technique using inlaid plain or serrated strips on the blade came into use, and can be found on many spearheads with decorated sockets (Figure 3.5). This may indicate that the two techniques were introduced together.

Solberg's Table 11 shows that Petersen's M-type spearheads, Solberg VII.3A and B, were also forged with MS 1 and MS 3 blades, indicating continuity in indigenous smithing traditions (1984:Table 11). Only six M-type specimens have been found in Telemark, and only one with Ringerike style decorations (C.29878b). Consequently, we will not discuss this continuity any further.

3.6 OTHER RELEVANT ARCHAEOLOGICAL FEATURES

All three of the most numerous sword types, C, M and Q, have been found all over the country, as far north as Norse settlements extended (see Petersen 1919:distribution tables; Sjøvold 1974:276, 278, 279). Variations in frequency among regions often correspond to general variations in find numbers, and the greatest number of M and Q-types come from Eastern Norway.

The earliest, the C-type going back to around 800 AD, was developed from the continental B-type, which Geibig split up into combination types 1.I–VI and 5.II–VI (Geibig 1991:Abb.1, 16), and has an upper guard and pommel made in one piece. The distinction between B and C is not always clear, as indigenous swords can very well have separate upper guards and pommel, and the C-type hilts vary in shape. There is, however, a distinctive difference in blades. While double-edged blades dominate the B-type hilts (14 to 8), the C-types demonstrate the opposite trend (40 to 67) (Petersen 1919:61, 68).

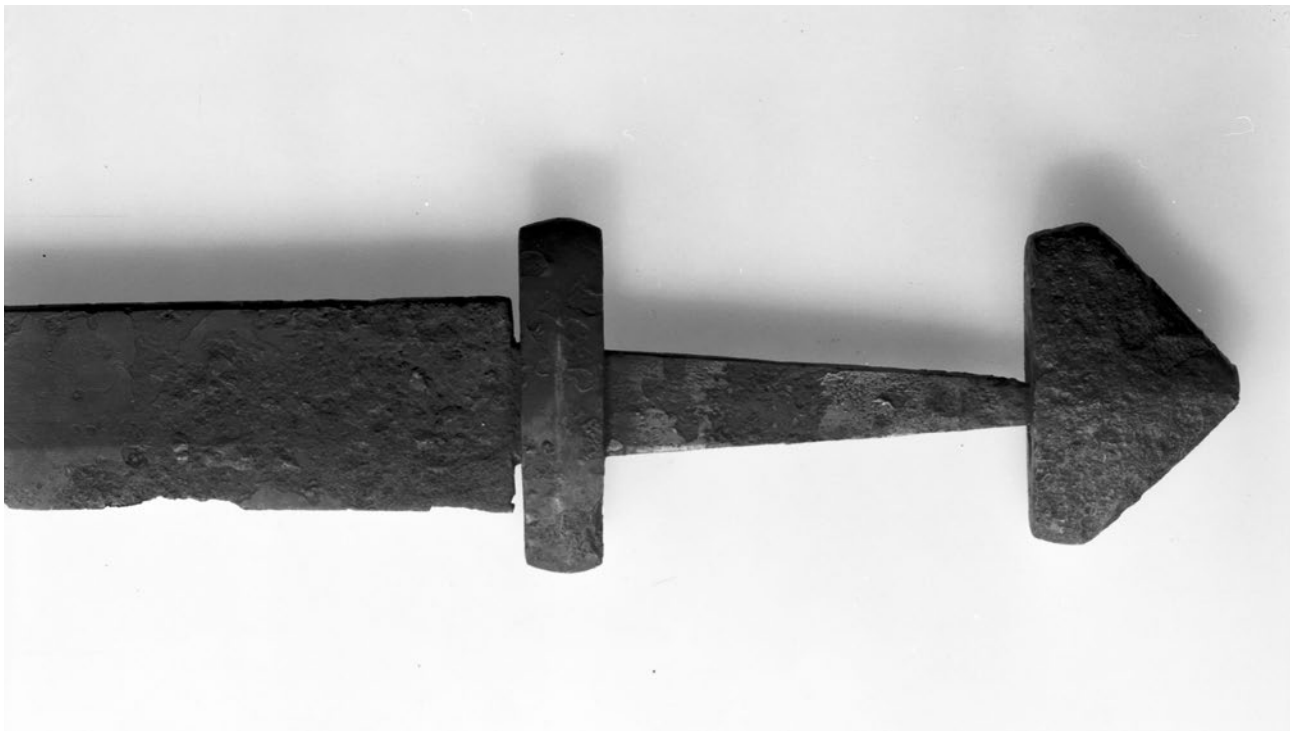

Figure 3.6. *The C-type hilt C.24217 from Risvold, Hjartdal. Photo: K. Helgeland, KHM (CC BY-SA 4.0).*

The M-type hilts, without a pommel are characterised by Petersen as the simplest possible form having two guards and a grip (1919:117). There are some variations in shape, for example between his figures 98 and 99, both found in the same area of Romerike north of Oslo. No investigations of possible regional variations in the three numerous types have been carried out. The Q-type is held to be developed from the M-type, and the changes show that the weaponsmiths knew about general fashions in hilt shapes.

Very few of these swords have blades with pattern welding or inscriptions. One such is the C-type sword from Århus, Hjartdal, Telemark (C.24217), which has a single-edged pattern-welded blade (Liestøl 1951:76, Figure 1b).

M-type spearheads: An example

A relevant study is Kristina Creutz's thorough investigation of Petersen's M-type spearheads from the countries around the northern part of the Baltic Sea, including eastern Central Sweden, the southern part of Finland, Estonia, Latvia and the adjacent part of Russia. Creutz found 355 examples in all, many with silver decorations on the socket (2003:17–18, 40). She groups them into M1–M8, based on the width of the blades and other striking features, such as facets or a knob at the transition between socket and blade (2003:37). The main dating is 11th century, but she does not detail the chronology.

Creutz has identified 25 smiths making M-type spearheads, through a partly impressionistic method based on "the personal touch" visible in details of craftsmanship (2003:137). Her study is fascinating and convincing in relation to some of the identified blacksmiths, while a very small number of spearheads identify others: in ten cases, there are only two examples. More than 50% of the spearheads could not be attributed to any particular blacksmith. The diagrams (Creutz 2003:59) show that the subtypes M1–8 are found in all countries with few exceptions, though in varying frequencies, and it is difficult to see regional differences in the material. The M-type spearheads were produced during a relatively long period, and some differences may therefore be chronological.

Creutz uses the concept "smith zone" to denote a certain area within which a specific smith was active, mainly to be understood as the outlet or working area of a craftsman, the area where he found his customers, or where he was allowed to work and to supply people with weapons. A smith zone may also correspond to the area of a leader of some kind, as well as indicating a production centre (Creutz 2003:192–3).

Some of the smiths have been connected to a single burial ground, and a distribution map shows that some were situated close to each other (Creutz 2003:162). Finland differs from the other areas by having only three identified smiths whose products enjoyed extensive distribution. The investigation demonstrates that M-type spearheads were most likely made in all parts of her very wide investigation area, indicating close connections between those who organised and those who carried out the production. Details depend on population density, social organisation and other factors that cannot be considered here.

Special types and variants

Further, it is interesting to take a closer look at the Norwegian weapons which fall outside the ordinary types: Petersen's special types, Solberg's variants, and especially their find locations. Petersen's special types are a mixed lot. Some have turned out to be ordinary types of continental origin (Sp.1 and 2, plus 4 with only the lower guard preserved), or closely related to the Anglo-Saxon L-type (Sp.7, 14, 15). Sp. 20, (two specimens) are of an ordinary, possibly V-type, which have lost their pommels and only have the fastening bow left. Most of the others, Sp. 3, 5, 6, 8, 9, 10, 11, 16 and 17 are probably the products of inventive Norwegian blacksmiths.

Petersen does not define a minimum number of examples needed to make an ordinary type, but it is plain from his work that a special type comprises a maximum of three swords. No search has been made for later acquisitions of such swords, but as far as we know there are very few, and Petersen's information is reliable. Even though it numbers four specimens, the G-type is included among the special ones.

Solberg emphasises the small number of spearheads that are non-classifiable because of lack of specific typological elements and/or symmetry. They amount to only 1.3% of the material from both the Merovingian and Viking periods. Accordingly, the standard spearhead is the product of a specialised workshop, many made by highly specialised smithies (Solberg 1984:141). She describes a total of 14 variants, eight of which (Nos. 7–14) were from the Viking Age. The majority were found in her Region 3, comprising the eastern Norwegian counties Hedmark, Oppland, Buskerud and Telemark. All are in the main inland areas, and only Buskerud and Telemark have short coastlines.

One could perhaps expect the indigenous special types and variants tohave come to light far away from central areas, but this is not the case. Sp. 8 and 9 were found on the same farm, Finstad in Løten, Hedmark, in an area that probably had a specialised smithy in

the 10th century, in addition to not being far from the centre Åker in Vang, Hamar (Martens 2002:181). Three out of four Var.8 spearheads, as well as a Var.9 and a 13, were found in the same area.

Sp.5 and 11, and Var.10 were found in Vågå, a municipality with an unusually high number of swords with decorated, partly imported hilts (Martens 2009). The two Var.10 spearheads have complicated MS patterns (No.8) and are probably imports belonging to a real type with at least five specimens in Finland (Solberg 1984:147).

The four G-type swords are of some interest here. This type differs from all others because the guards curve into spirals (Petersen 1919:Figure 71). As mentioned above, it is classified here as a special type made by an inventive Norwegian blacksmith. No more such swords have come to light since 1917 (Hernæs 1985:find lists). Two examples were found quite far apart in southern Buskerud (Kongsberg and Røyken), the other two equally far apart in Oppland (Gjøvik and Øystre Slidre). It makes sense that all four were made by the same blacksmith, and this seems not unlikely considering inland communication routes.

Likewise, Sp.18 and spearhead Var.8 and 9 with three specimens each, had a wide distribution, but not far from central habitation areas, a feature significant for our understanding of weapon production in general.

Most of these special types and variants are difficult to date, but Petersen places most of the swords in the 9th century, while more of the spearhead varieties belong to the 10th century.

Chronology

One of the aims of this investigation is to trace technical development in sword blade production in Norway during the Viking Age. There are no other technical investigations to rely on, but again Solberg's investigation of spearheads is relevant. The indigenously made spearheads from the 9th century, of her type groups VI and VII.1 (Petersen's types A–E and type F respectively) include heterogeneous objects. Many of the VII.1 group items have decorations consisting of horizontal circles in elevated areas on the socket, made in specialised workshops (Solberg 1984:81–83). Such workshops probably existed in all her three regions, but type VII.1C seems to have been manufactured in the inland regions only (Solberg 1984:112).

By the introduction of the VII.2 spearheads (Petersen's type I) c. 900 AD, new smithing techniques appear on the blade. It is therefore relevant to search for a parallel development on sword blade constructions.

Blacksmith graves

The last find group to be considered is that containing graves with blacksmith tools. This is a problematic and much discussed group, the main problem being whether they should be called blacksmith graves at all (Straume 1986:46ff; Pedersen 2016:21–23; Barndon and Olsen 2018:77ff). It is difficult to decide which of the buried persons were actually blacksmiths. At least a certain number of blacksmith tools are needed in order to designate them in this category, and Petersen has shown that if such graves are required to have three or more such tools, their number decreases markedly (Petersen 1951:110). Multipurpose tools, such as hammers and files, should not be included when numbering these graves.

Jørgen Bøckman maintains that all blacksmith tools found in graves represent smiths' graves as a *pars pro toto* burial custom (2007:91). This is certainly a problematic viewpoint that cannot be accepted without further investigation.

Blacksmith tools found in graves have always been recognised to be iron smithing tools. Bøckman carried out a detailed analysis of the tools' functions based on Petersen's archives and his own practical experiences. He found that many of the tools were small and suited only for work in other metals, bronze silver etc., and were used for jewellery production (2007:Chapter 5). To what extent smiths used small tools to create inlay decorations also remains uncertain, but it is interesting and relates to the question of indigenous production and H/I-type hilts.

A central question here is the relationship between skilled smiths and central farms or places. Graves containing high status objects like bronze cauldrons and gaming pieces, as well as blacksmith tools, could be status markers rather than indications of a trade (Petersen 1951:111). Liv Helga Dommasnes maintained that the idea that a man's honour included activities for which he was responsible but did not necessarily carry out himself, was an important factor in interpreting the meaning of grave goods. Having a skilled weaponsmith in his employment could certainly add to a man's honour (Dommasnes 2018:44).

An intriguing example is the grave from Englaug in Løten, Hedmark, dated to c. 1,000 AD. Besides a T-type sword with a decorated hilt in Ge 5 pattern, it contained pairs of stirrups and spurs, thus belonging to the group of equestrian graves interpreted by Helge Braathen and others as the burials of men with a special political function in society (Braathen 1989:141, 162ff; Glørstad 2010:270–71). It also contains a large number of blacksmithing tools including rare and special objects, such as an ingot mould and a draw-plate for making wire, indicating a specialist

blacksmith as well as a man of high status (Martens 2002:175). The find location of Englaug is closely connected to the large cemetery at By, going back at least to the beginning of our era (Martens 1969). It has been suggested that he may have been a member of the By/Englaug family. Another nearby grave mound contained a hammer, a file and a pair of tongs, but these tools can only be considered vague indications of a blacksmith grave.

Other burials with several blacksmith tools do not contain high status objects, and may have hardly any weapons at all, thus making them difficult to date. This is the case with a grave from Ytre Elgsnes in Troms, which has the most blacksmith tools found in a grave in Northern Norway (Simonsen 1953). Povl Simonsen suggests a date in the 9th century. Nicolay Nicolaysen excavated another grave from Besseberg in Eiker, Buskerud, and it is unlikely that all status objects were overlooked (grave 1 in Nicolaysen 1891:76–78). Other examples, such as B 1068–89, have badly documented find circumstances.

The Byggland find from Morgedal, Kviteseid in the middle of Telemark, dated to c. 950 AD, is relevant to several aspects of this discussion. It contained more than 20 blacksmith tools for both coarse and fine work (Blindheim 1963; Martens 2002). Based on the interpretation that the spearheads with inlay decorations were produced by the deceased, the grave thus contained no imports or special status objects. The find was discovered by the farmer, and an excavation was carried out by Blindheim and Erik Hinsch (Blindheim 1963).

There have been questions raised as to whether this was a grave at all, as the site showed some unusual traits. An alternative interpretation is a burnt-down smithy, as well as possibly a grave built over a burnt smithy (Østigard 2007:144–48). Julie Lund has interpreted the find as a votive deposit, referring to similarities in both content and find circumstances to other deposits in southern Scandinavia (Lund 2009:167–69). This is an interesting and certainly a not unlikely interpretation. I have visited the find location ourselves, and I disagree with the idea that it is a wetland deposit. The numerous weapons and implements were placed under a cairn on a small elevation by marshy land on sloping ground, not a real bog. The objects had a much wider distribution than the limited charcoal rich layer, and there were no indications of a forge. Only a few small pieces of slag are included in the museum collection, and nothing is said in the report about more slag. This repudiates the idea of a smithy on the spot, and argues even more strongly against iron extraction there.

Frans-Arne Stylegar has suggested that there are several burials in the cairn where the find was discovered (2014). However, many of the weapons and tools were spread in a seemingly disorderly way, but the four swords were found with two pairs lying parallel and with the hilts in opposite directions. Both pairs lay in the outer part of the cairn away from the charcoal layer where most of the blacksmith tools were found (Blindheim 1963:29).

The comprehensive number of blacksmith tools still gives the impression of being one man's equipment. In any case, we see the find as a proof of a blacksmith's work in the vicinity[5].

The find is so unique in many ways that a definite determination of the find category is difficult. Altogether, the find circumstances suit a grave better than a smithy, and we interpret it as a grave for a very special and highly esteemed blacksmith who mastered a wide range of techniques.

The graves treated here are certainly very few in number, but they can be used to argue in favour of a connection between smiths' graves and centres.

A further challenge connected with the blacksmiths is where they were buried, when considering whether they were itinerant or a settled part of society. The identified graves place them within ordinary society, but this leaves open the question of where an itinerant craftsman, perhaps even brought to Norway from abroad, would have been buried.

3.7 PRELIMINARY CONCLUSIONS

The hypothesis is that weapons of different kinds, including swords and spearheads, were made in Norway during the period preceding the Viking Age. Solberg considers her group type V to be of indigenous Norwegian manufacture, and that differences in the distribution of subtypes "may simply represent different regional manufacture traditions" (1984:50–51).

The number of finds increases greatly in the Viking Age, accompanied most likely by the number of blacksmiths. The problem in relation to their number, localisation and social connections needs to be divided into several questions. One basic factor is the very wide distribution of common Norwegian sword types, which must rely on connections between the producers. Three possible explanations are suggested:

5 The few slag pieces wrongly interpreted as remains of iron extraction, include a plano-convex slag-cake, formed in the smithing hearth, probably the piece Blindheim (1962:36, 50) wrongly described as a lump of raw iron. There are no indications of iron extraction in the find.

1. The number of weaponsmiths was very small, and the weapons from each smithy had a very wide distribution.
2. The number of smiths was greater and production more decentralised, but there were close connections between the smiths or their employers.
3. The blacksmiths were itinerant and produced the same types independent of where they practised their skills.

Itinerant craftsmen including blacksmiths are often mentioned in the literature, but it is harder to find a discussion of the social conditions for their existence outside the Viking Age towns. Did Norwegian Viking Age society allow independent craftsmen to move freely from one place to another, and if so what about their personal security? It is more likely that they were exchanged among leaders.

To what extent was weapon production regulated and how could such regulations be enforced? These questions are again closely connected to the equally old question of the smiths' social status as a free man or a slave.

The graves containing blacksmith tools mentioned above, along with a small number of others, are interpreted here as the graves of specialised blacksmiths. They leave no definite traces of their products, but Blindheim's (1963) interpretation of the weapons and other objects in the Byggland grave as the smith's own products is plausible, and is supported by other concentrations of decorated weapons surrounding such graves (Martens 2002).

Several of these graves were found in cemeteries or otherwise in places supporting the idea of the smiths as free men belonging to a local community. This does not exclude the existence of blacksmiths with other backgrounds, which are not recognisable in the grave finds.

The smiths' belonging to the farming community does not solve the problem of their working conditions, whether they were independent or attached to centres/chieftains. The uniformity of hilt and spearhead types all over the country indicates their links with centres, as the elite normally command long-distance internal connections, which would have been more difficult for independent blacksmiths to establish and maintain.

Further examination of potential Norwegian blacksmith graves is still necessary as Bøckman's investigation has further demonstrated. One interesting factor is their location in relation to chieftains' farms and possible centres, which deserves further study.

The Byggland grave is not centrally placed, but the distances to the core areas of Kviteseid and Seljord are only about 10 km and 15 km respectively as the crow flies. The overland crossing between the two areas passes Brunkeberg not far from Byggland (Figure 2.1a–b).

A connection between the blacksmith buried at Englaug and the centre at Åker, about 10 km to the west, was previously suggested (Martens 2002:184). The Elgsnes grave came to light on the peninsula forming the northwestern point of the large island Hinnøya. On the inner side of northern Hinnøya, lies the farm Trondenes, the seat of one of the mighty chieftain families of Northern Norway. Another important such farm, Bjarkøy, is situated on a smaller island not very far north of Hinnøya. One possible explanation for the location of these graves is that blacksmiths attached to chieftains were recruited among local artisans and were buried on their family land.

In 2014, a grave with blacksmith tools was excavated at Nordheim in Sogndal, Sogn and Fjordane county. This grave was situated a few kilometres away from the central part of Sogndal, and no Viking Age or medieval farm is documented to have been there, though it cannot be excluded as a possibility. Randi Barndon and Asle Bruen Olsen suggest a location beside a road leading northward from Sogndal (Barndon and Olsen 2018:67). If found on a farm, the grave can be interpreted as another example of a local artisan attached to a central farm in Sogndal, where Kvåle stands out as a probable location. Kvåle was a high-status farm in the medieval period, but comparable high status in the Viking Age has not been securely confirmed (Iversen 1999:56).

The Nordheim grave is dated to around 800 AD and is thus an early example of such graves. The tools include items for working in soft materials as well as an H-type sword with a hilt decorated with vertical bronze stripes (Barndon and Olsen 2018:70 and Figure 5). This begs the question as to whether such decorations were produced in Norway at this early date.

Centres were probably instrumental in a continuous apprenticeship training system and in the spread of new technical skills. Another factor leading towards the same conclusion is access to raw materials, at least metals such as copper alloys and silver used for hilt and socket decorations.

However, one must be cautious, and rather than propose a rigid system, accept the possibility of the existence of smiths working for a limited local population, and not necessarily making only weapons of simple construction. They could also very well have maintained some level of contact with more centrally placed colleagues.