4. ON SWORD TYPOLOGY

In this work we apply the widely used typology of Petersen (1919). However, before venturing further, some remarks on typology, relevant both to the Telemark material and in general, are necessary.

About typology

The primary role of typology is to provide type determinations that supply basic information about an object's shape and dating, making them intelligible to researchers everywhere. In terms of wider use, it is important to take into account the basic characteristics of both the typology and the relevant material.

For sword typology – as for all iron weapon typologies – it must be remembered that all iron objects are shaped during the forging process, in contrast to objects cast in moulds. This simple fact accounts somewhat for deviations found throughout the Viking Age. It is therefore surprising that the great majority of swords can so easily be classified according to specific types.

4.1 ON PETERSEN'S AND OTHER SWORD TYPOLOGIES

Like all others, this typology is based on the hilts, which consist of three parts: the lower guard, upper guard and pommel. Being three-dimensional, they are characterised by side-view, length-section and cross-section (Figure 4.1). Side-view is preferred to side-section because of decorations on the surface. Even though the shape of the lower and upper guards is the same in most cases, one finds a large number of combinations. Exceptions in which the two guards are not uniform were found on certain late hilt types, including types X and Y, in which the upper guard and pommel are in one piece, sometimes with a rudimentary division.

Naturally, a typology that can be used in all countries where such swords have been found is a great advantage for comparative studies. This does not mean, however, that there are no problems attached to the use of Petersen's or indeed other typologies. Normally, both in museum catalogues and publications, type determinations are given without further details or deviations, and erroneous determinations do occur. Of course scholars have used typologies differently, and in many cases the need to place swords within a type has overshadowed the deviations from the type's characteristics. During our work, we have tried in vain to ascertain interesting details of certain sword hilts in the literature, but the only safe way to confirm details is to study the swords themselves. Depictions normally show the side-view, while length-section and/or cross-section are omitted. It is in many cases important to consider all three dimensions.

To these elements of shape, one must add the decorations, consisting of three types: forged line decorations, inlaid, or encrusted decorations, which use one or more other metals such as silver, copper alloys and niello, often in combination with metal threads for marking divisions. For a brief description of the two techniques, see Chapter 3.5. A few types, above all O I, have cast guards in copper alloys with decorations. The decorations are type specific, even though variations within the same type can be considerable and the same patterns are found on two hilt types, O II and R, while decorations on the S-type are distinctly different (Martens 2002). Geometric patterns are found on several hilt types (H/I, K, O III, T and V) from the 9th and 10th centuries. No systematic studies of combinations of hilt types and patterns have been carried out.

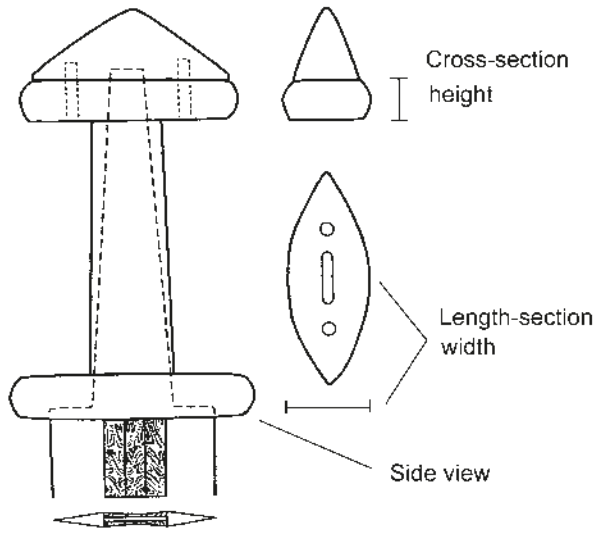
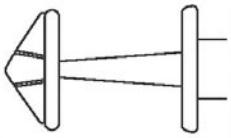
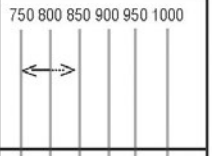
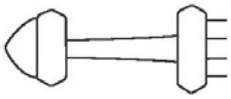
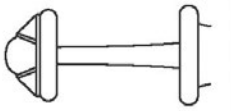
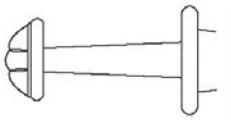
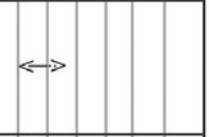
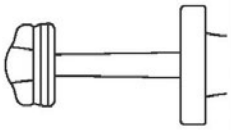
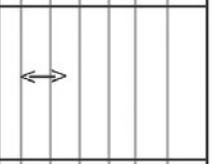
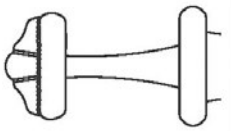
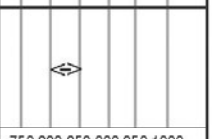
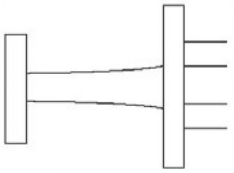
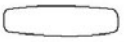
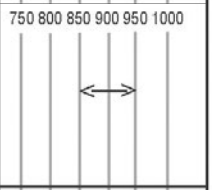
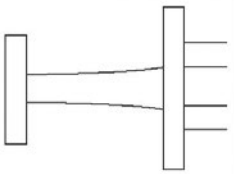
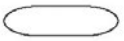
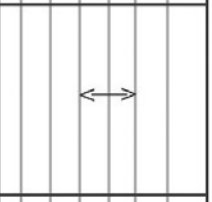
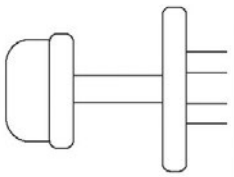
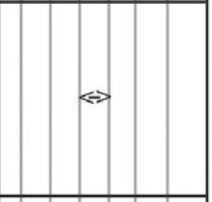
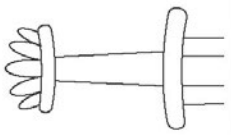
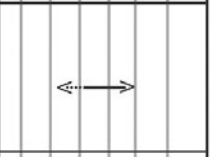
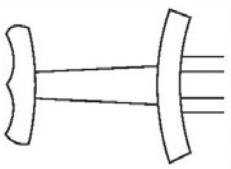
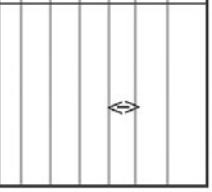


Figure 4.1. *Terminology for sword hilts (after Oakeshott 1960). The image is not covered by the CC-BY license and cannot be reused without permission.*

Sword types / Fig.						
Petersen / Fig.	Geibig / Fig.	Side view	Length section	Cross section	Pattern type	Dating
A / 52	-				Forged lines	
B / 53	1 I-VI, 5 II-VI / 2,6				-	
Sp 1 / 55-56	-				Not classified	
Sp 2 / 72	2 / 3				Not classified	
-	3 / 4 Mannheim				Not Classified	
-	4 / 5 Mannheim - Speyer				Not classified	
C / 57-58	-				Forged lines	
M / 98	-				-	
M / 99	-				-	
N / 103	8 / 9				-	
O I-III / 104-105	O III, 6 / 7 O I-II, 9 / 10				O I Cast bronze O II Ri1 O III Unclassified geometric	
P / 109	-				Fi	

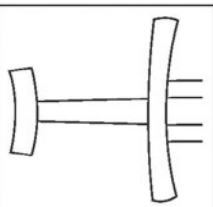
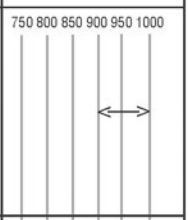
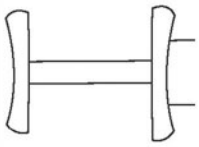
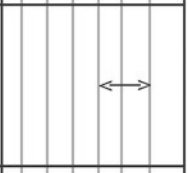
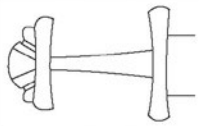
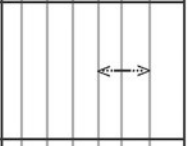
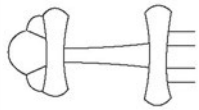
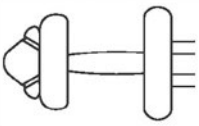
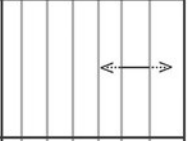
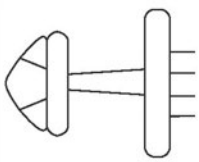
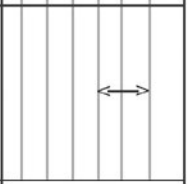
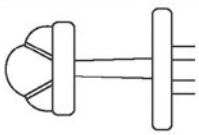
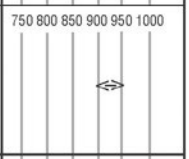
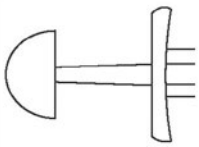
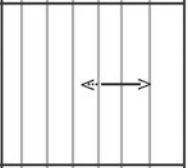
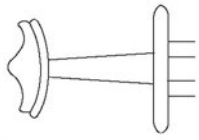
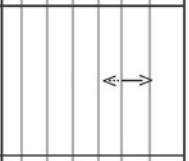
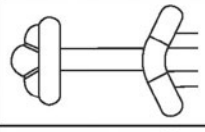
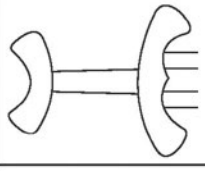
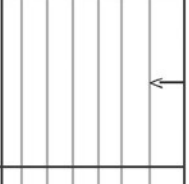
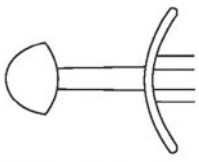
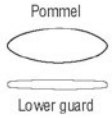
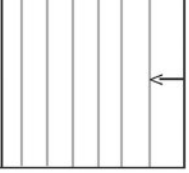
Sword types / Fig.						
Petersen / Fig.	Geibig / Fig.	Side view	Length section	Cross section	Pattern type	Dating
Q / 110	-				-	
Q / 111	-				-	
R / 113	10 / 11				Ri 1 / Ri 3	
S / 114-116	10 / 11				Ri 2 / Ge 2 An / Ge 2, Ri 3	
T / 119-121	-				Ge 2 / Ge 4 Ge 5 / Ri 3 An / Ri 3	
U, W / 122, 123	11 / 12				U = Ge unclassified W Cast bronze	
V / Pl III	11 / 12				Ge 2 / ? Ge 3	
X / 125-126	12 I / 13				Forged lines	
Y / 130-131	13 I / 14				R-	
Z / 136-137	-				Undeter-minable	
Æ / 138	-				-	
Late anglo-scand. / (LAS)	-				Ringerike style	

Figure 4.2. *Summary of Viking Age hilt types with decoration types and dating. Drawing: J. Kreutz. The image is not covered by the CC-BY license and cannot be reused without permission.*

Petersen describes and depicts the side-view of the guards and the length-section normally of the upper guard (which he incorrectly calls *tversnit*, meaning cross-section), often depicting the cross-section of the upper guard and the pommel as well. However, he is not consistent in his presentation. He mentions variations in shape within a type which are in fact quite common, but even when this is taken into consideration, each type stands out because of its combination of shape elements. Tests have demonstrated that these individual element combinations are specific to each of Petersen's types. This is perhaps the main reason why the typology has proved to be so applicable, and the naming of the types with simple letters from A to AE has added to its popularity. Decoration is briefly described, though it is not a real part of the type definition.

A typology scheme based on Petersen's depictions and descriptions with several corrections and supplements, and with the corresponding combination types and figures in Geibig's typology, is presented in Figure 4.2. Early Carolingian hilt types are problematic, and are not included in the typological scheme. They are basically individual examples with fine inlay decorations, although indigenous undecorated specimens may occur (Petersen 1919:Figure 55a; Martens 2006a). Details of the side-view of the pommels differ, for example Sp.1 has oblique, while the other three have vertical partitions. Sp.2 and Mannheim-Speyer guards have angular cross-sections, while Sp1 and Mannheim types have slightly convex ones. Sp.2 and Mannheim-Speyer often have geometric decorations (Menghin 1980:Abb.8 and 6).

The scheme presented here is very schematic, listing only the main characteristics. Geibig's Abbildungen demonstrates that deviations are not unusual. Common decoration schemes are added for several types, while for other types decorations are individual, and a classification is not possible without comprehensive studies of the swords. Of course, distinguishing, for example, between oval and rounded length-sections can be difficult.

Petersen's typology was constructed for the swords discovered in Norway, which constitute by far the greatest number found in any European country. Although the foreign material at his disposal for comparison was limited, Petersen was fully aware that the Norwegian material included both imported and indigenously made swords, as opposed to Anders Lorange who believed that all swords in Norway were imported (Lorange 1889). However, finding sound criteria for distinguishing between the two remains problematic (Martens 2004).

Petersen (1919) made two very important statements. The first was that Viking Age swords did not form a typological series, starting with type A and ending with AE:

> The study of typology involves several problems, not least because of the extraordinary abundance of and extensive changes in particular details. There are only a few cases in which there occurs a continuous development of a typological series over a longer timespan in the way that we find from several other periods, e.g. Stone Age axes without shaft holes, Bronze Age sword grips, bucket-shaped pots, cruciform brooches from the early Iron Age or oval brooches from the Viking Age. There are only a few cases in which we can demonstrate that late or the latest Viking Age weapons were developed from early Viking Age ones. [Petersen 1919:21–22, our translation]

This is supported by Geibig (1993) in his publication of the early Carolingian hilt from Rostock-Dierkow. He points out that the shape and decorative elements on this hilt can be found on a considerable number of hilt types, and that the elements belong to a common pool of established forms from which they could be individually selected and combined (Geibig 1993:218).

Petersen's other statement was that weapons were changing over time:

> It has turned out that because of the comprehensive amount of Viking Age weapons that we have, and through a thorough knowledge of this material, it is in fact possible to establish a chronology of forms. By making up a detailed relative chronology within the two centuries, an absolute chronology will appear as a result, even if it is not correct in all details. With a thorough knowledge of the extent of the material obtained, we can place each type within the two and a quarter centuries covered by the Viking Age in Norway. Wherever possible, I have also used ornamented objects of other kinds to support the dating, but as previously stated these other objects can only be used with great care when dating single finds, and even more so when dating types. It is the closed finds with many objects, as well as the comparison between such finds, that allow secure dating and not just a single ornamented item. [Petersen 1919:18, our translation]

He was able to establish a chronology, although

> The investigation has demonstrated that it is dangerous to base chronology on typological similarity. There is a similarity between Figs. 62 and 121 (E and T-types), but the first is from the earliest and the second from the latest Viking Age. Of course, clearly demonstrable typological developments have also taken place, which can be used as support for the dating, although we cannot rely solely on that. [Petersen 1919:201, our translation]

In fact, he had few other objects to rely on, and the object type most often included in the grave finds were oval brooches belonging to female dress, always leaving one in doubt as to whether all the objects belonged to the same grave. New research including physical anthropology has verified that women's graves with weapons do occur (Price et al. 2019). Thus such combinations can be reliable. Petersen had to rely on find combinations with other weapons, thereby leading to circular conclusions. Even so, his chronology is still valid with some adjustments.

4.2 OTHER TYPOLOGIES: COMPARISONS PETERSEN/GEIBIG

Several other typologies have been presented after Petersen's (see Geibig 1991:13–19: Research history, where Abb.1 presents the correspondence between different typologies). Some studies, such as Willfried Menghin's, are valuable supplements relating to early Carolingian swords, which made it clear that Petersen's special types 1 and 2 are ordinary if not numerous types (Menghin 1980). Other scholars have also worked on a limited number of types, or have reduced the number of types considerably. However, such simplified systems do not fulfill the need for an adequately detailed classification, and can be directly misleading.

The most systematic and detailed element-based typology was made by Geibig (1989 and 1991). He depicts six different views/sections, but he constructs his combination types based on four elements, and the variations of each element are numbered. The elements are: side-view (Seitenansicht); cross-section (Schmalseitenansicht); length-section (Knaufaufsicht) of the pommel/upper guard; and the length-section (Parierstangenaufsicht) of the lower guard, with the latter two depicted as projections, not sections. These elements are sufficient for distinguishing between the combination types, and encompass a number of variations within some of them.

The cross-sections of the upper and lower guards are normally the same, and this is very often the case for the length-sections as well. Geibig describes the side-view of the guards briefly. The side-view of the guards is important for two reasons: Firstly, the side view is the element that is most sensitive to fashion changes and thus has a chronological value. Very briefly – and not without exceptions – early guards are short, straight and often wide, while later ones are curved, often with singly or doubly extended ends. They are often longer too. Secondly, in many cases the side-view of one guard can produce a secure type determination even when the other guard and pommel are not preserved, especially when remains of the decoration are still preserved.

One of the advantages of Petersen's typology is certainly that it is built on few elements, and Geibig has demonstrated this to be sufficient. Even though they rely partly on different elements, Geibig can always correlate his combination types to Petersen's types. Still, Geibig's classification system has its weaknesses, at least from a Norwegian point of view. He does not take decorations into account, and they ought to be included in the description of the types.

Geibig's typology was constructed for swords found in the former West Germany (Bundesrepublik Deutschland), and several of Petersen's types are not included. Among these are the common Norwegian types M and Q, but other ones with a much wider distribution in Northern and Eastern Europe, for example the D, E, T and Z-types, have also been omitted. Even though the problems relating to the representativity of find distribution of these latter types are substantial, they raise some interesting questions.

Bearing in mind that nearly all hilts were shaped by hand during forging, the question remains: How much can an item deviate from its type characteristics and still be ascribed to that type? This is not just a theoretical question, but one which is relevant to several problems of production. The remarks below seek to reveal some of these problems.

Petersen and Geibig have handled type-forming questions in different ways. In most cases Petersen gives a general type description including variations, while Geibig has divided some of his combination types into several varieties, such as his combination types 1 and 5, both of which comprise six variants. The first one corresponds to Petersen's type B, the second to Petersen H/I (5 I) and B (5 II–VI). Thus type B is split into a total of 11 variants. Geibig describes the combination type 1 variants as "a greater, loosely connected group" (1991:28). Further "The combination types 1 and 5 combine a wide range (spectrum in the German text) of hilt forms rich in variations with

similarities in the pommels' cross-sections as well as the side-views" (1991:29). In his summary of combination type 5, he points out the straight sides of the pommel in side-view as the main characteristic of variant I "a closed (*eng geschlossene*) homogeneous group sharply delimited from the other variants" [our translation].

For both combination groups, variant I has the most finds, seventeen and six respectively. For the others the numbers are small, in five cases only one hilt, and one may therefore question whether the variants are real or just the result of the hilts being hand-shaped (Geibig 1991:186–87).

Allowing variations within types is better than splitting a type into several subtypes, in part because similar deviations are often small in number. There is no doubt, however, that in many cases type determinations have been used too freely.

Origin and production areas for widespread sword types are difficult to find. There is no doubt that the Carolingian realm and its successors played a central role and were probably a core area for fashion development. The production area problem must be split into several separate considerations because of the fact that a hilt type originating in one area can very well have been produced in several places lying far apart. Such questions are difficult to handle both methodically and in practice.

This is a highly relevant issue in relation to Petersen's H/I type, which is the most numerous type in Norway, Sweden and Finland. (Androschuk 2014:246–67; Kivikoski 1973:15; Petersen 1919:89). It is no doubt of continental origin, and some very early swords from Croatia have been placed in a group between a special type 1 and the H-type (Müller-Wille 1982:134–35, Abb. 20). Petersen cites the number of H swords as 213 and the I swords as 16. The numbers have increased greatly since then. Were all these hilts imported or were many, perhaps the majority of them, produced in Norway? This question depends on the technical skill of Norwegian weaponsmiths, in terms of whether they mastered the inlay decoration technique. If so, there were probably only a small number of smiths working in central places, such as royal or noble farms, who did.

Geibig's combination types 1 and 5 are very widely distributed in Europe. Geibig's placing of the sword from Medvedica in Croatia (Vinski 1983:Abb.2, 1) in combination type 5 is convincing (Vinski 1983:42). This sword hilt, like the one from Joshoven in Bayern has a coarse inlay decoration with vertical strips, one of the characteristics of the early H-type swords. Geibig points out the difference between the two in the cross-section of the pommels, and ascribes the Joshoven sword to his variant 5 II, Plate 9. Geibig places all the other variants of types 1 and 5 in the late 8th century, and are thus older than 5 I, which was probably developed at the very end of the same century. What this means in terms of the production of 5 I is hard to say. These complex questions need a far more thorough investigation.

On divisions of later types

A few words are needed on some late types, specifically the relationship between Petersen's X-type and Geibig's combination types 11 and 12. Combination type 11 encompasses Petersen's types U, V and W, and in Geibig's description he refers to Vinski, who describes a transition type between W and X. The X-type is challenging. Geibig splits it into two combination types, 12 and 15. Both have upper guard and pommel in one piece. 12 I, Geibig's Figure 13, which is the only one of Viking Age date, corresponds to Petersen's Figure 124.

Geibig places Petersen's type X, Figure125, in combination type 11, as it is closer to this than to his combination type 12 (Geibig 1991:56, and Abb.12).

For the W-type, however, Petersen's main characteristic is not the shape of the hilts, but the material they are made of. "The guards are totally made of bronze, with the upper guard and pommel cast in one piece" (1919:156, Figure 123). He does not describe the shape, but both Figures 123 and 126, as well as Geibig's Abb.12, show a straight lower guard, while Figure 125 has a slightly curved lower guard. Moreover, both Figures 125 and 126 show slightly extended ends on the underside. These variations are in accordance with Geibig's depiction of combination type 12 (Figure 13). The W-type is not an independent type, but a variant on the X-type, made in cast bronze. This is a parallel to the O-type, which Petersen divides into three variants, according to material and decoration (Petersen 1919:126–29). Any transition type between W and X is thus irrelevant.

As to shape, Petersen's Figures 125 and 126 are the most common in our material. However, four of these, C.23364 and C.29700a–b from Tinn and C.24739 from Kviteseid, deviate from the X-type in one important characteristic, the upper guard and pommel are in two pieces. This links them to the U-type, which can also have copper or brass decorations. Petersen described the U-type pommels as relatively low, and on his Figure 122 the guards are low as well.

The four swords mentioned above stand out because of their very high lower guards: the height of the lower guard on the sword C.23364 from Bøen, Rjukan, Tinn (Met.14) is 2.3 cm. There are some other hilts of similar

shape from Telemark that have high guards, among them C.29700a–b. The heights of the lower guards are 1.8–2.3 cm and 2.5 cm respectively. Two others, from Seljord C.17401 and Kviteseid, measure 2.1 and 1.8–2.0 cm in height, and a third one, C.13933 from Fyresdal, measures 1.8 cm, while the other four from Telemark measure only 1.4–1.6 cm in height. The Bøen sword also stands out because of its inlay decoration, which is very unusual on the X-type. The pattern is unusual as well. The decoration forms open lozenges on the pommel and probably on the upper guard (Figure 3.4).

Despite the four specimens having a separate pommel, they are categorised as X-types, or rather Xa-types to indicate the variant. One argument for this is that a high lower guard is also found on other X-type swords, possibly forming a Norwegian variant of the type. Even some Q-type specimens have such high guards.

Type Y, Geibig's combination type 13 (Figure 14), shows several variations, difficult to express through a simple scheme. The pommel's two concave lines meeting in a central top point is a distinctive feature. However, the material used here, consisting as it does of only three or four specimens, is too limited to warrant further remarks.

The distribution of Geibig's combination type 11, presented on his map (Abb.44), shows a concentration in the Hedeby area. The W-type sword, found near Schleswig (Plate 164) is so similar to Petersen's Figure 123 from south Trøndelag that it is likely they were made in the same workshop.

The V-type is the most numerous and widespread of combination type 11. It has a high three-partite pommel and a distinctive geometric inlay decoration (Petersen 1919:Plate III). According to Petersen (1919:155), the pommel does not have convex sides in the cross-section, but the cross-sections can vary. The V-type is certainly a distinct type. The U-type swords are more difficult to place, as they are few in number. Petersen lists eight finds, none of which feature in our material. They are close to the V-type in shape, but with lower guards and pommel. Petersen mentions decorations on some: "Narrow, flat ribbons of brass or copper, stripes on only one hilt" (1919:153). It is possible to see it as a variant of the V-type.

4.3 REMARKS ON SOME LATE EUROPEAN SWORD TYPES

Turning to some late Viking Age types, one noteworthy detail is found on several hilt types: the convex, on some types nearly globular, cross-section of the pommel (R, S, T, Z). This starts in the 9th century with the D and E-types (not included in Geibig's typology), which have moderate convex cross-sections with a rounded top. For chronological reasons, Petersen rejected a typological connection between the E and T-types, but there are E-type finds from the 10th century bridging the gap. In her treatment of spearhead types VII, 2A and B (Petersen's types I and K), Solberg refers to one spearhead of each type found in combination with an E-type sword. Both spearhead types are dated to the period 900–950 AD. Solberg, referring to Petersen's dating of E-type swords, believes the sword found with the K-type spearhead to be an old item included in the grave (1984:94–95). There is no reason for this, as there are other examples of E-type swords found with 10th century spearheads. The sword C.22324a from Hedmark was found with a spearhead of Solberg's type group VII, 2C. A typological connection between the E and T-types implies that the T-type goes back to before 950 AD.

The two types have another special feature in common: a decoration with small pattern-forming indentations on the sides of the guards and the pommel. Even the lozenge on the pommel, found on several T-type hilts, occurs on an E-type sword from the Baltic, as well as on some specimens from Gotland (Kazakevicius 1996:Figure 21; Thunmark-Nylén 1998:Tafel 224:2, 225:1), a detail strengthening a connection between the two types (Figure 4.3).

Unfortunately, cross-sections of the pommel are not often depicted or described in the literature, but such a distinct detail as the convex/globular one, in use for a long time on a limited number of types, is certainly worth noticing. Moreover, the production and distribution of these hilts is a question that deserves a special investigation (see Chapter 7).

The two swords from Tinn, C.21211 from Såem and C.28239a from Mårem, have caused problems because they do not fit into any current typology. Petersen, with hesitation, places the first one in his Z-type, where it certainly does not belong. Their pommels show no rudiments of upper guards, and the lower guards are low and without extended ends, and overall very different from the heavy ones on the Z-type hilts (Figure 4.4). Signe Horn Fuglesang mentions the Mårem specimen as one of two examples of swords decorated in the Ringerike style. The other is in the Moesgård Museum in Århus, Denmark, and she places both in the X-type, although in two different sub-types (Fuglesang 1980:42; the Århus sword is depicted in Evison 1968:Plate XVI B).

A close parallel is the sword from the Thames at Battersea, London (Wilson 1965:32–33, Plate II; Evison1968:174, Figures 2a, 4b; Pedersen 2004:Figure 1).

Figure 4.3. *Pommel and upper guard from E-type sword from Gotland (after Thunmark-Nylén 1998:Tafel XXX). The image is not covered by the CC-BY license and cannot be reused without permission.*

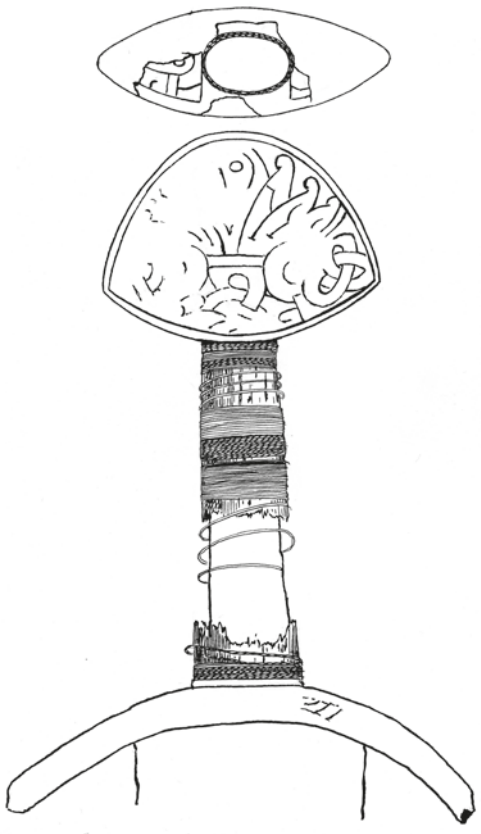


Figure 4.4. *Sword hilt of L-type, C.28239 from Mårem, Tinn. Drawing: Unknown, KHM (CC BY-SA 4.0).*

Evison places it in the X-type, but with an acanthus motif silver decoration and a markedly curved lower guard, it does not fit into this type. According to Geibig, the X-type combination types 12 and 15 are never decorated. David Wilson states that "the acanthus ornament of the pommel of this object … is quite close to the Winchester School of painting" (1965:33). As far as can be seen from the drawing of the sword from the River Frome (Evison 1968:Figure 7a) it is very like those from Tinn, but it's lower guard is markedly more curved.

These swords form a type of their own here named LA, even though they have traits in common with several other sword hilts – which is in fact quite a common phenomenon. The find locations lie far apart and reveal no clue to their place of production. Neither does the Ringerike style of decoration, as this style "seems to have been applied both in Scandinavia and is fairly well represented in the South of England and in Ireland" (Fuglesang 1980:77). Pedersen interprets the Moesgård sword as an Anglo-Scandinavian weapon made either in Scandinavia under English influence or in England under Scandinavian influence (Pedersen 2004:47), which is a very reasonable conclusion.

In her publication on the sword from Wallingford Bridge, Evison describes a typological development that took place in England from the L-type to the Battersea sword. In addition, she presents some more swords which do not fit into the ordinary types, such as the Mileham and River Frome finds (Evison 1968:Figures 2b and 7a; Wilson 1965:Plate VIA). The individual character of these as well as other late Viking Age sword hilts is noteworthy. Unfortunately, decorations can be badly preserved – if at all – and some have only a part of the hilt left. Even though they have traits in common, they never form real types to which one can easily assign even a small number of hilts. The reason for this cannot only be the occasional find context, such as river finds and the late date, as other real, contemporary types like the Z or X (Geibig combination type 15) do exist. Likewise, the many M-type spearheads decorated in the Ringerike style show a similar pattern (Fuglesang 1980; Creutz 2003). There is no convincing explanation as to how this individuality is related to the production of these hilts, apart from it very likely being decentralised.

4.4 THE NORWEGIAN M AND Q HILT TYPES

One main characteristic of these types is the lack of a pommel, while another is that they are undecorated.

Petersen believes that the M-type is of foreign origin, "but, of course, when first introduced, it could easily have been copied and produced at home" (1919:121, our translation). There is no doubt that these swords were indigenously made and, as Petersen points out, they are hardly ever found outside Norway. Blindheim (1999:81) and other Norwegian archaeologists have argued for an indigenous origin of the type, and there is no reason to doubt this. Moreover, all hilt types lacking a pommel, M, Q, P and Æ, are very rare outside Norway.

There are two reasons for closer study of the M and Q-types here. They are the most numerous ones in the Telemark material: 51 M-types and 31 Q-types respectively, as well as some uncertain ones. They are definitely indigenously made, and it is likely that hilt and blade were forged and fitted together by the same smith. Therefore, these swords have the potential to reveal local variations in smithing traditions. In addition to the shape and size of the guards, their welding seams are often cracked or visible, and their different positions could be an additional indication of such traditions. In the Telemark material, their distribution does not confirm this. Other reasons for more precise descriptions would be to define a distinction between M and Q-types, and to improve the possibility of type-determining swords which have only one (usually the lower) guard preserved.

Petersen gives a general description of the M-type:

> The guards are straight or slightly curved and of equal heights. The cross-section (i.e. length-section) is of approximately equal width, most often with transversely cut, more rarely rounded, ends. The sides are normally flat, though they can be slightly convex, but never keeled. The guards are never decorated. [Petersen 1919:117, our translation]

This description covers both Figures 98 and 99. There are several variations in guard shapes, forming partially distinct variations and some seemingly casual element combinations. He describes the form elements of Figure 98 as the most common ones, and this is certainly correct for the Telemark finds. The length-section is depicted as rectangular, but normally the length-sides are slightly convex. The cross-section is rectangular. The other variant, Figure 99, has a length-section with rounded ends and a cross-section with convex sides. Most probably Figure 99 is originally a distinct variant, but in many cases the two are mixed.

For the Q-type, the matter is more complex. Petersen's general description relates to the guard shapes of the previous types. Petersen states that the guards are slightly curved for the whole length. The ends can be higher than the central part (extended ends in the terminology applied here). They usually have a rectangular cross-section, but can be convex more often than on the M-type. Here too, his description covers all variants, and that makes it a bit vague for some elements. He points to R 502 as a late variant. R 502 is in fact another specimen of Figure 111.

Starting with Petersen's Figure 110, the length-section has convex outlines and transversely cut ends, in side-view the ends are extended on the lower and upper side respectively (Figure 4.5). Some specimens have very heavy guards with a height of up to 2.3 cm on the ends. In Figure 112 no length section is depicted, but in the Telemark collection some classified as 112 have pointed oval or more rounded oval length-sections, as in Figure 111. In the side-view the upper guards have more extended ends than Figure 110, and Petersen calls it a transition form to the Æ-type. The guard ends can even taper. Overall, it is very difficult to distinguish between 110 and 112, and they are all variations of the main type in Figure 110. The connection with the M-type (Figure 98) is clear, most probably by a direct evolution from the M to the Q-type.

Petersen's Figure111 (R 502) represents something new, but it is closely related to other contemporary types like O III, with a wide distribution outside Norway. The length-section is elongated oval or pointed oval with rounded ends. In side-view the upper and lower lines of the lower and upper guard respectively are straight, but sometimes with double-sided extended ends. The under and upper lines are curved, the cross-section rectangular or with convex sides. The type elements on Figures 110 and 111 can be mixed.

Most probably, the curving and the end extensions become more pronounced over time, leading from the Q to the Æ-type. This development, as well as the increasing length of the guards, are clear signs that Norwegian blacksmiths were familiar with the evolution of European trends.

One question that arises when dealing with these types is how to distinguish between M and Q-types when the guards are curved. There are two distinctions one can use here, the first of which is the side-view. They are to be classified as M-swords when curved guards have parallel sides, not extended ends. This trait needs to be combined with the second distinction, which relates to the length and height of the guards. The shortest lower guard on an M-sword is 7.8 cm

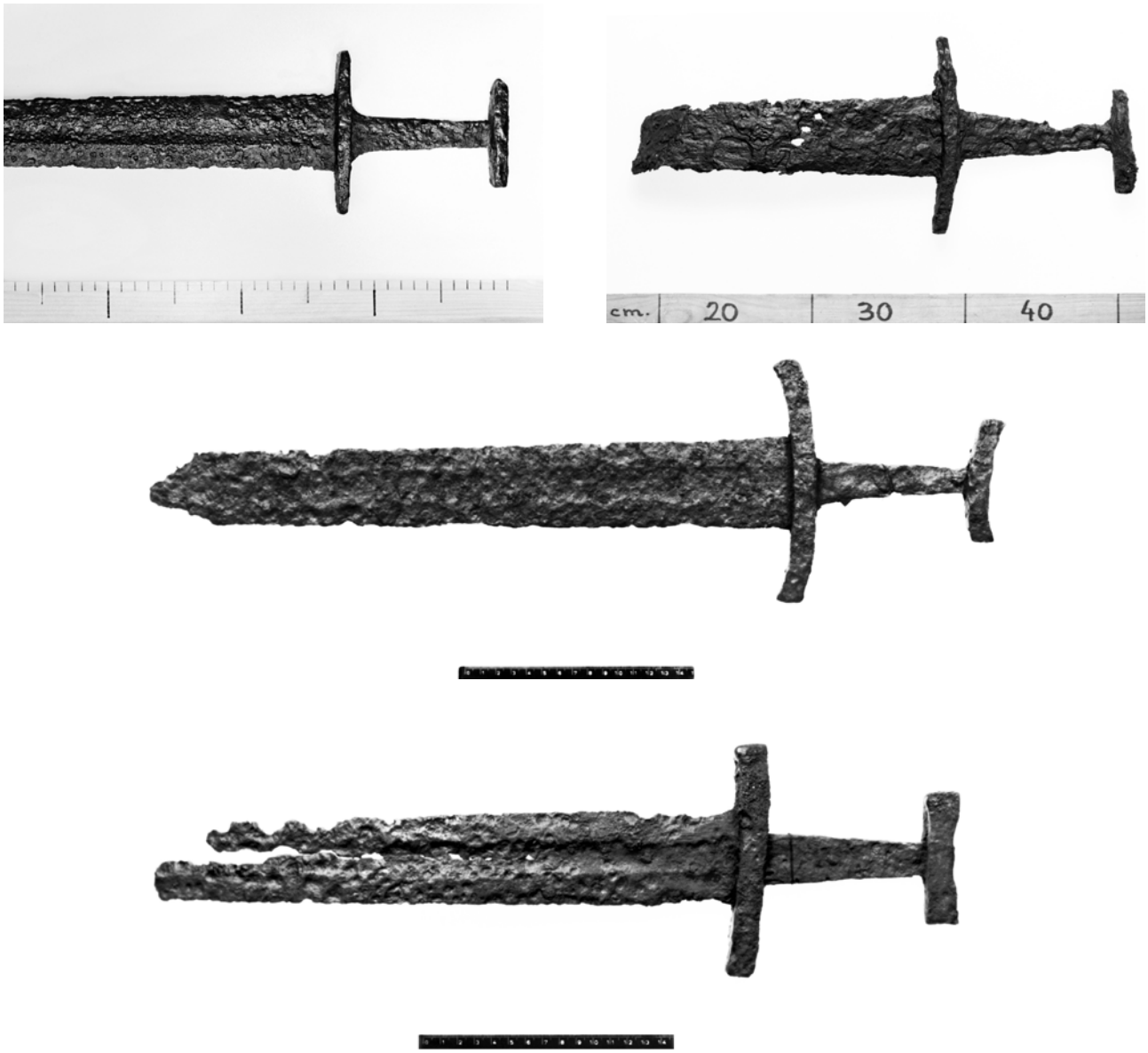


Figure 4.5. *Hilts from M and Q-type swords: 1. C.34271 Nissedal, M; 2. C.30067 Skien, M; 3. C.26828 Tinn, Q; 4. 23018 Tokke, Q. Photo: Unknown, KHM (CC BY-SA 4.0).*

long, and on nine specimens from Telemark does not exceed 10 cm in length. The majority are 10–12 cm long and only a few exceed 12 cm. Q-type guards are never shorter than 10 cm, and many guards are longer than 12 cm. The longest one from Telemark measures 15.7 cm, while Petersen defines 16.7 cm as maximum length. For guards of middle length between 10 and 12 cm, no distinction between the two types based on length is possible. While the height of the M-type guards never exceeds 1.2 cm, the Q-types are frequently higher and can be up to 2.2 cm high (one sword, 30049). Hilts, being both long and high, make a very heavy impression.

In the Telemark collection, only one guard is preserved on several swords, in most cases the lower one. Many of these have length-sections with slightly convex sides and transversely cut ends, like the M and Q-swords. This length-section also occurs on the X- type (Figures 124, 125) and on the Y-type (Figure 130). The length of the X-type (Figure 125) varies. Some swords with only one guard can be safely placed in the M-type, but for those with curved guards or extended ends a secure determination is difficult. As the Q-type is more numerous than X and Y, this type is most probable even for damaged finds.

4.5 CHRONOLOGY

As stated above, Petersen was able to establish a weapon chronology, despite the fact that he had few independent objects to rely on. For the most part, his chronology has proved reliable.

Turning to the Telemark finds, the situation is no better. In the few cases where there are other kinds of objects in a grave, they do not contribute to closer or more secure dating.

The Telemark finds have another disadvantage too: Very few graves have been excavated by archaeologists, and the documentation for a majority of them is insufficient, stating only that the objects were found in a burial mound. In some cases, it is obvious that items from more than one grave have been mixed, and in several cases this may apply to items from more than one mound. And of course, finds can be mixed without obvious indications that this happened. On the other hand, one has no guarantee that all weapons in a grave were taken care of after excavation.

A key question in an investigation of smithing techniques and blade construction is the need for exact dating. The swords cover a timespan of nearly 300 years, and changes and improvements have obviously taken place during those centuries. Changes were processes, taking some time to spread throughout a production area. Except for specific new techniques that can coincide with new hilt types, such changes cannot be dated exactly. One of our goals is to study this development. Even though one has to keep in mind that a blade and hilt can be made separately and that swords can be heirlooms, the only way to study such phenomena is by typology and find combinations. Further, there is no reason to doubt that for the ordinary Norwegian sword types, hilt and blade were made as a unit.

Weapons were personal belongings and were normally buried with their owners. High quality swords, with pattern welding or inscribed blades and/or finely decorated hilts are most likely to end up as heirlooms, combined with other weapons of a definitely later date. Such practices can, however, be obscured by new "modern" hilts being mounted on old blades. Such valuable specimens are few in number, and most sword hilts with inlay decorations (except H-type hilts) are from the 10th century, some belonging to the last part and into the 11th century. The possibility of tracing such renewals is small without a special investigation of a greater number of specimen combinations than the Telemark finds.

Because of uncertain documentation, exact numbers of secure find combinations are unreliable. There are 31 finds with two or more weapons besides the sword, which certainly or most likely belong to one grave. The weapon types are spearheads, axes and shield-bosses. Rattles, a Norwegian tool type connected to horse gear (R460–463, Petersen 1919:Figures 46–50), form a typological and chronological series, but have been found only twice with swords without other weapons, and can thus for the most part confirm the dating of the weapon combinations (Petersen 1919:48–50, 1951:43–46). Many graves contain arrowheads as well, but they are of little value to chronology.

Besides swords, spearheads are the weapons that can be most precisely dated, and for these Solberg's PhD dissertation from 1984 is significant, mainly because she had a much greater number of finds to rely on than Petersen had. One important group of spearheads, her type group VI, corresponding to Petersen's types A–E (except for Petersen's D, Figure 11) was published in a separate paper in 1991 (Solberg 1991).

The most numerous combination of swords with one other weapon is sword and axe, which occurs in 30 finds, while swords and spearheads occur in 11 finds. Shield-bosses are not common, and except for one find, they are always found in graves with more weapons than the sword. Weapon combinations without swords are left out here.

In accordance with these factors, the swords can in many cases be dated to a certain century only, at best to the first or second half or the middle part of a century. Among the most common hilt types, C-type swords have been found once with a spearhead of Petersen's F-type and a shield-boss like R 562, and twice with G-type axes, indicating use throughout the 9th century.

H-type swords were likewise used from the beginning of the 9th and well into the 10th century, according to Petersen. He states that the M-type came into use in the middle of the 9th century, and was still being used in the beginning of the 10th (1919:120–21). In the Telemark finds, few were found in combinations limited to the 9th century, while the majority can be dated only to 850–950 AD. This is clear from the combinations with E, G and H-type axes and some with I and K spearheads that did not come into use before 900 AD. M and Q-type swords were partly contemporary in the 10thcentury, but the Q-type was used until the end of the century.

Finally, one must mention that the number of finds increase throughout the period, with the 10th century having the highest number, and a subsequent decrease occuring after 1,000 AD.

One can also note that there are differences in the relative numbers of M and Q-type swords in different parts of Telemark. In Grenland the M-type dominates (29 to 15), while in eastern and western Telemark the numbers are nearly equal (4 to 5 and 15 to 18 respectively). This is part of a chronological trend: late finds are more numerous in the inner parts than in Grenland.