

The textile fragments in boat-grave 5, Valsgärde, Old Uppsala parish, Uppland

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The present work deals with the textile finds from the Vendel Period boat-grave 5 at Valsgärde, Uppland. The excavation of boat-grave 5 between 1929 and 1930 resulted in the discovery of 120 textile fragments, most of them stuck to metal (shield mountings, helmet etc.) and covered with metal corrosion. A main result of the present work is that the deceased seems to have been laid to rest covered by a cloak, but *not* formally dressed. Instead, several types of fine textiles, suitable for garments, were placed on top of the shields that covered the cloaked body and above the mans head, where the textiles lay in several layers. The helmet and parts of the shields were covered with a fabric that might have been a "field" cloak/blanket. The central part of the boat was covered with a tent/superstructure of birch-bark with a fabric lining. A textile quiver and a buckle with a patterned fabric from the edging of a caftan were placed separately closer to the stem.

Introduction

Valsgärde cemetery was excavated between 1928 and 1952, when 15 boat-graves and 11 chamber-graves with valuable burial gifts were found; furthermore 54 cremation graves were found. The graves date from the Migration Period to the end of the Viking Age.

Thirteen of the boat-graves and five of the chamber-graves contained textile fragments, from one single fragment in the graves from the Viking Age to abundant material in the graves from the Vendel Period. The results of the archaeological investigation of boat-graves 6-8, all dated to the Vendel Period, have been published by Greta Arwidsson, who conducted textile technical analyses (Arwidsson 1942; 1954; 1977). The textile material from Valsgärde was later analysed and catalogued by Lise Bender Jørgensen (1992). My study of the textile material from boat-grave 5 in Valsgärde aims to find out how the deceased was placed in the boat and how the deceased was dressed. The textile material that was excavated 1929-30 under the direction of Pär Olsén, constitutes the basis for this study.

Material

Information about the finds in the boat was collected from the Department of Archaeology, Uppsala, where plans, original notes, finds and find catalogue are kept. The textile material was then studied in detail at the Archaeological Research Laboratory, Stockholm University.

With one exception all the textile pieces discovered were attached to metal fragments. The metal salt penetrates the fibres to a certain extent and places itself as corrosion around the textile, but despite this the binding system and spinning direction of the textiles are often apparent in certain areas and can be studied. Predominantly the textiles originate from shield I, and come from the iron-shod shield rim, the iron shield boss and the iron and bronze shield mountings. Textile pieces were also found on shields II and III, a helmet, arrow, button and belt buckle (fig. 1). A total of 112 textile fragments with metal precipitation and 6 fragments without precipitation were analysed. Of these 84 respectively 4 fragments could be defined according to binding system, thread count and spinning direction. The greatest measurable textile area was 14x7 cm, but mostly the area was less than 0.5x0.5 cm. For definitions of textile techniques and spinning, see Geijer 1972 and Strömberg 1979.

Methods

The material has been analysed according to the method recommended by Hägg (1974:5ff), that is, the original remains of textile, metal etc. have been systematically recorded in horizontal and vertical find context by micro stratigraphical analyses. The textile material has been examined under a microscope to determine binding system, thread count and spinning direction. The most difficult part in the analyses of archaeological textile material is to establish the

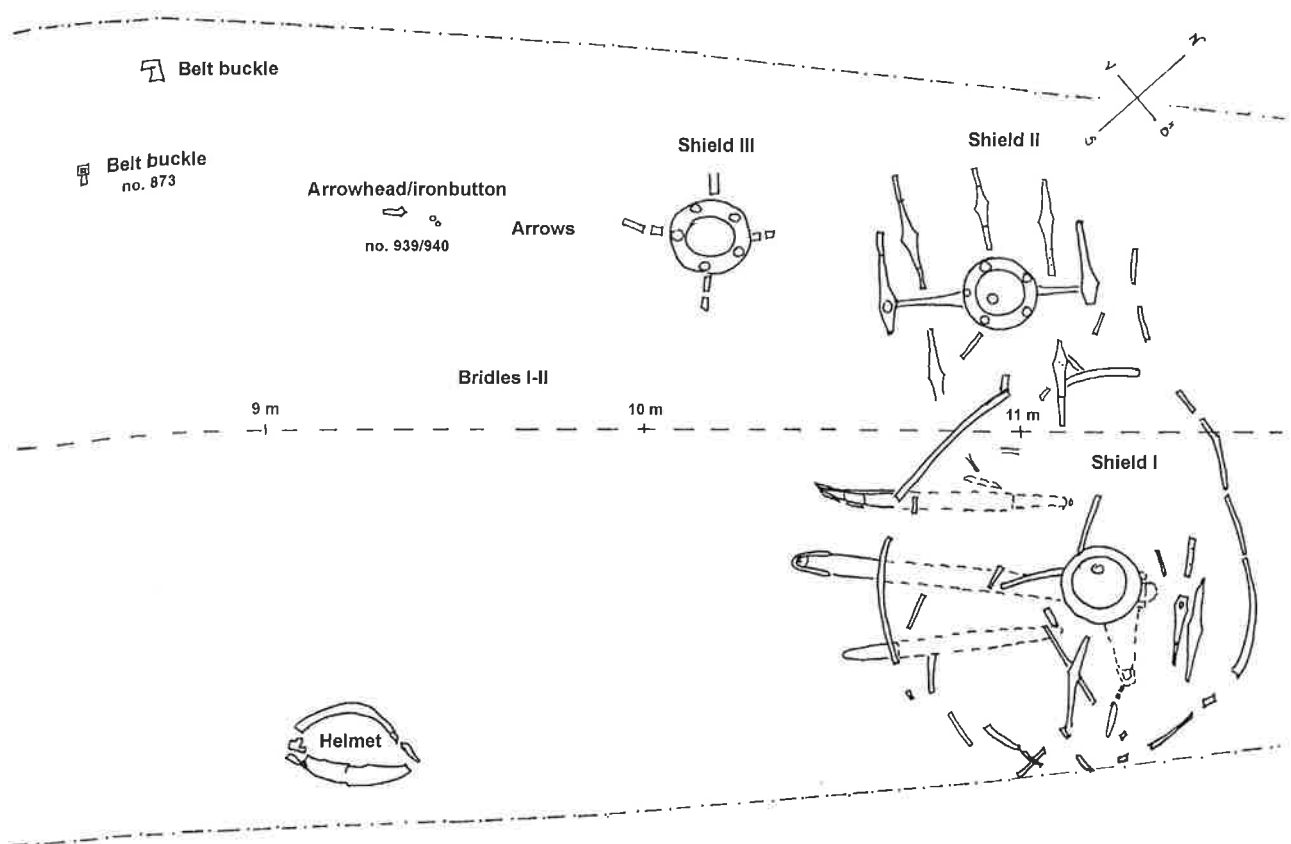


Figure 1. The dead man was situated somewhat astern of the centre of the boat facing the stern, according to the then current norm. Both the man and the weapons were lying under shield I. The weapons were placed to the left of the man. Shield II, leaning against the other boat side, was partly covering shield I. Shield III, which had been placed in front of shield II, was partly covering the same. Abreast of the helmet, lying below the man's legs, there were two bridles and arrows. Two belt buckles were put down ahead in the otherwise empty central part of the boat. In the stem of the boat there was kitchen equipment and food supplies feast remnants: Here were found the remains of pig, cattle, horse and a grey goose. North of the boat were bones from two horses, one sheep and one head of cattle; south of the boat the remnants of four dogs and in the stern the skeleton of a sheep. The centre line of the boat is shown with a broken line, and the approximate line of the gunwale shown with a broken/dotted line. The measurement at the centre line starts out from the stem. Scale 1:20.

thread count. The thread count varies significantly in fabrics that are hand-woven out of hand spun yarn. Furthermore if the material is covered with metal precipitation the areas that are measurable are often small, making it difficult to decide where a thread begins and where it ends. To be able to compare the thread count in fabrics woven in the same binding system and spinning direction, to decide which fragments belong to the same original fabric, and the total number of fabrics in the grave, it is necessary to compare the fragments within the same unit of measurement, in this case threads per centimetre (threads/cm). In those cases when it only is possible to count the threads over a distance less than one centimetre both the distance and the thread count has to be enlarged to threads per centimetre. When the distance is short and the counted number of threads are not distinct the uncertainty increases with enlargement. (Example: 7 threads/0.31 cm = 22.6 threads/cm; 7 threads/0.35 cm = 20 threads/cm). To increase the certainty the thread count has, if possible,

been measured in several areas and over a varied number of threads. The number of threads has therefore been specified partly as an interval within which the thread count varies, and partly as a mean value in both warp and weft (Example: 20–22.5×10–12 threads/cm => 21.25×11 threads/cm).

To be able to decide which textile fragments belong together, the fabric has furthermore been classified with a rib factor, R , and thread count sum, T (cf. Malmius 1996 for method and definitions). The rib factor ($[\text{thread count in warp}]/[\text{thread count in weft}]-1$; $R \geq 0$) defines the thread relationship between warp and weft; the higher the number the more unbalanced the fabric/binding system. $R=0-0.09$ shows that the fabrics are balanced, $R=0.1-0.9$ a ribbous fabric and $R \geq 1.0$ a ribbed fabric. The thread count sum (the sum of the mean value of $[\text{thread count in warp}]+[\text{thread count in weft}]$) defines the fineness of the fabric; the higher the sum the finer the fabric. Two or several fabric fragments, where binding systems and spinning directions

correspond, are put together in a rib factor diagram and the thread count compared. Textile fragments with the same finding number were compared to find out if there was one or several fabrics, then fragments with different finding numbers were compared to determine where in the boat fabric fragments of the same quality were found. In this study fine or very fine samples have been judged to belong to the same piece of cloth if the variation in thread count was below 3 threads/cm.

A great deal of the material has been documented using micro- and macro photography, to study differences in fragments with the same binding system. Yarn- and fabric thickness has only been measured on samples not covered with metal precipitation.

Chemical analyses and morphological analyses by scanning electron microscope (SEM) have been used in this study to determine the material. Before analyses the corrosion must be removed by assistance of etylen-diamintetraacetat solution (EDTA-solution) in varied concentration, by a method worked out by Prof. Birgit Arrhenius. The textile material is not affected by the EDTA-solution if it is held neutral by a phosphate buffer (Arrhenius 1973:39). The chemical analyses gives a quick answer to the origin of the material, since soaking in a warm 3% sodium hydroxide solution dissolves animal material, while it has no effect on vegetable material (Arwidsson 1942:87). By studying the material in the SEM the surface structure of the fibres appears, which makes it possible to distinguish between such material as wool from different sheep breeds, fur from wild

animals, flax, hemp etc. In certain cases the fibre analyses even indicate the provenance of the material.

One difficulty in this investigation has been to interpret this fragmentary textile material, excavated decades ago where the exact location of the various fragments is frequently unrecorded and where classificatory confusion exists.

The fabrics field of application has been interpreted according to their location in the boat and in comparison with fabrics from the published Vendel warrior graves, Valsgärde 6–8, Sutton Hoo, England and Morken, Rheinland, Germany. The fabrics have further been analysed in terms of textile development through comparison with material from earlier and later periods. Pictures of dressed men and information from literary sources have been used to illustrate the dress habits, but these sources have only been given subordinated value, as they most often give a schematic description of the costume.

Result

The fabrics in boat-grave 5, Valsgärde, were mainly woven in tabby and 2/2 diagonal twill with varied thread counts. There were also fabrics in 2/2 broken twill, half extended tabby, warp- or weft floated tabby, spin patterned tabby and a tablet woven band. Very vague traces, in the form of a few threads, came from a patterned weave. Most of the fabrics were unbalanced. All the fabrics have been woven with z-spun warp yarn. Where it has been possible to deter-

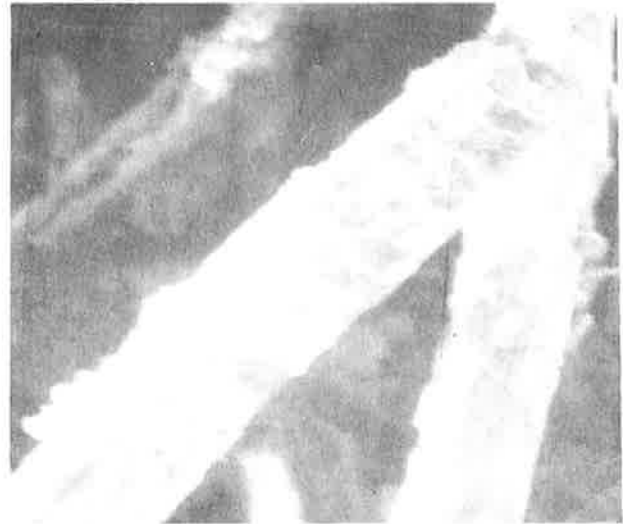


Figure 2. To the left the diagonal twill fragment, no. 910, (c. 10 \times) and above the characteristic scales of the wool (c. 700 \times). Photo and SEM micrograph by the author.

Table 1. The total amount of textile fragments from Valsgårde 5, shown in order of layers and sorted according to binding system.

Situation	Fragment No.	Object	Binding system	Thread count (thread/cm)	Measuring points	Spinning	Thread count, mean value	T	R
1. Under Shield I, under the cloak (fig. 3)									
	910a	Shield I, rim	tabby	20x16.75-18.5	2x2	z/z	20x17.5	37.5	0.14 (0.1-0.2)
	B	Shield I, rim	tabby	22.5-25x14.25-15	9x3	z/z	24x14.5	38.25	0.65 (0.5-0.75)
	1228	Seax II	2/2 diagonal twill	11-12x10-12	3x4	z/z	11.5x10.75	22.25	0.07 (0.0-0.2)
	1232	Knife	2/2 diagonal twill			z/z	25x12	37	1.08
2. Under Shield I och II (fig. 4)									
a) Cloak									
	910a	Shield I, rim	2/2 diagonal twill	16-18.5x7.5-9.25		z/z	Tot 17x8.5	25.5	1.0
	910b, d, e, f	Shield I, rim							
	B	Shield I, rim							
	A.a-f	Shield I, rim							
	A.g	Shield I, rim							
	985, all	Shield I, rim							
	994, all	Shield I, rim							
	1215, all	Shield I, rim							
	1295, a, c	Shield I, rim							
	C, all	Shield I, rim							
	923	Shield II, handle	2/2 diagonal twill	15x6	1x1	z/z	15x6	21	1.50
	687a	Shield I, rim	2/2 diagonal twill	13-15x8-10	3x3	z/z	14.5x9.25	23.75	0.57 (0.3-0.9)
b) Other fabrics									
3a. Over Shield I och II (fig. 5)									
	915a	Shield I, mount?	tabby	16.5-17.5x6-7	2x2	z/z	17x6.5	23.5	1.61 (1.4-1.9)
	984a	Shield II, mount	tabby	20-23x8.5	3x1	z/z	21.75x8.5	30.25	1.56 (1.3-1.7)
	1295f	Shield I, mount	tabby	16.5-17x8.5-9	2x2	z/z	17x8.75	25.75	0.95 (0.8-1.0)
	687b, c, d	Shield I, rim	2/2 diagonal twill	19.5-21x10-11.5	8x4	z/z	20.25x10.25	30.5	0.97 (0.7-1.1)
	687a	Shield I, rim	2/2 diagonal twill	13-15x8-10	3x3	z/z	14.5x9.25	23.75	0.57 (0.3-0.9)
	1295b	Shield I, rim	2/2 diagonal twill	18.5-22x8-8.5	3x2	z/z	21x8.25	27.5	1.54 (1.2-1.7)
	A.g	Shield I, rim	2/2 diagonal twill	20-22x6.75-7.5	3x4	z/z	20.75x7.25	28	1.86 (1.6-2.3)
	B	Shield I, rim	2/2 diagonal twill	18.75-19.25x8.5	2x2	z/z	19x8.5	27.5	1.23 (1.2-1.3)
	962c	Shieldboss II, brim	2/2 diagonal twill	14x10.5	1x1	z/z	14x10.5	24.5	0.33
	1205	Shield I, mount?	spinn-patterned tabby	28-33x12-13	6x7	4z,4s/z	30.75x12.5	43.25	1.46 (1.1-1.7)
	1219	Shield II, mount	pattern threads			z/z			
	984b	Shield II, mount	half extended tabby	29.5-30x6-7.5	2x2	z/z	29.75x6.75	36.5	3.41 (2.9-4.0)
	910c	Shield I, rim	2/2 broken twill	20x7.5-8.5	3x3	z/z	20x8	28	1.50 (1.3-1.7)

Situation	Fragment No.	Object	Binding system	Thread count (thread/cm)	Measuring points	Spinning	Thread count, mean value	T	R
3b. Over over shield I (fig. 6)									
	687d	Shield I, rim	<i>tabby</i>	20x12	1x1	?/?	20x12	32	0.67
	A.g	Shield I, rim	<i>tabby</i>	22-23.5x14-16.5	4x4	z/?	22.5x15.5	38	0.45 (0.3-0.7)
	A.g	Shield I, rim	<i>tabby</i>	26-28.5x13.5-15.75	4x4	z/z	27.25x14.5	41.75	0.88 (0.6-1.1)
	B	Shield I, rim	<i>tabby</i>	22.5-26x13.5-14.25	6x3	z/z	24.25x14	38.25	0.73 (0.6-0.9)
	A.g	Shield I, rim	<i>2/2 diagonal twill</i>	18.75-20x8.5-9	2x3	z/z	19.5x8.75	28.25	1.23 (1.0-1.3)
4. Lining to superstructure (fig. 7)									
	683	Shield I, rim	<i>tabby</i>	14.25-15x7.5	2x1	z/?	14.75x7.5	22.25	0.95 (0.9-1.0)
	914	Shield I, mount	<i>tabby</i>	14.5-16.5x6-8	4x4	z/?	15.5x7.5	23	1.05 (0.8-1.7)
	917	Shield I, mount	<i>tabby</i>	14.5-15x7.5	2x1	z/z	14.75x7.5	22.25	0.95 (0.9-1.0)
	919	Shield II, mount	<i>tabby</i>	15-18x7-8	6x6	z/z	15.75x7.75	23.5	1.03 (0.9-1.6)
	921	Shield I, mount	<i>tabby</i>	13-16.5x6-6.5	10x4	z/z	14.75x6.25	21.0	1.36 (1.0-1.75)
	956	Shield II, mount	<i>tabby</i>	14-16.5x6.75	6x3	z/?	15x6.75	21.75	1.22 (1.1-1.4)
	960	Shield II, mount	<i>tabby</i>	16-18x7-8	7x4	z/z	16.5x7.75	24.25	1.13 (1.0-1.6)
	962b	Shieldboss II, side/button	<i>tabby</i>	15-16x6-7	3x3	z/z	15.25x6.75	22	1.26 (1.1-1.7)
	973	Shield I, mount	<i>tabby</i>	14.5-16.5x6-8	4x3	z/?	15.5x6.75	22.25	1.29 (0.8-1.75)
	976	Shield I, rim	<i>tabby</i>	13.5-15x6.5-8	3x3	z/?	14.5x7	21.5	1.07 (0.7-1.3)
	987	Shield I, mount	<i>tabby</i>	15.5-18.25x6.25-6.75	5x4	z/z	16.5x6.5	23	1.54 (1.3-1.9)
	989	Shield I, mount	<i>tabby</i>	16-18x6-6.25	4x3	z/?	16.5x6.25	22.75	1.64 (1.5-2.0)
	1135	Shield III, boss	<i>tabby</i>	16-18x6.75-7.5	3x2	z/z	16.5x7.25	23.75	1.27 (1.1-1.7)
	1211	Shield I, mount	<i>tabby</i>	14.5-16.5x6.5	5x2	z/?	15x6.5	21.5	1.31 (1.2-1.5)
	954b	Shieldboss I, button	<i>tabby</i>	15x8	1x1	z/z	15x8	23	0.87
5. Coarse cloak/blanket (fig. 7)									
	903	Shield II, mount	<i>tabby</i>	12-14x7.5-8	3x2	?/?	12.75x7.75	20.5	0.64 (0.5-0.8)
	915b	Shield I, mount?	<i>tabby</i>	10-12x7.5-9	6x4	z/z	11.5x7.75	19.25	0.48 (0.1-0.6)
	962a	Shieldboss II, loose fragment	<i>tabby</i>	10-10.5x6.5	2x1	z/?	10.25x6.75	17	0.52 (0.4-0.6)
	954a	Shieldboss I, side/button	<i>tabby</i>	11-13.5x5.5-6	5x3	z/z	12.5x5.75	18.25	1.17 (0.8-1.5)
	1053	Helmet	<i>tabby</i>	13x5.75	1x1	z/z	13x5.75	18.75	1.26
6. Over additional objects (fig. 1)									
	940	Button/rivet	<i>2/2 diagonal twill</i>	15-16.5x9-10.5	4x4	z/z	15.75x9.75	25.5	0.61 (0.4-0.8)
	939	Arrow-head	<i>tablet weave</i>	15.5-18.5x9.5-10	6x7	z/z	17x9.75	26.75	0.74 (0.5-0.9)
	873	Buckle	<i>tabby with warp- or weft floated pattern</i>	18.5-20.5x12.5-13.5	3x4	z/z	19.25x13	32.25	0.48 (0.4-0.6)

mine the weft yarn it was single plyed and z-spun (table 1). The material is mostly wool (fig. 2).

Interpretation of the function of the textile material

The position of the man in boat-grave 5 can be interpreted from bone meal from the cranium and a piece of left thigh- and calf bone, which lay at the bottom of the boat. Textile fragments were preserved on the blade of the knife and on seax II next to the man, and north-east of the man's head from underneath the rim of shield I (fig. 3). The remains on seax II, that resemble two bands, probably belong to a cover. The fabric on the knife is probably from a pouch, like in Morken, where a fabric or fabric-coated pouch held 2 iron knives, one clasp knife and one strike-a-light, that lay next to the dead man (Böhner 1958:438). Under shield boss III, the sword holder and the glass cup under shield I, there were small fragments of feathers and leather, which might originate from a cushion or feather bed, whereupon the deceased was placed.

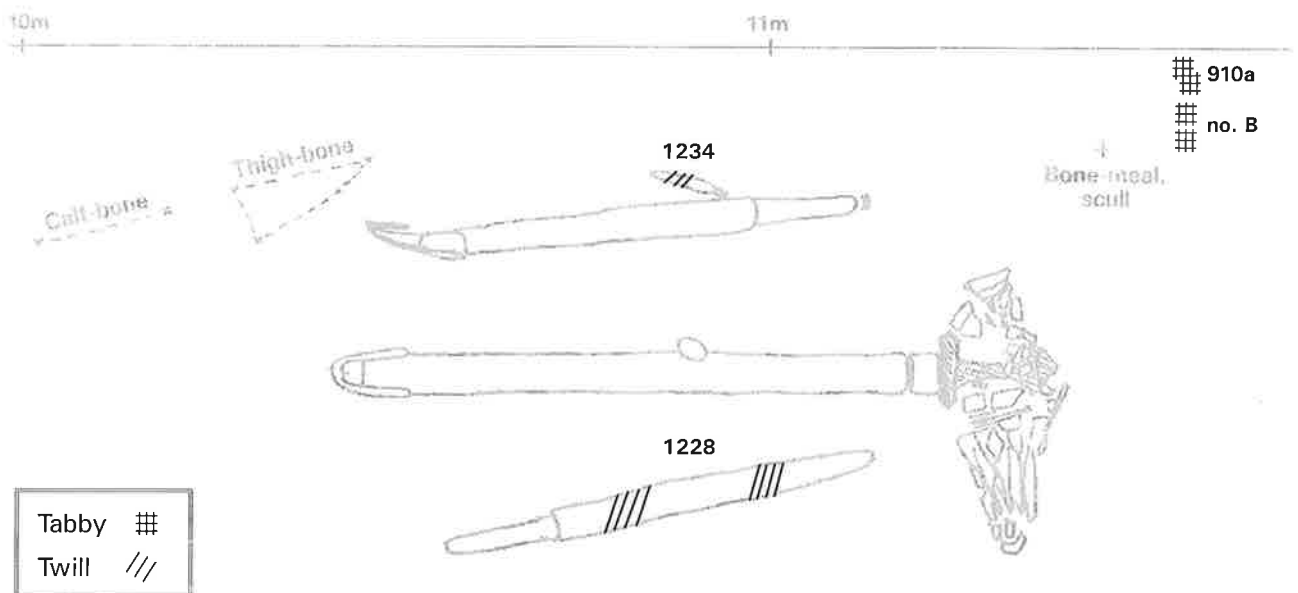
Over the man a fabric woven in diagonal twill was laid (Lorentzon 1997). This may be concluded since the greater part of the underside of the rim of shield I had textile fragments of the same quality. Given the position of the fabric, the binding system, size and comparative material, the fabric has been interpreted as a

cloak. The cloak covered also the fabrics woven in tabby at the man's head. This is clear since the inner rim of the shield had the twill fabric next to the metal with the tabby woven fabric on top of this. The original size of the cloak cannot be decided, but it was at least 1m long and 0.5m wide. However, the cloak didn't reach the twill woven fabric (no. 687) that was found around the north-east rim of shield I. The cloak may on the other hand have reached under the holder of shield II, which was wrapped with a twill fabric (fig. 4).

The cloak covered man was then sheltered by the shields I and II, on which several types of fine and very fine textiles were placed. Above the man's head the fabrics were lain in several layers (fig. 5-6). Thus the man was not formally dressed, but only covered by a cloak, which also covered the head of the man.

Over the central part of the boat there was a tabby woven fabric ranged over the three shields. Fragments existed, apart from on the shield bosses, also on shield mounts from shield I and II and on the rim from shield I. At two of the bosses and some of the mounts there were furthermore pieces of birch-bark. It is therefore quite possible that this tabby fabric represents a lining to a superstructure of birch-bark (Arwidsson 1942:87). Pieces of a relatively coarse fabric, that was found on the shield bosses and on a couple of mounts, might have been a strengthening of the tent. But, because a fabric of corresponding quality was lying on the hel-

Figure 3. The man, of whom only fragments of calf- and thighbone and bone-meal remain, had on his left side a knife, a sword and two seaxes. A large cup of green glass was lying on top of the sword hilt, placed upon feathers and leather. The lowest layer of the fabrics lay under shield I (no. 910a and no. B) and on the knife (no. 1232) and the seax (no. 1228). The fabrics have been marked with a finding number and binding system. For the thread count, number of measuring points, spin direction, thread count sum and rib factor, see table 1. The fragments on the seax were probably a cover, and the fabric on the knife a pouch. The fabrics above the man's head presumably belonged to clothing. Scale 1:10.



met, the fragments can also be interpreted as a coarse "field" cloak/blanket, symbolically placed over the helmet and the shields (fig. 7). In some of the male graves at Birka the deceased probably had two cloaks, laid separately. This was clear because of the fact that there was both a penannular brooch and a ring-needle in the same grave (Geijer 1938:141). The man in Sutton Hoo also had a good cloak or blanket and a coarse cloak or blanket (Crowfoot 1983:457f).

On one arrowhead (no. 939) there was a piece of a tablet woven band and close to it a button (no. 940), covered by a fine diagonal twill. This indicates, that the arrows could have been kept in a textile covered wood- or leather quiver, closed with a button. The tablet woven band probably belonged to a strap. Two buckles of iron lay slightly apart from of the arrows and the spear to the west. The better preserved buckle (no. 873) with rectangular frame and squared strap mount, was covered on the upper side by a fine patterned fabric (fig. 1). Two buckles of the same type exist in Valsgärde 6. Greta Arwidsson has interpreted one of them as belonging to a baldric, the other to a belt (Arwidsson 1942:54f).

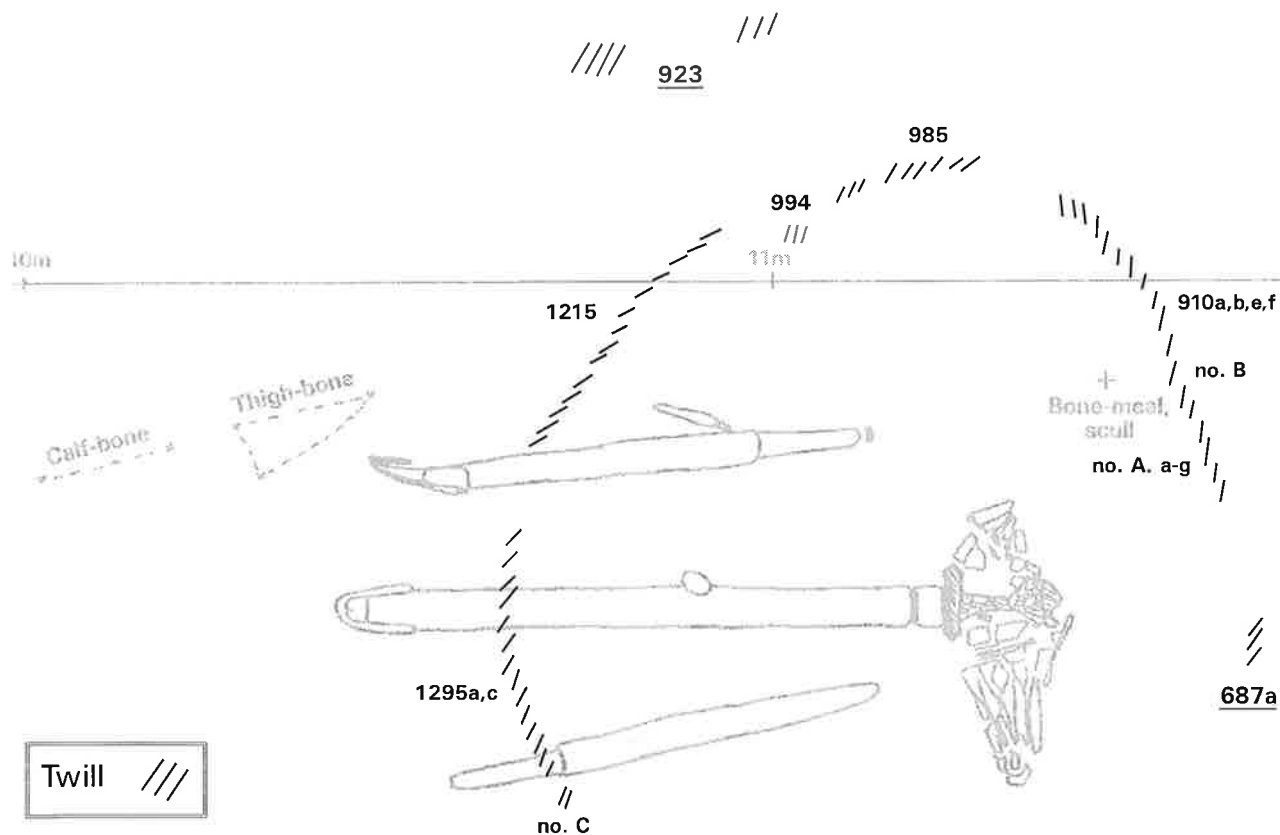
These conclusions reduce the number of possible combinations of fabric and dress that could have characterised grave 5 at Valsgärde. A number of textile fragments can be identified as the remains of one or more cloaks, of a tent lining and a quiver. The remaining fragments from the grave can now be considered. It becomes apparent that these were almost certainly "dress" fabrics – cloth taken from items of clothing, but that they were probably not "dressing" the corpse. They were, it appears, laid down separately from the body.

Interpretation of the dress material

The pieces of fabric which are most likely to be the remains of clothing are those lying north-east of the man's head and those lying upon the shield I and II, found attached to the remains of the shields, and those attached to the belt buckle closer to the stem of the boat.

The fabric found adhering to the belt buckle is a tabby with warp- or weft floated pattern (fig. 8). Traces of textile fragments on belt buckles found in Anglo-Saxon male graves and in the Southern German Alemannic graves, have mostly been interpreted as waist

Figure 4. The cloak lay over the dead body and the lower layer of the fabrics. The cloak was lying under shield I (at the fragments no. C, 1295a, c, 1215, 994, 985, 910a, b, d, e, f, no. B, no. A.a-g). The handle of shield II (no. 923) was wrapped with a twill fabric of coarser quality, and theoretically the cloak can have been lying under the twill fabric, although there is no sign of it. However, the cloak did not reach the eastern part of shield I (no. 687a); here was a twill fabric of another quality than the cloak quality. The cloak was at least 1m long and 0.5m wide. Scale 1:10.



garments (Crowfoot 1983:414) or waist garments/trousers (Hundt 1974:233). It is likely that it was part of a waist garment such as a caftan. My interpretation is that it belonged to the edging of a caftan (fig. 9).

In order to consider the nature of the fabrics found north-east of the man's head, it is important to establish their relation to one another (fig. 10). Textile fragments were found attached to the top face and under side of several rim fragments from shield I, catalogued as no. 910. Textile fragments were also attached to the rim of shield I, catalogued by the author as no. A and B, as the boxes containing these fragments had no catalogue number. These fragments appear to belong to find no. 910, a supposition strengthened by the fact that one fragment from no. A and one from no. 910 fit together exactly and that pieces of the cloak were attached to all these rim fragments.

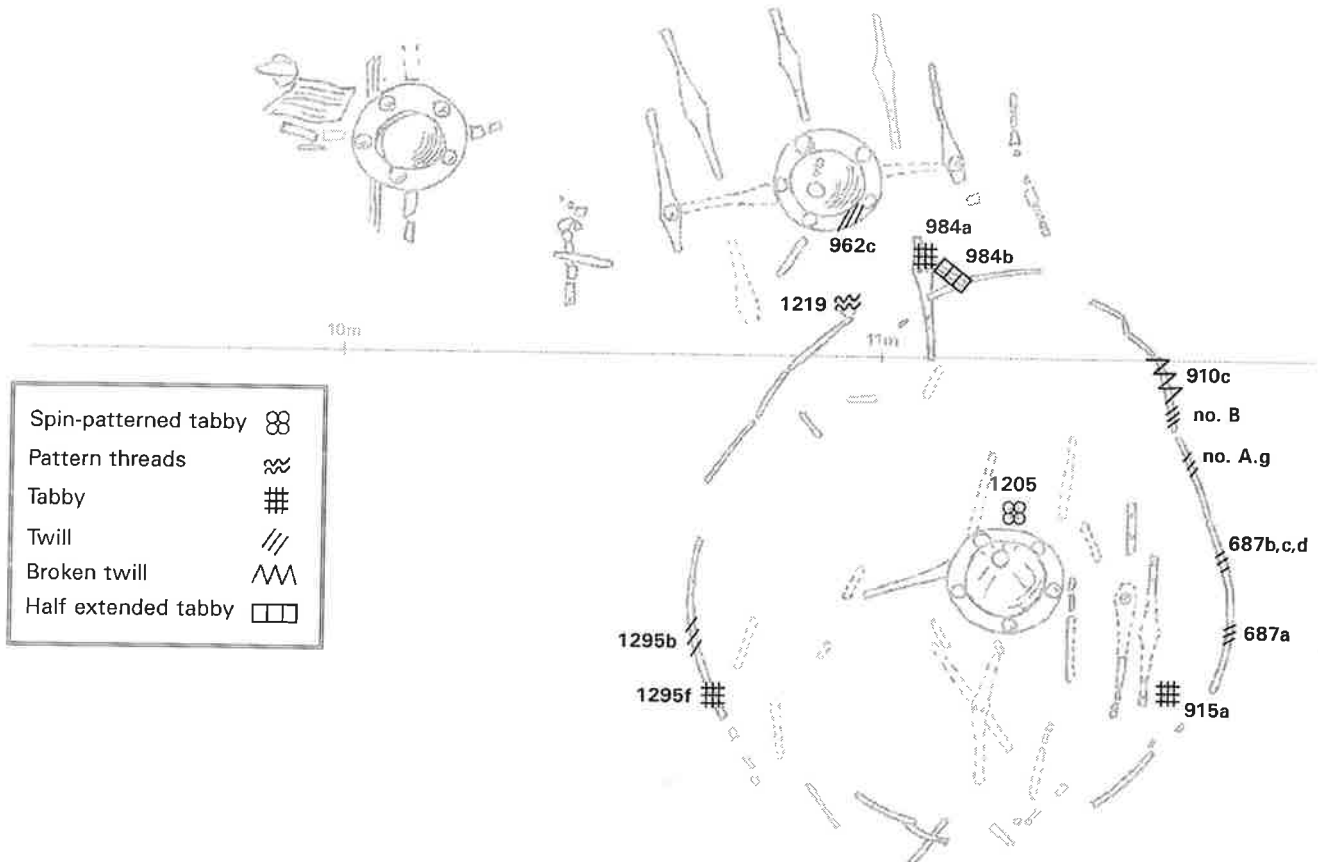
Within find no. 910 and no. B, two very finely woven tabby fragments were found on the underside of the shield rim ($T=37.5$ and 38.25 respectively), one of them is weakly ribbous and the other medium ribbous. Upon these lay the cloak and shield I. Over the shield rim

there were textile fragments woven in diagonal twill and broken twill with corresponding qualities ($T=27.5-28$). Since the shield rim is very long, about 50 cm, it is probable that the textile fragments belong to two different fabrics. Fragment no. B was covered in turn by a tabby ($T=38,25$). All fragments within find no. A had only fragments of the cloak on the underside of the rim. Over the twill fabric ($T=28$) on fragment no. A.g two very finely woven tabby fragments were found next to each other ($T=41.75$ and 38 respectively). The latter of these two fragments was covered in turn by a diagonal twill ($T=28.25$).

Find no. 687a, another shield rim fragment, had a twill fabric ($T=23.75$) on both sides while find no. 687b,c,d had a twill fabric ($T=30.5$) on the upper side only. This was also covered partly by a very finely woven tabby ($T=32$).

The tabby woven fabrics are all of very fine quality ($T=32-41.75$), weakly to medium ribbous; the diagonal twill and broken twill fabrics are also of fine quality ($T=23.75-30.5$), most of them ribbed. All of them are likely to originate from dress garments.

Figure 5. Several fine and very fine dress fabrics were laid upon shield I and II. Tabby woven fabrics in varying thread counts existed at shield mounts (no. 915a, 1295f, 984a). Fabrics in twill existed at the rim of shield I (no. 687b, c, d, 687a, 1295b, no. A.g, no. B) and at the brim of shield boss II (no. 962c). On the shield mounts there were also fabrics woven in half extended tabby (no. 984b). Here was also the only fabric found isolated from a metal fragment - a fabric in spin-patterned tabby (no. 1205). At the rim mount (no. 910c) was a broken twill. Traces also existed from a possible patterned weave in the form of loose threads where the ground fabric was missing (no. 1219). Scale 1:15.



On one of the mounts from shield I there was a folded fabric woven in an uncoloured spin-patterned tabby, 4z,4s/z, (T=43.25). The material is linen (fig. 11) (cf. Hansson 1997:12). On the reverse side of a disc brooch, found in a grave at Lousgaard, Bornholm (Ørsnes period 2), there was a spin-patterned tabby fabric of corresponding quality (T=43) and material (Bender Jørgensen 1986:211). The fabric from Bornholm evidently belonged to a shirt. Very small and insignificant thread patterns were found on another mount that have not been possible to define more closely.

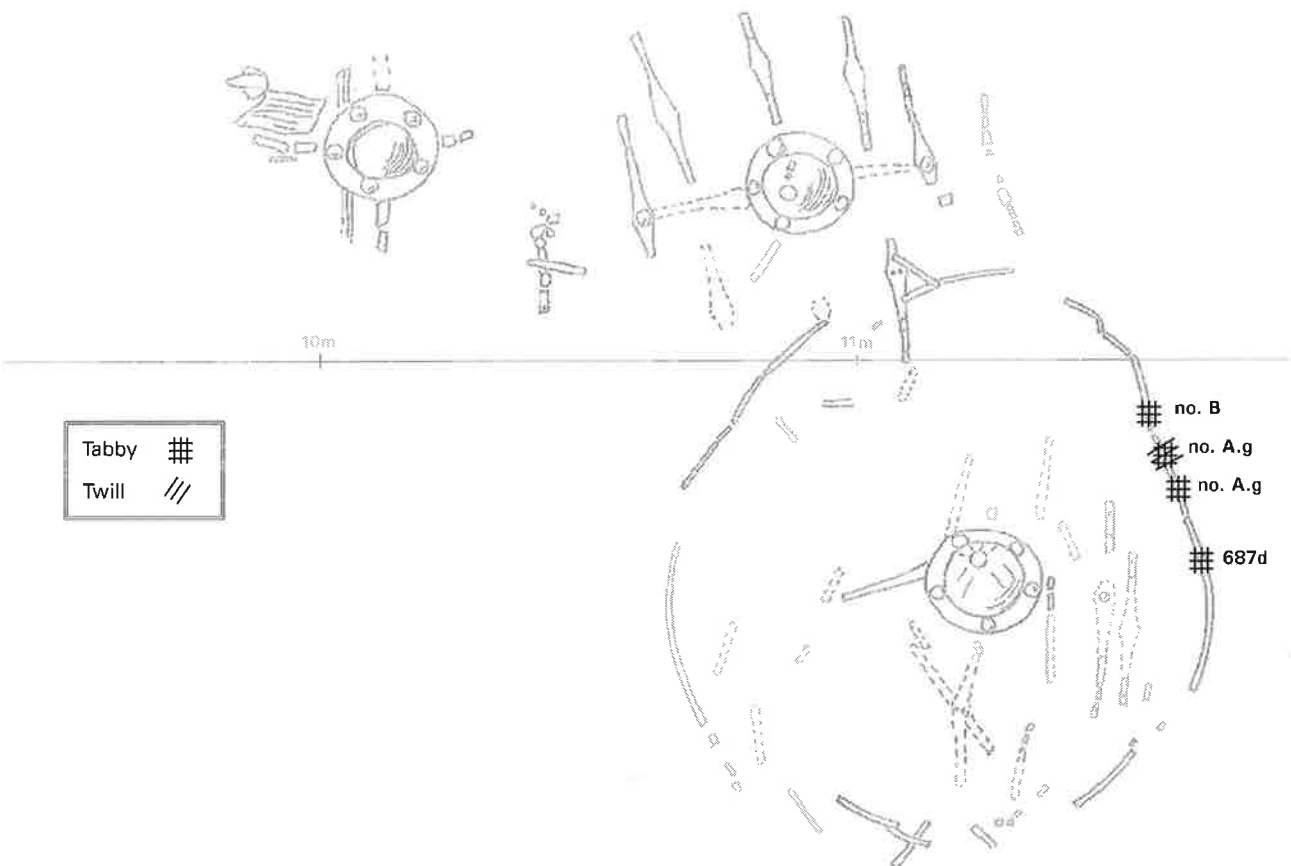
On one of the mounts from shield II there was a fabric woven in half extended tabby of a very fine quality (T=36.5) and extremely unbalanced (R=3.4). At Bornholm a fabric, woven in broken lozenge twill, with a starting border in half extended tabby has been found (Bender Jørgensen 1986:216). The border is of different character, but the fabric in Valsgårde 5 can, using this evidence, be interpreted as a starting border. On three mounts at shield I and II there were three different tabby woven fabrics (T=23.5–30.25; R=0.95–1.61) and on the rim of shield I there was a fabric woven in diagonal twill (T=27.5; R=1.54). All these fragments are of a quality associated with garments.

From this we can conclude that the fabrics we have been considering are all likely to originate from garments. For two of them we can be more precise and suggest that they once formed the edging of a caftan and a shirt. Further, we can observe that some garments seem to be built up in several layers of thin, finely woven cloth lying one above the other. This characteristic reflects evidence found on other sites.

At Bornholm there has been found a fabric woven in tabby with warp- or weft floated pattern on the reverse side of a beaked formed brooch (Bender Jørgensen 1986:fig. 245). It is here found together with several fabrics, which indicates that the contemporary costume in the north consisted of several layers. By wearing several thin garments it is possible to compensate the loss of heat, but above all this shows the status of the person. Soft linen fabrics, like the folded linen fabric in spin patterned tabby, found in Valsgårde 5, and the other linen fabrics found in the other boat-graves, were now probably worn closest to the skin instead of earlier periods woollen garments.

Textile fragments from this period have been extensively described as far as their weaving method is concerned, however less attention has been paid to their original use. Particularly, few finds from the period

Figure 6. Above the man's head tabby woven dress fabrics were lying in a second layer over shield I (no. 687d, A.g, B). Fragment (no. A.g) has a third layer of twill woven dress fabric, cf. figure 10. Scale 1:15.



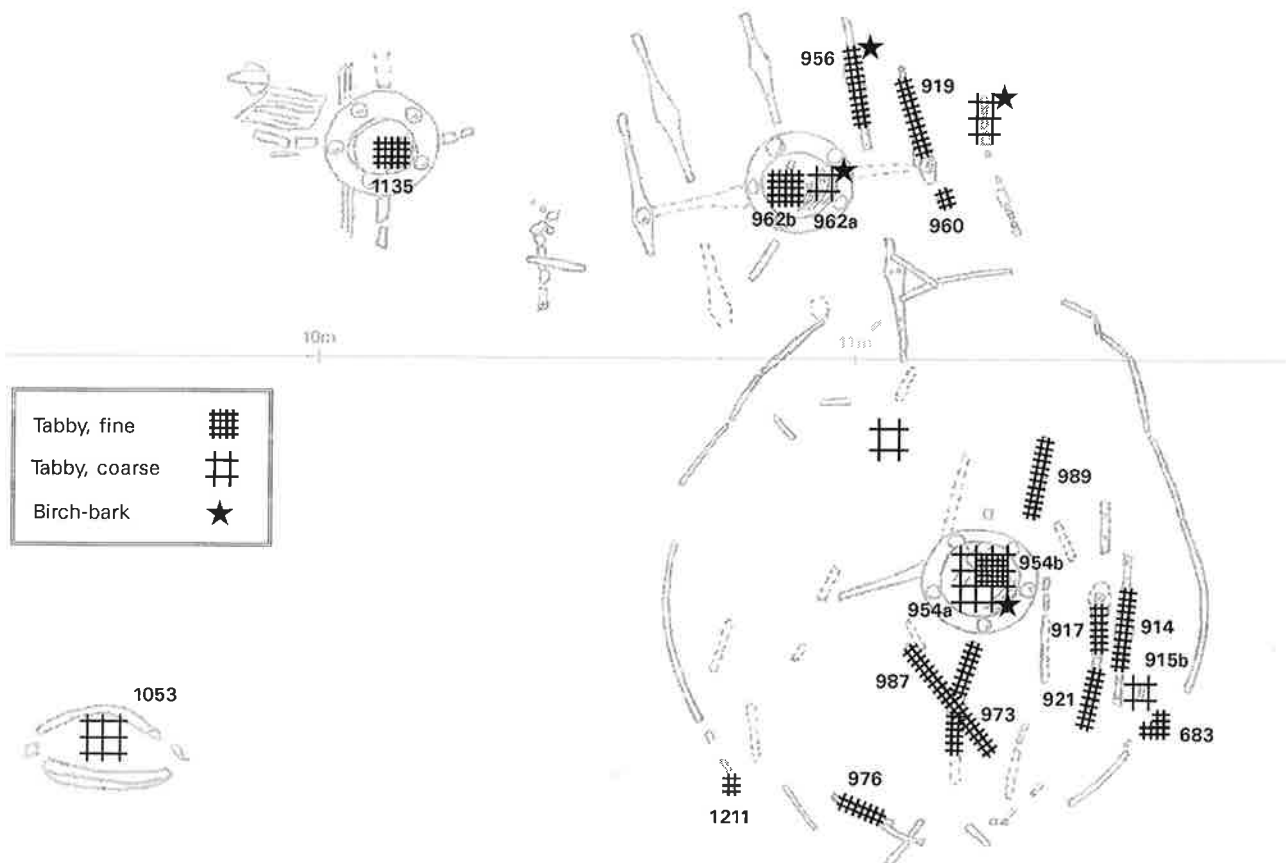
have been linked to clothing, a connection whose absence is rather surprising. Why is this the case? Two major factors have prevented the connection being made. Firstly, there is the nature of the costume. It seems probable that in the first instance the study of clothes in archaeology has manifested itself as a study of preserved textile fragments on fastenings – brooches, buttons and clips. For this period such items are rare, which has made textile analyses impossible. Secondly, there is the location of the fragments. In boat-graves such as Valsgärde 5 and Sutton Hoo the fabric remains are not found around the body but dispersed, spread across the central part of the boat. This situation is quite unlike the graves from the Vendel Period and Viking Age, in which the bodies were clearly clothed for their funeral. Because of this physical isolation the fabrics from the above mentioned boat-graves are assumed to have little to do with clothing the bodies (table 2). However, the likely use of fabrics can also, as we have seen, be investigated by considering aspects of the fabric fragments themselves – binding system, thread count, spin

direction and regularity have all been considered here. The above observations on the quality of the fabric suggest that certain of the fragments found at Valsgärde probably did originate from garments.

Burial custom

The ritual funeral during the Vendel Period, of which graves such as that of Valsgärde are the permanent memorial, marked a highly sacred event. The deceased awaited his fate in the next world and every preparation was made for his challenge. He is given a ship, horses, dogs on leashes, weapons and armour; his bodily needs are met with tools, kitchen utensils, artefacts for banquets and pigs, cows and other food stuffs; his leisure hours are supported with combs, games, a decorated state-room with a bed and wall hangings. It seems very unlikely that, given all this preparation, he was sent on his way without his clothes. The suggestion that fragments of fabric discovered in such finds as Valsgärde are likely to originate from cloth-

Figure 7. Uppermost in the boat there was a relatively fine tabby woven fabric, that reached over the bosses, mounts and rims of the three shields. On the shield bosses (no. 962, 954) and at the mounts (no. 956, 903) there were also pieces of birch bark. It is therefore possible that the fabric was a lining to a superstructure of birch bark. There also was a somewhat coarser fabric at shield bosses I and II (no. 954a, 962a), on two mounts (no. 903, 915b) and on the helmet (no. 1053). This fabric may have been related to the superstructure or could have been a cover to the helmet or, possibly, a coarse 'field' cloak/blanket laid over the shields and helmet. Scale 1:15.



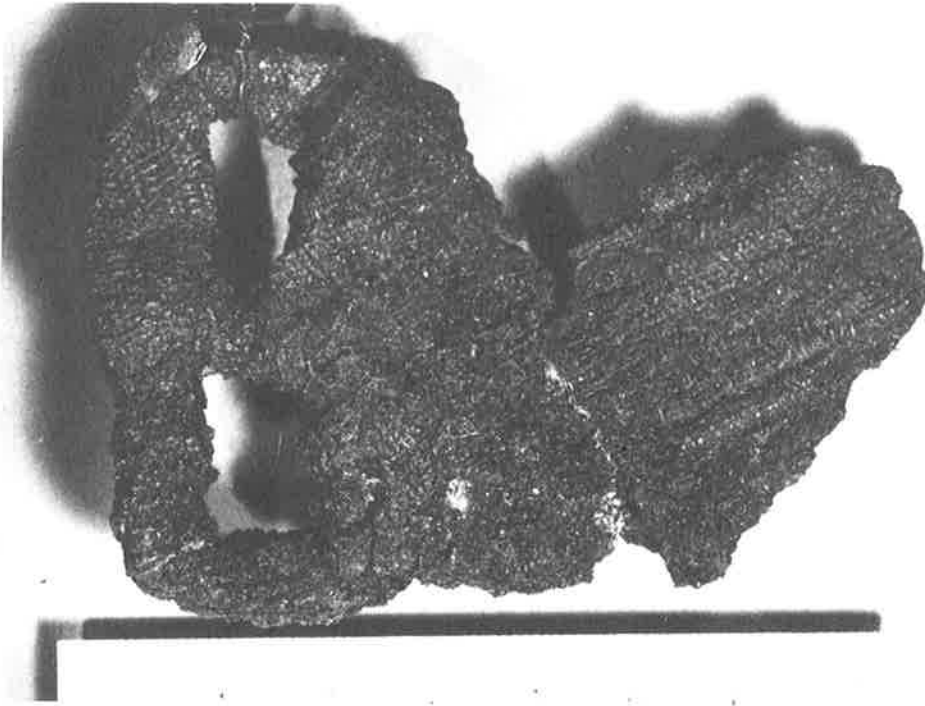
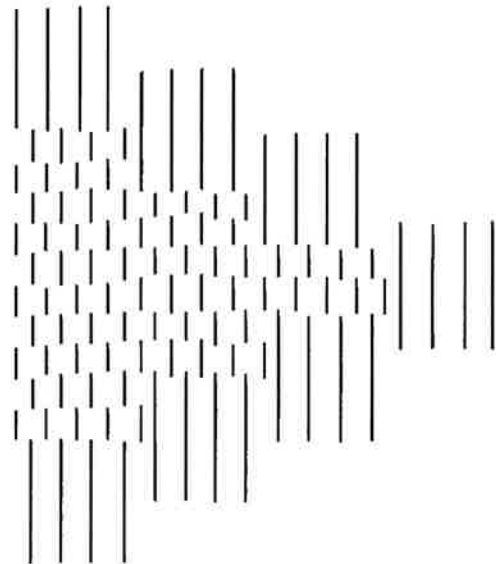


Figure 8. a) Belt buckle (no. 873) with a fabric woven in tabby with warp- or weft floated pattern. Scale 2:1 (left) b) detail. Photo (c. 10×) (below to the left) c) Drawing of the pattern. (below to the right). Scale 4:1. Photos and drawing by the author.



ing seems eminently reasonable, therefore, providing an explanation can be given as to why these pieces of cloth are not found adjacent to the body – why the man remained not formally dressed but was provided with a store of clothes elsewhere – and providing examples of a similar organisation can be traced elsewhere.

One such example is provided by the chamber-grave at Morken, Rheinland, Germany, in which the body does appear to have been dressed, but in which clothing fabrics were included in other locations in the grave. In

the coffin at the Morken grave there was found a magnificent buckle which points to the presence of some kind of dress. More interestingly for this study, however, outside the coffin a bronze bowl was discovered which had been filled with various fabrics all of which have been identified as clothing. The textile fragments were of extremely fine quality and included seven linen fabrics, together with wool and silk (Bender Jørgensen 1992:240, means however that the material is wool, not silk,) cloths in contrasting colour patterns. Above

them lay a linen-lined calf fur (Böhner 1958:436, 438, 444f, 451).

The placing of fabrics at Valsgärde 6–8 can perhaps be related to this other example. Here the fragments of cloth are placed amidships, mainly under a protection layer of shields, and next to the weapons laid down in the grave. The placing is somewhat similar to that at Sutton Hoo, where fabrics were found adhering to the weapons, helmet and chain-mail placed in the grave. In both cases the fabrics appear to have been placed in piles containing several layers, rather as they were found in the bronze vessel at Morken.

If this case points to a precedent for laying clothes in a grave away from the corpse, we must try to find a motive for this removal. In researching this question, it will be of use to consider the state that the corpse would have been in when consigned to the grave. One noticeable characteristic of the Valsgärde 5 boat-grave is that the bones from the corpse buried in the grave are badly preserved. This pattern is repeated at Sutton Hoo, where the human remains are only evident as a phosphate accumulation (Oddy 1980:174) and at Valsgärde 6–8 (Arwidsson 1977:104). Bones of the animals deposited in the boat-graves at Valsgärde, on the other



Figure 9. Impressed foil from the helmet, Vendel XIV. The man on the left is wearing a caftan with a patterned edging, the man on the right has chain mail and a sword with a baldric. The oldest Swedish depiction of a caftan, before or around 600 (Stolpe 1912:Pl. XLI. fig 3, drawing by O. Sörling). Scale 1:1.

Table 2. Textile fragments from Valsgärde 6–8, Sutton Hoo and Morken, interpreted as belonging to the dress. *tab*=tabby, *dtw*=2/2 diagonal twill, *bltw*=broken lozenge twill, *btw*=broken twill, *ctw*=2/1 chevron twill, *lpr*=long pile rug.

Grave	Total amount of fabrics	Cloak	Cloak/cover/blanket?	Waist garments/trousers	Headgear	Unspecified garments	Shoeribbon
VALSGÄRDE 6	≥17	—	<i>lpr</i> , wool T=36 R=2,5	—	—	—	—
VALSGÄRDE 7	≥17	—	<i>lpr</i> , wool T=34, R=0,61	—	—	<i>dtw</i> , wool, with slit T=34, R=1,4	—
VALSGÄRDE 8	≥12	<i>dtw</i> , wool T=18, R=0,8	—	—	—	—	—
SUTTON HOO	≥26	<i>lpr</i> , wool T=13, R=0,12	<i>btw/tw</i> , wool T=25, R=0,58 <i>dtw</i> , wool, T=13,5, R=0,25	<i>bltw</i> , wool T=57, 0,79	<i>bltw</i> , wool T=57, R=0,79 with otter fur and lining of <i>tab</i> , wool T=27, R=0,07 <i>dtw</i> + pile, wool T=19, R=0,35	2/1 <i>ctw</i> , flax? T=52, R=1,06	tablet weave, wool <i>tab</i> , wool? T=52, R=1,71
MORKEN	≥7	—	—	—	—	<i>tab</i> , flax, 2 fragments <i>binding</i> ?, wool <i>bltw</i> , silk <i>tab</i> , silk <i>braiding</i> , silk	—

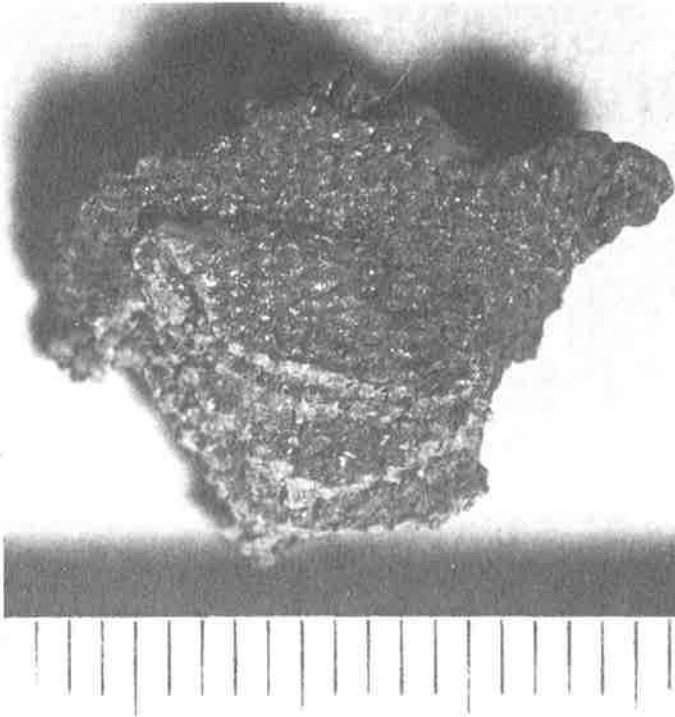


Figure 11a. Spin patterned tabby (no. 1205) found upon shield I. One of the pleated fragments. Scale 2,5:1. Photo by the author.

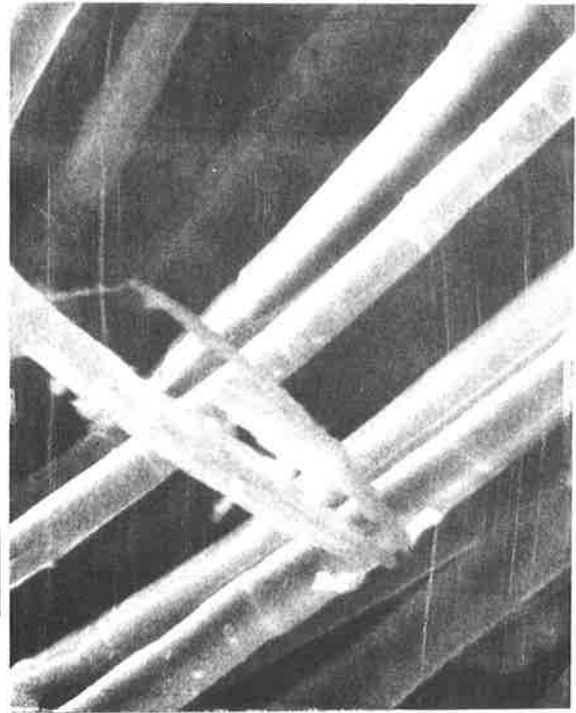
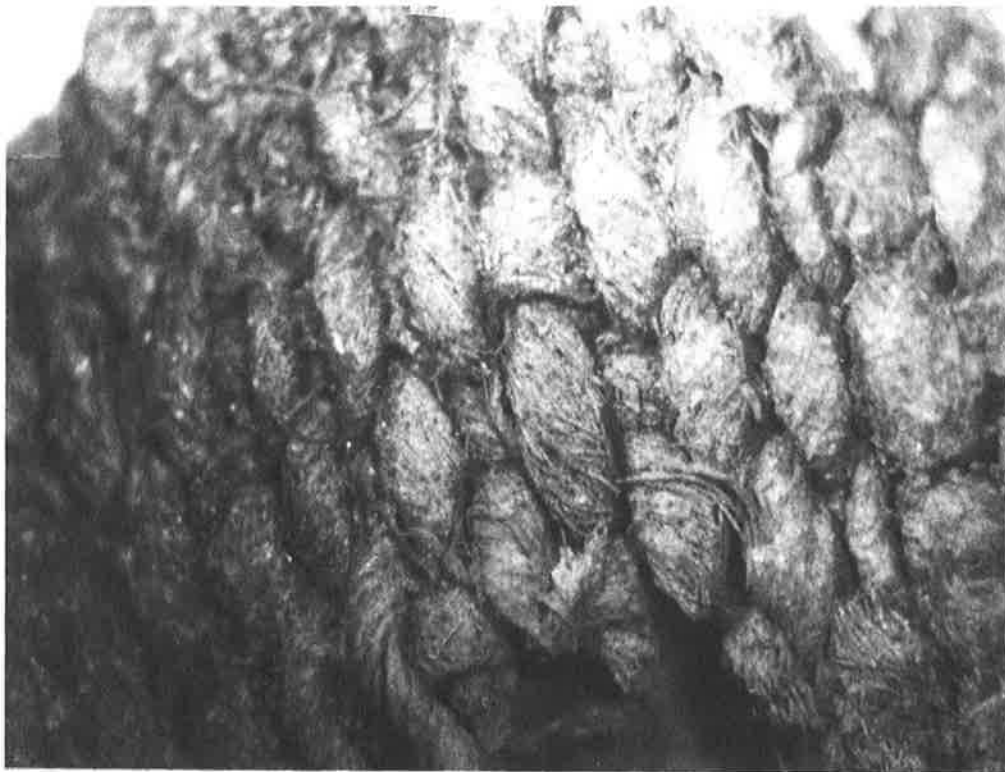


Figure 11b. The characteristic nodes of the flax fibre (c. 920x). Photo by the author.

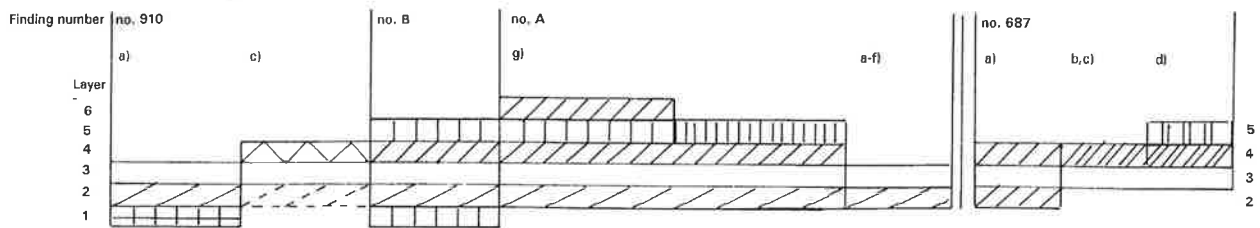


11c. The variation of the z/s-spun warp threads (c. 25x). SEM micrograph by the author.

Figure 10. Schematic drawing of the fabric layers above the man's head (not to scale):

No. 910a,c, B, A.a-f, g: 1) Tabby woven fabrics, 2) Cloak in twill, 3) Shield 4) Broken twill and diagonal twill woven fabrics, 5) Tabby woven fabrics 6) Diagonal twill fabric.

No. 687: 2) Diagonal twill fabric, 3) Shield, 4) Diagonal twill fabrics, 5) Tabby woven fabric. Quality, see table 1. Drawing by the author.



hand, are well preserved. One explanation of this difference is that the human remains had already started to decay before the deceased was laid in the grave, whereas the animals placed in the grave were freshly slaughtered for the funeral (Arwidsson 1977:104). The variation in preservation could of course be the result of other factors, for example soil character and varying chemical composition of the bones themselves. However, other evidence also points to the fact that the human remains in the graves were not “fresh” when they were buried. Significantly, although highly resistant to decay, no teeth have ever been discovered in the boat-graves, which could indicate that the body has been kept a long period before the ceremonial boat funeral. The buried men may have been a part of more ceremonial rituals than the actual boat funerals (Arrhenius 1980:19; cf. Arrhenius 1995:330ff).

If this kind of decay was a feature of the corpses buried in graves such as Valsgårde, this might provide an explanation as to why the clothes that were provided for the funeral were not used to dress the corpse itself.

Gentry dress – warrior dress

The first indications of a dress code for a “gentlemanly” or warrior class can be found in the late Roman Period in Sweden. The origins of this use of class dress are hard to trace, but they may have spread from Germanic warriors adopting Roman habits in their service in the Roman army. For those serving on the Eastern frontier of the Empire, clothes were often included in the war salary. Many Germanic warriors reached high military positions and received official credit in form of an exclusive rank symbol, a “tunica rossa”. The tunic is found in Scandinavia already during Roman Iron Age and continues to be present in the graves of great warriors during the Migration Period. Evidence for this can be found, for instance, at Enebø, Norway and Högom, Sweden. With the development of the internal Nordic upper class, Roman rank dress could have been

the model for displaying status (Hägg 1982:260f; cf. Hägg 1991:160).

This influence of foreign dress-codes seems to have extended in Sweden up until the Birka epoch. Russian, Frankish, Scandinavian and Anglo-Saxon court life all derived habits and dress codes from Byzantium where sacred and profane hierarchies were exhibited through dress material, colour, model and carriage (Hägg 1982:255).

The fact that some of the fabrics in the boat-graves belong to clothing is indicated by the quality of fragments. The regularity of the woollen fabrics, the high thread count and the unbalanced nature of the fabric indicate standardisation, consequently at least partly traded products. Linen fabrics and fabrics in several new binding systems indicate that the dress favoured by the warrior and nobleman in Valsgårde 5 consisted of several garments, some of them cut. There is obviously a shift in the fashion among the upper classes during the Vendel Period, due to impulses from the Frankish domain. New and refined materials and techniques are introduced which must all have served to reveal status and the social rank.

Conclusion

The deceased man in Valsgårde 5 seems to have been laid to rest amidships on a cushion/feather bed covered by a woollen cloak, but *not* formally dressed. I use the word cover, as the cloak also seems to cover the head of the man (fig. 4). Instead, several types of fine textiles, suitable for garments, were placed on top of the shields that covered the cloaked body and above the man's head, where the textiles lay in several layers. The helmet and parts of the shields were covered with a fabric that might have been a “field” cloak/blanket. The central part of the boat was covered with a tent/superstructure of birch-bark with a fabric lining (fig. 12). A patterned fabric was attached to his buckle, placed separately closer to the stem, near a textile quiver.

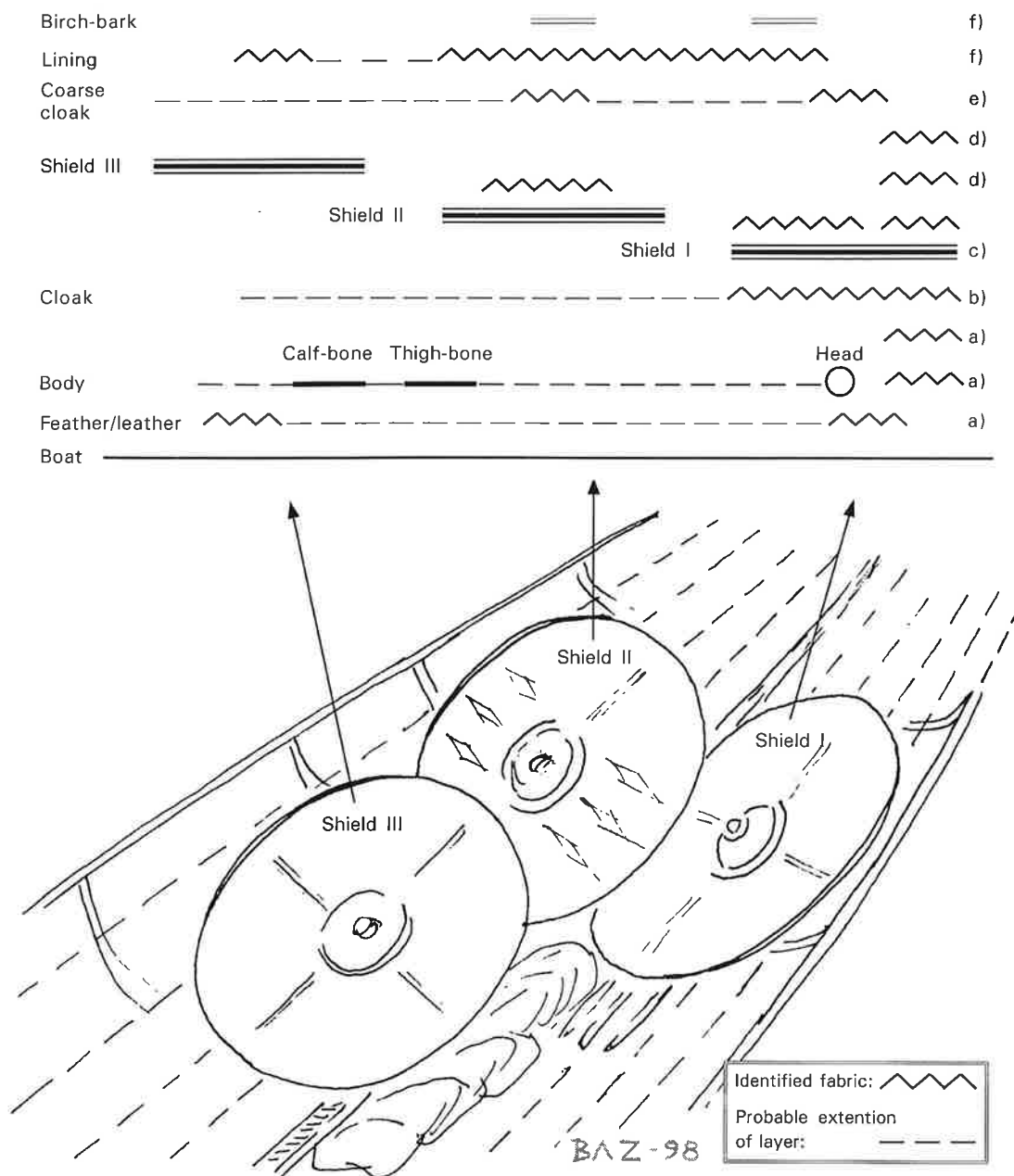


Figure 12. Schematic drawing of the boat and the layers (not to scale):

- a) A probable cushion or a feather bed, whereupon the man was placed. Above his head the lowest layer of dress fabrics (fig. 3).
 - b) A cloak covered the upper part of the man, including his head (fig. 4).
 - c) Shield I and II, whereupon several fine and very fine dress fabrics were laid (fig. 5).
 - d) A second and a third layer of dress fabrics were lying upon shield I, above the man's head (fig. 6, 9).
 - e) A coarse fabric was laid over the shields and the helmet, which probably belongs to a coarse 'field' loak/blanket.
 - f) A superstructure of birch bark, lined with a fabric, covered the central part of the boat (fig. 7).
- Drawing: Bo Zachrisson, graphics: Lena Lundberg.

The clothing seems, in broad outlines, to have followed the pattern abroad with a shirt of linen and one or more outer garment of wool and a cloak of wool.

The linen fabric, belonging to a shirt, was a very fine spin patterned and pleated linen. The outer garments were woven in tabby, 2/2 diagonal twill, 2/2 broken twill and tabby with warp- or weft floated pattern. The latter probably came from the edging of a caftan (fig. 9).

However, more investigations are needed to get a full evaluation of the male dress in the boat-graves at Valsgärde and Vendel to find out more details about the dress and if the dress is made on purpose for the war or if it was a ceremonial costume for the hird that encircled the king or even a Scandinavian ruling dress.

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