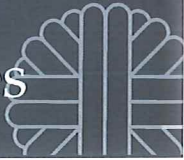


Nº
63

ARCHAEOLOGICAL TEXTILES REVIEW



2021 issue



Lise Bender Jørgensen, Dagfinn Moe and Hana Lukesova

Viking Age textiles and tapestries: drawings by Miranda Bødtker

Abstract

For many years, illustrator Miranda Bødtker (1896–1996) made drawings for botanists, zoologists and archaeologists at Bergen Museum, the University of Bergen in Norway. After her death, thousands of drawings were discovered as part of her estate. Among them were numerous unpublished drawings of archaeological textiles from five sites. Bødtker's illustrations show that although several scholars have studied the textiles, none had seen them all. This includes textiles from two Viking Age burials, Grønhaug and Dale, both of which comprise remains of tapestries hardly mentioned in the archaeological literature. This paper presents Bødtker's drawings of textiles from these two sites and discusses how they compare with published descriptions and new photos of the textiles, with drawings of textiles from the Oseberg burial, and to what degree this form of documentation meets current scientific demands.

Keywords: Grønhaug, Dale, western Norway, documentation, archaeological textiles

Introduction

Drawings have long been an essential form of documentation in archaeology, and are often preferred to photographs, but are nowadays largely replaced by digital solutions. Drawings have also been used to document archaeological textiles. During the 1904 excavation of the Oseberg ship burial, excavator Gabriel Gustafson hired Ola Geelmuyden to paint watercolours of selected items including textiles. Later, Sophie Krafft and Mary Storm carried out many drawings of the Oseberg textiles (Christensen and Nockert 2006; Vedeler 2019). These drawings show many details no longer visible in the original textiles, as demonstrated by Marianne Vedeler in her recent publication of the Oseberg tapestries (Vedeler 2019). This makes the drawings invaluable sources for these unique textiles.

This paper presents a series of drawings by Miranda Bødtker (1896–1996) of archaeological textiles from sites in western Norway, dating to the Viking Age. The drawings have only recently become known (Moe 2006; Bender Jørgensen and Moe 2020). The textiles, however, have been examined and described by several

archaeologists and textile scholars over the years. This makes it possible to compare what Bødtker saw and drew with what various scholars saw and described with words, but rarely documented with photos. As will be seen, Bødtker's observations and those of the scholars display similarities as well as differences. The drawings thus inspire questions as well as open new possibilities for the interpretation of the finds. In some cases, artist and scholar noticed different aspects of the textiles; in other cases, differences were more marked: several drawings show textiles that have not been recorded in previous publications. What new data do the drawings offer us, and what do they tell us about drawings as scientific documentation?

An artist and her work

Miranda Bødtker was born and raised in Bergen (fig. 1). She was educated at the Bergen School of Arts and Crafts and what is now *Konstfack*, the Stockholm University of Arts, Crafts and Design. In 1920, she was employed as a pattern designer at the Bergen School of Arts and Crafts where she remained in post until her retirement in 1966 (Moe 2006). Bødtker developed

a rare interest for details in nature, especially flowers and animals, using them to create new motifs to use in various crafts, especially textiles. A small hand-lens was one of her most important tools. As part of her work (and perhaps partly as a hobby) she documented old bedspreads and tapestries, wall paintings, craft items and much more. In her role as a teacher of pattern design, she created her teaching portfolio, using her insights in the small details of nature. She also became a highly esteemed volunteer at Bergen Museum (now part of the University of Bergen). Her sharp eye for detail was important in the documentation carried out at the museum departments of archaeology, zoology and especially botany (Korsmo 2006). Here, a large part of her production was done in close collaboration with the scientists. She illustrated the Norwegian handbook of flowers *Norsk Flora* (Nordhagen 1970) and made numerous drawings of archaeological artefacts including textiles.

During her 30 years in retirement, the Botanical Department in Bergen Museum became Bødtker's main contact with science. Her meticulous drawings form important contributions to numerous scholarly works (for a list, see Moe 2006, 62–63) but as she survived most of her scientific colleagues, many of her illustrations – especially the earliest – were forgotten. As she had no heirs, the Botanical Department finally inherited her estate, and it was a great surprise when her belongings were unpacked and proved to contain



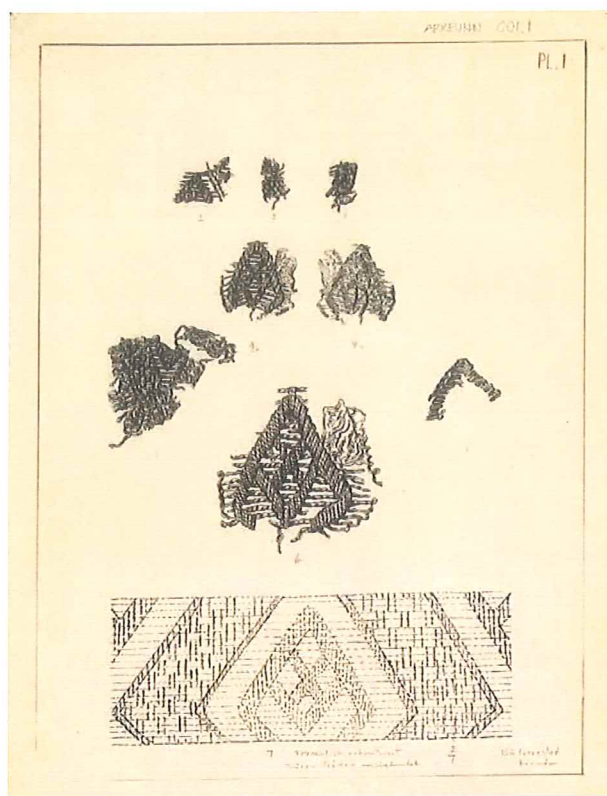
Fig 1: Miranda Bødtker (Image: © University Museum of Bergen, unknown photographer)

more than 10,000 watercolours and many black-and-white drawings. Only a handful of her drawings had until then been published. In 2006, an exhibition of a small part of her work was organised and a book was published commemorating her life and work (Moe 2006).

Bødtker's drawings of archaeological textiles

Bødtker established early contacts with the archaeologists at Bergen Museum. Haakon Shetelig, curator and later professor at Bergen Museum between 1901 and 1942, and his successor Johannes Bøe invited her to draw and document archaeological artefacts. Among these are a collection of drawings in Indian ink and a few watercolours showing textile fragments found in excavations in western Norway and Rogaland. It comprises 28 plates with drawings of textiles from the following sites: Grønhaug in Bø, Torvestad, Karmøy, Rogaland (B 5758 g); Øvre Tofte, Halsnøy, Kvinnherad, Hordaland (B 5406 b, c); Dale, Ytre Holmedal, Sunnfjord, Sogn and Fjordane (B 3106 b); Døsen, Hordaland (B 6091); and Blindheim, Vigra, Møre and Romsdal (B 8628). According to Bødtker's notebook commenting on her drawings of the Grønhaug find (By 10036_30), they were made in 1941. All the drawings are arranged in plates measuring 25 cm x 32.5 cm. Most of them contain written notes including information about size and magnification. Bødtker was obviously fascinated by the ancient textiles. Her drawings of textiles from Øvre Tofte, Døsen and Blindheim are not included in this paper. They are published and discussed by Bender Jørgensen and Moe (2020) where references to detailed studies and documentation of the textiles by Bente Magnus, Margareta Nockert and Inger Raknes Pedersen can be found.

This article focuses on the drawings of the textiles from the Grønhaug and Dale finds. The textiles are briefly mentioned in Bergen Museum's published annual reports and in some cases in publications of the finds of which they were part (Lorange 1877, 51–52; Shetelig 1902; 1912). Several are described by Johan Hiorth (1908), in Bjørn Hougen's studies of Norwegian textiles from the Migration Period and Viking Age (Hougen 1935, 2006), and in Lise Bender Jørgensen's catalogue of prehistoric textiles from Norway (Bender Jørgensen 1986). In these works, descriptions are brief and almost without illustrations. Photographs of a few textiles from Grønhaug can be seen in Arnfrid Opedal's study of ship burials at Avaldsnes (Opedal 1998, 72). In 2012, textile conservator Hana Lukesova at the University Museum of Bergen examined the textiles from Grønhaug and Dale (Lukesova 2012). In



preparation for this paper, Lukesova re-examined some of the textiles and selected items to be photographed in order to compare them with Bødtker's drawings.

Grønhaug in Bø, Norway

Grønhaug in Bø, Torvestad, Rogaland (B 5758 g), a burial mound on the island of Karmøy was excavated by Haakon Shetelig in 1902. The finds were brought to Bergen Museum where they acquired the museum number B 5758 (Shetelig 1902, 1912). The mound proved to contain a 15 m long boat, used for the burial of a single person. The grave had been plundered and the grave goods scattered. The latter included masses of down and feathers and several hundreds of very small textile fragments. Bødtker depicted only a few of them. Shetelig's interpretation was that the deceased had been laid to rest on an eiderdown duvet, which was placed near the middle of the boat. Dendrochronology has shown that the boat was built approximately 780 CE and it is thought that the burial took place between 790 CE and 795 CE (Bonde and Stylegar 2009, 162). This makes the find closely contemporary with the attack on Lindisfarne in 793 CE traditionally seen as the beginning of the Viking Age.

Shetelig described the textiles as follows: several larger and smaller fragments of textiles. One was a very fine one, still partly brightly coloured in red-brown, and



Fig 2 (left): Plate 1 (museum no. By 10036_1) fragments of coarse tapestry from B 5758 g Grønhaug, Rogaland (Image: © University Museum of Bergen)

Fig. 3 (right): Fragments of coarse tapestry woven with motifs in soumac as on Plate 1, (Image: © University Museum of Bergen, Adnan Icgic)

assumed to be remains of clothing. In addition, there were some coarser pieces: a single fragment is very coarse and Shetelig suggested that it might be remains of a sail (Shetelig 1902, 10). Some years later the textiles were examined by Johan Hiorth (1908, 18). He found that they consisted of four different fabrics:

- A) A very fine wool tabby, coloured dark red-brown. Referring to a Miss H. Christensen, Hiorth added that it had been woven using a very coarse sett and a very tight warp, and a loose but tightly woven weft;
- B) A coarser and lighter fabric than the previous, very thin;
- C) A coarse wool 2/2 twill; and
- D) A 2/2 hemp twill, presumably from a sail, and a fourfold string of two-ply hemp

Hiorth's descriptions are repeated in *Vestlandske graver fra jernalderen* (Shetelig 1912, 223), with 'probably of the boat's tent' to Shetelig's earlier suggestion that fragments D are the remains of a sail. Hiorth's assessment of raw materials is based on superficial observation, not on fibre analysis. Although different twills (one of them of light brown colour) and a fourfold string are preserved in the Grønhaug find, none of them were made of plant fibres. Even if additional fragments, now lost, existed in Hiorth's time, no method was available in 1908 to distinguish between species of plant fibre. The first methodology for this was published over a decade later (Herzog 1922). Hiorth's identification is likely to be mistaken. The next examination of the Grønhaug textiles was carried out by Lise Bender Jørgensen in the summer of

1982 (Bender Jørgensen 1986, 257, catalogue N:IV:4). Her findings were as follows:

- 1) Textile fragments, largest piece 9 cm x 7 cm. Weave: repp, z/z-twisted yarns, 35/10 threads/cm
- 2) Several larger textile fragments, largest pieces 9.5 cm x 7.5 cm and 10 cm x 9 cm. Weave: repp with brocaded pattern (presumably figured tapestry), S2z/S2z-plyed yarns, pattern weft also S2z-plyed, 28/12 threads/cm + brocading
- 3) Textile fragment, 20 cm x 15 cm. Weave: repp, z/z-twisted yarns, 25/6 threads/cm
- 4) Several larger textile fragments found with masses of down/feathers. Presumably remains of a pillow or eiderdown. Seam. Weave: 2/2 twill, z/z-twisted yarns, 24/7 threads/cm

Bender Jørgensen's repps 1) and 3) correspond to Hiorth's A and B, while his coarse 2/2 wool twill is probably Bender Jørgensen's 4). Hiorth's hemp twill and string are not included in Bender Jørgensen's records, while Bender Jørgensen's brocading (2) is missing from Hiorth's notes.

Lukesova described the find B 5758g as very extensive, comprising hundreds of small fragments that were very fragile and thus difficult to handle. She was able to recognize at least 12 different structures, but her list of preserved fragments is not complete due to the complex nature of the find which still needs a thorough textile analysis. They are as follows:

1. Fine tabby (rib weave)
2. Coarse tabby (rib weave)
3. Tapestry-like patterned weave I.
4. 2/2 twill (fine)
5. Coarse textile remains (one thread system)
6. Diamond twill
7. 2/2 twill (coarse)
8. Tabby
9. 2/1 twill
10. Tapestry-like weave II – soumak
11. Very coarse textile remains (one thread system)
12. String and other unidentified structures

Miranda Bødtker's drawings of textiles from Grønhaug comprise 22 plates, numbered 1 to 16 (plates

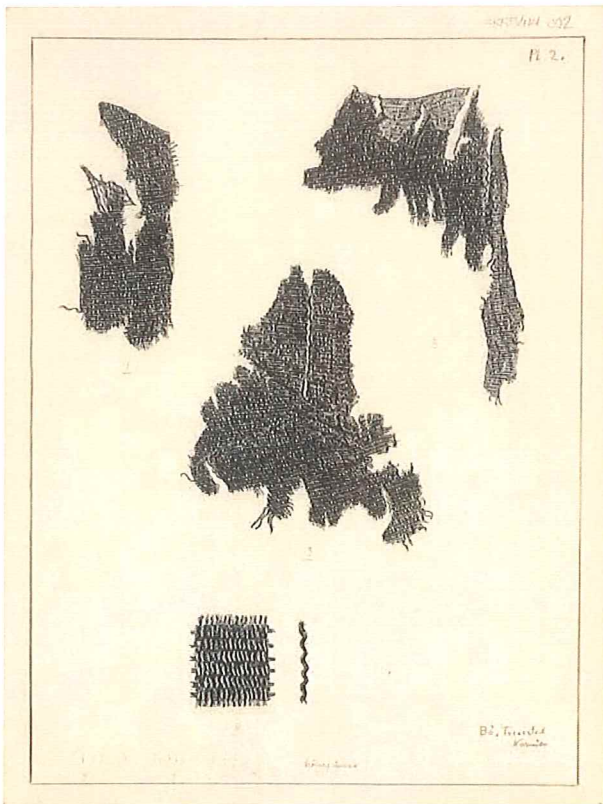
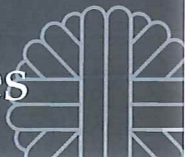


Fig. 4 (left): Plate 2 (museum no. By 10036_4) fragments of coarse repp from B 5758 g Grønhaug, Rogaland (Image: © University Museum of Bergen)



Fig. 5 (right): Three fragments of coarse repp as on Plate 2 (Image: © University Museum of Bergen, Adnan Içagic)



1 to 3 include a subset a, b and in one case c). Two unnumbered plates are also included. They are now in the Collection of Cultural History in the University Museum of Bergen (By 10036_1 – By 10036_28). At least 10 different fabrics can be discerned. They include at least two different types of tapestry, several fabrics in tabby: one is a fine repp with an imprint of a pattern, another is a coarse repp. There are several twills represented: coarser, balanced and unbalanced twills and small fragments of fine diamond twill of the Birka type (for definitions, see Bender Jørgensen 1986, 357). In addition, Bødtker's drawings include remains of caulking and a plaited string. Only parts of these are represented in Hiorth's and Bender Jørgensen's descriptions. These observations reflect almost a century of scientific interest in textiles which explains why the styles of recording differ. Miranda Bødtker's drawings include several hitherto unpublished textiles from Grønhaug, which makes them particularly valuable.

Plate 1 According to Bødtker's handwritten accompanying text, plate 1 (fig. 2) shows fragments

of very thick fabric. Regular parts where the warp is clearly visible. Nos 1 to 6 depict six fragments of the fabric. No 4 is depicted in several versions: face and reverse (4a and 4c); two views (at different sizes) of the same fragment's face side (4b) and a schematic reconstruction (7). In the latter, the middle area is based on 4 and perhaps 5, whereas the areas left and right are based on Bødtker's knowledge of pattern construction. The yarns are described as left twisted (s). Bødtker's drawings and descriptions partly correspond to Bender Jørgensen's type 2, but as the thread count of the latter, 28/12 threads/cm, does not fit Bødtker's description as 'very thick' it is unlikely that Bender Jørgensen saw these textiles. This also applies to Hiorth. Lukesova (2012) assessed these fragments as type 10. Tapestry-like weave II - soumak, with 7/14 threads/cm, warp: S2z, weft: S2z (fig. 3).

Plate 2 (fig. 4) shows three fragments and magnification of a repp fabric in right-twisted (z) yarn and traces of what looks like sewing in the drawing but on closer examination of fragments proved to be folds. The

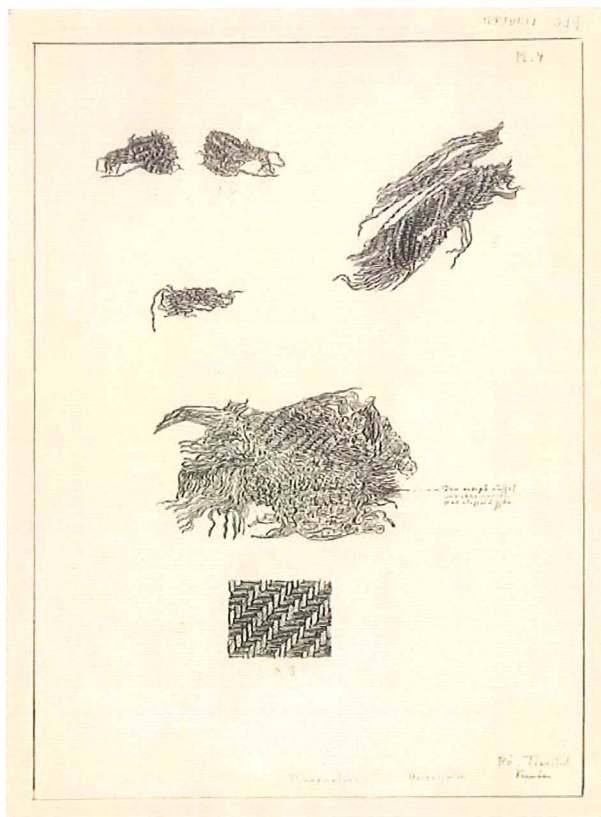
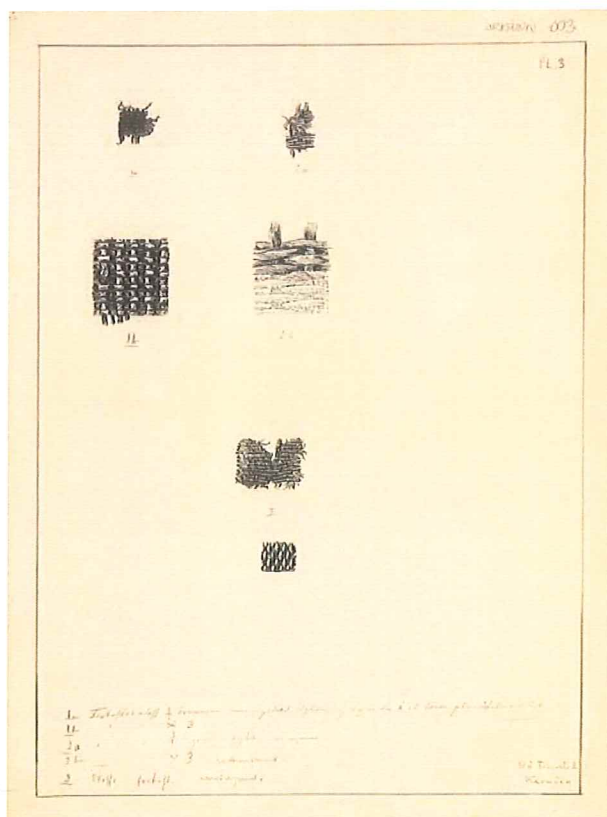


Fig. 6 (left): Plate 3 (museum no. By 10036_5) fragments of tabby from B 5758 g Grønhaug, Rogaland
 Fig. 7 (right): Plate 4 (museum no. By 10036_6) fragments of 2/2 twill from B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

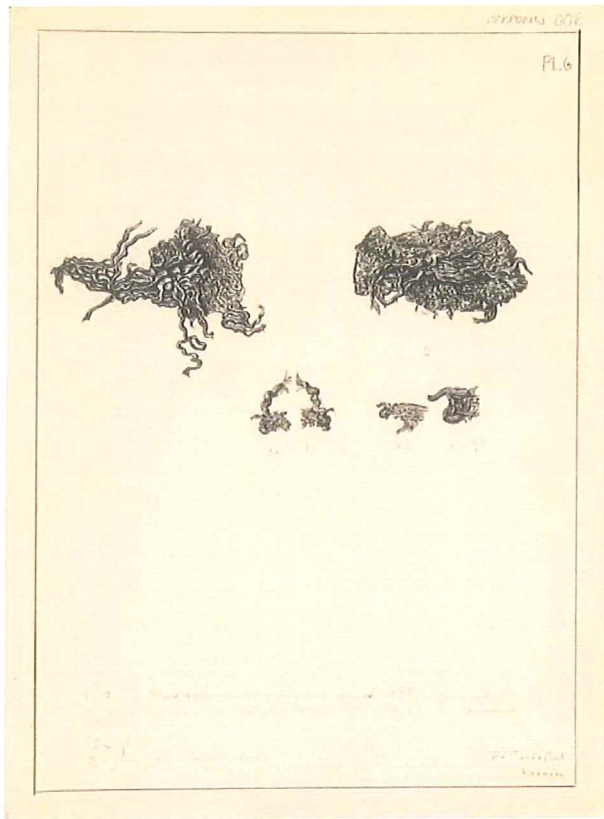
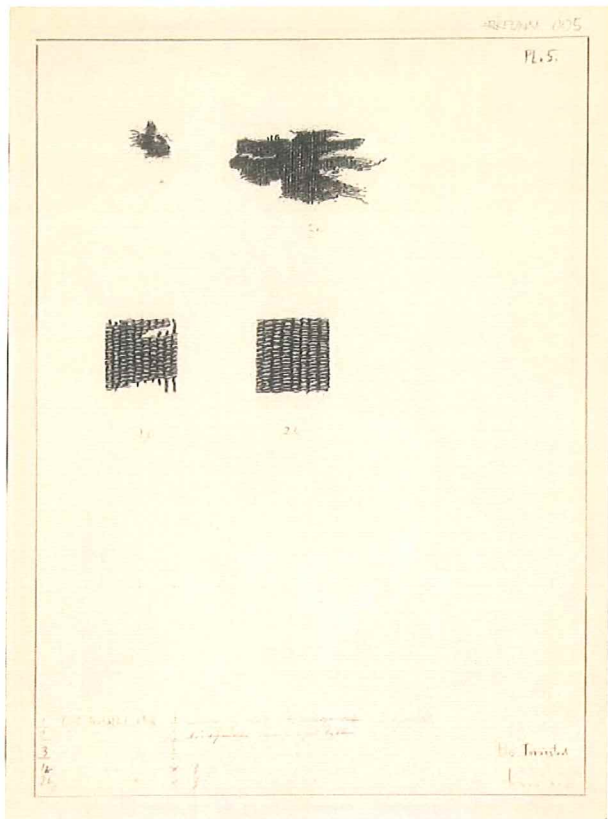


Fig. 8 (left): Plate 5 (museum no. By 10036_7) fragments of tabby from B 5758 g Grønhaug, Rogaland
 Fig. 9 (right): Plate 6 (museum no. By 10036_8) fragments of very coarse textile remains from B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

magnification indicates 6/28 threads/cm. This fabric is likely Bender Jørgensen’s type 3 and either Hiorth’s type A or B and corresponds to Lukesova’s type 2. Coarse tabby (rib weave), 25/6 threads/cm, z/z (fig. 5). Plate 3 (fig. 6) shows three fragments of tabby-woven fabric and magnifications of these. Nos 1 and 2 are described by Bødtker as made of right-twisted yarn (z) and no 3 as left-twisted (s). The drawings are quite diverse and likely to represent three different fabrics. No 1 is a balanced tabby where every second warp thread is thicker. It has about 10/12 threads/cm. No 2 is a tight repp with 2/10 threads/cm. No 3 is another repp, rendered as warp-faced, but the numbers of threads/cm cannot be calculated. The quality of the latter corresponds to Bender Jørgensen’s type 1 and 3, but the yarn twist does not. It means that none of the three fabrics appears to have been recorded by Bender Jørgensen. As Hiorth did not mention yarn twist it cannot be ascertained if any of the drawings represent Hiorth’s type A or B.

Plate 4 (fig. 7) shows four fragments of 2/2 diagonal twill, one of them with down attached, and a

magnified scheme for the structure. The yarns are described as right-twisted (z). The fabric corresponds to Bender Jørgensen’s type 4 except for the thread count, and may also represent Hiorth’s type C. This

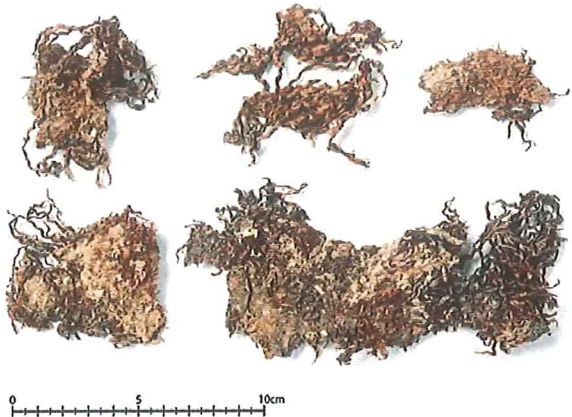


Fig. 10: Very coarse textile remains as on Plate 6 showing red-brown threads of one system (probably warp), z-spun (Image: © University Museum of Bergen, Adnan Içagic)

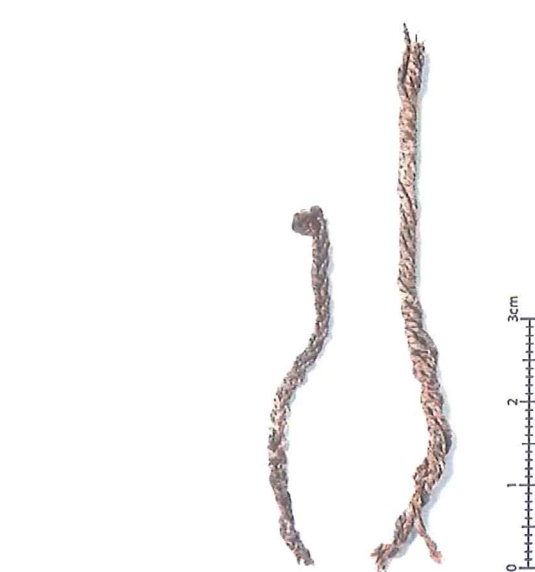
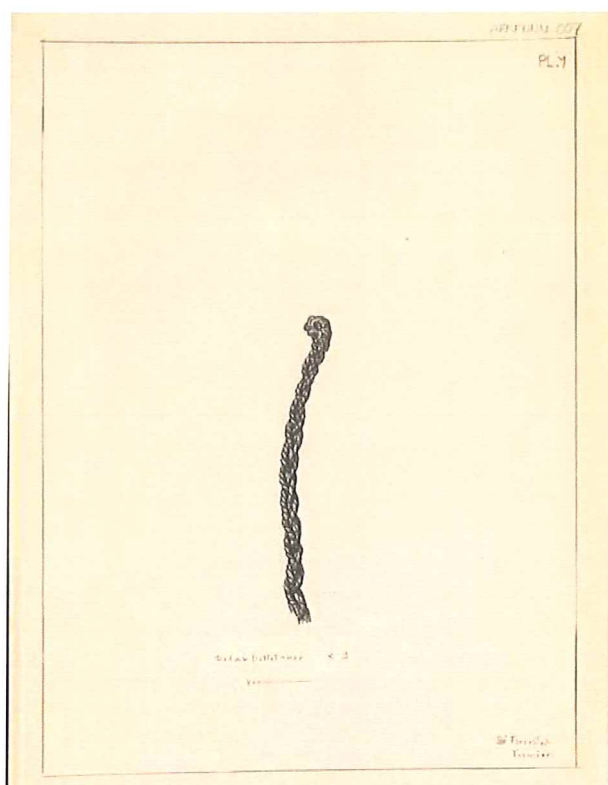
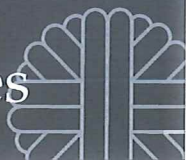


Fig. 11 (left): Plate 7 (museum no. By 10036_9) plaited string from B 5758 g Grønhaug, Rogaland (Image: © University Museum of Bergen)

Fig. 12 (right): Two strings from B 5758 g: the left one is depicted on Plate 7, the right one is probably the string that Hiorth thought was made of hemp (Image: © University Museum of Bergen, Adnan Içagic)

fabric perhaps relates to Lukesova's type 7. Twill 2/2, 12/9 threads/cm, z/z.

Plate 5 (fig. 8) shows two samples of fine tabby made of right-twisted yarns (z) plus magnifications. Bødtker describes no 1 as a very fine fabric with similar yarn in warp and weft while the warp of no 2 is slightly thicker. They derive from the same fabric depicted in Plate 10 (see below). The fabrics correspond to Lukesova's type 1. Fine tabby (rib-weave).

Plate 6 (fig. 9) shows coarse wool threads connected to a thinner but still coarse tabby-woven fabric. Bødtker notes that the yarn in no 3 is left-twisted (s) and that wool threads and fabrics are entangled all over it. Bender Jørgensen and Moe (2020, 184) suggested that this could be undecorated parts of Bender Jørgensen's type 2 and that it might be remains of a piled fabric, but Lukesova (2012) interprets the coarse wool threads as her type 11. Very coarse textile remains (one thread system only) – probably warp. The threads are long and wavy in a very regular way (see fig. 10), something that is typical for warp threads. They are spun in the z direction, but no thread count can be calculated. The threads are stuck together with organic remains that might be a decomposed plant fibre weft.

Plate 7 (fig. 11) shows a string, plaited from three left-ply (s) threads. Bødtker does not mention any fibre type. It cannot be the string that Hiorth described as a

four-ply hemp string, which most probably referred to a four-ply string made of animal hairs (fig. 12, right side). Bender Jørgensen did not record strings as she focused on textile structures.

Plate 8 (fig. 13) shows samples of thick 2/2 diagonal twill, brownish, made of right-twisted yarn (z). No 4 is magnified 3:1. This is likely to represent Hiorth's type C but is not represented in Bender Jørgensen's records. It may derive from the same fabric as the twill in Plate 4. The fabric may correlate to Lukesova's type 7. Twill 2/2 (coarse), 12/9 threads/cm, z/z or it may be another 2/2 twill not in Lukesova's list.

Plate 9 (fig. 14) displays thick diagonal twill with a nap on one side, made of right-twisted yarns (z). This might be a sample of Bender Jørgensen's type 4 or perhaps Hiorth's type C, although both of them described it as a 2/2 twill. It is Lukesova's type 9, twill 2/1, 12/12 threads/cm, z/z (dark brown and red-brown) and one side napped. Photos (fig. 15 and fig. 16) show face and reverse. Textiles with a napped surface were found in the harbour of Haithabu where they were interpreted as the remains of garments (Hägg 1984, 121–126; Hägg 2015). Finishing processes such as napping were common in the ancient world. They are also often difficult to recognise in archaeological textiles, especially if it is not possible to examine both sides. This also applies to 2/1 twills that are known

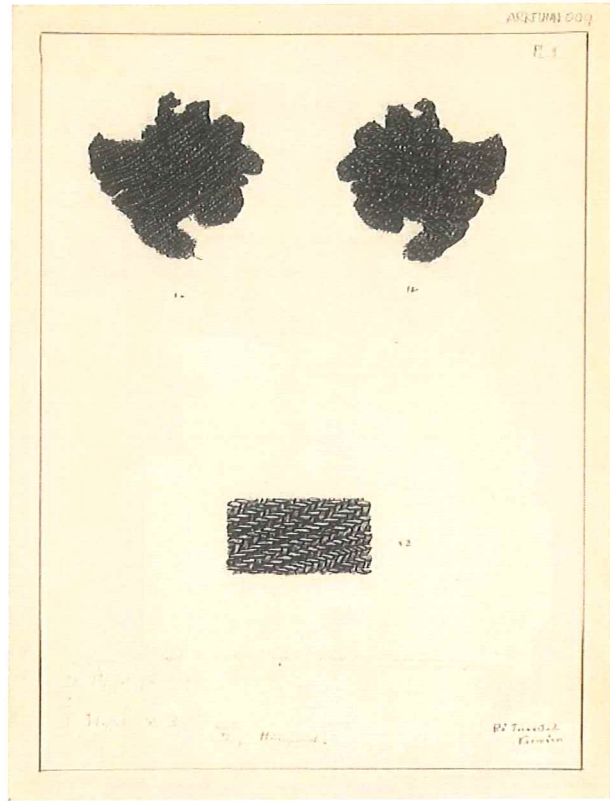
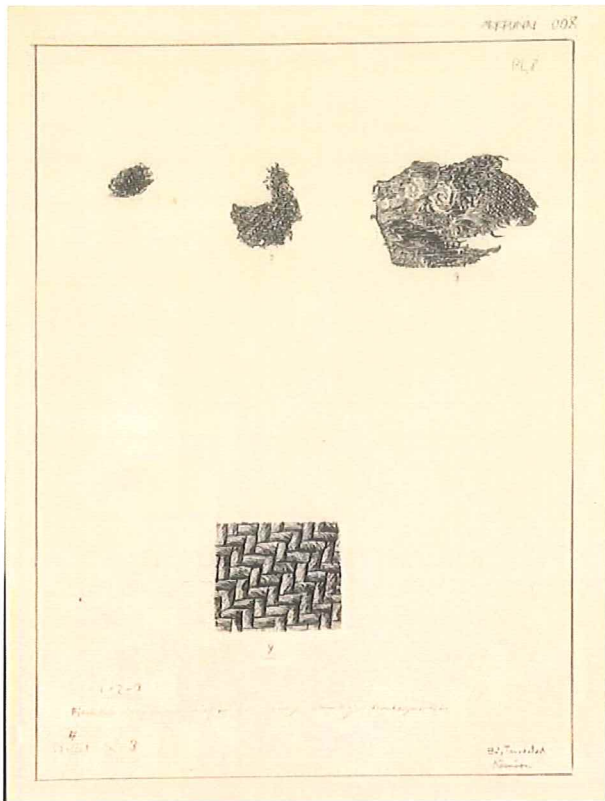


Fig. 13 (left): Plate 8 (museum no. By 10036_10) fragments of thick 2/2 diagonal twill, B 5758 g Grønhaug, Rogaland
 Fig. 14 (right): Plate 9 (museum no. By 10036_11) fragment of napped 2/1 twill, B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

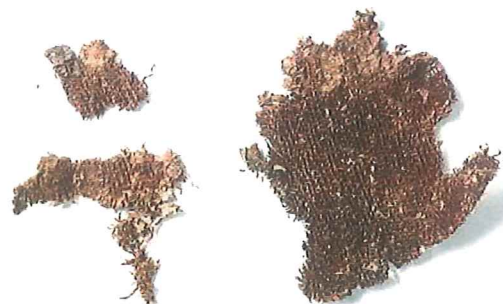


Fig. 15 (left): Napped 2/1 twill, face side, as on Plate 9 (Image: © University Museum of Bergen, Adnan Icgagic)
 Fig. 16 (right): Napped 2/1 twill, reverse side, as on Plate 9 (Image: ©University Museum of Bergen, Adnan Icgagic)

throughout the first millennium CE. They are rare in Viking Age textiles from Scandinavia but appear as diagonal as well as løn ge twills. Bender Jørgensen (1986, 358) recorded none from Norwegian finds but listed diagonal 2/1 twills in three Danish burials and løn ge twills in two, all dated to the tenth century

CE. Swedish finds (including Birka) number two finds of diagonal 2/1 twill and nine to ten burials with løn ge twills. A diagonal twill from Birka is dated to the ninth century CE, the rest to the tenth century (Bender Jørgensen 1986, 358). At Haithabu diagonal 2/1 twills appear among finds from the harbour

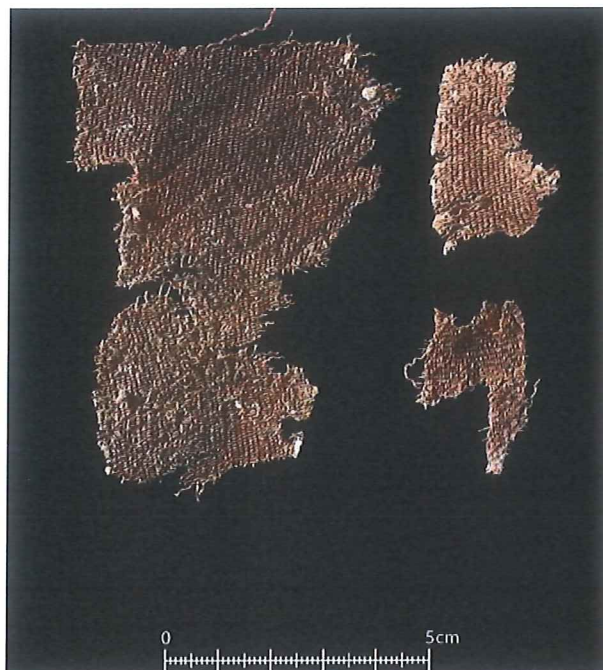
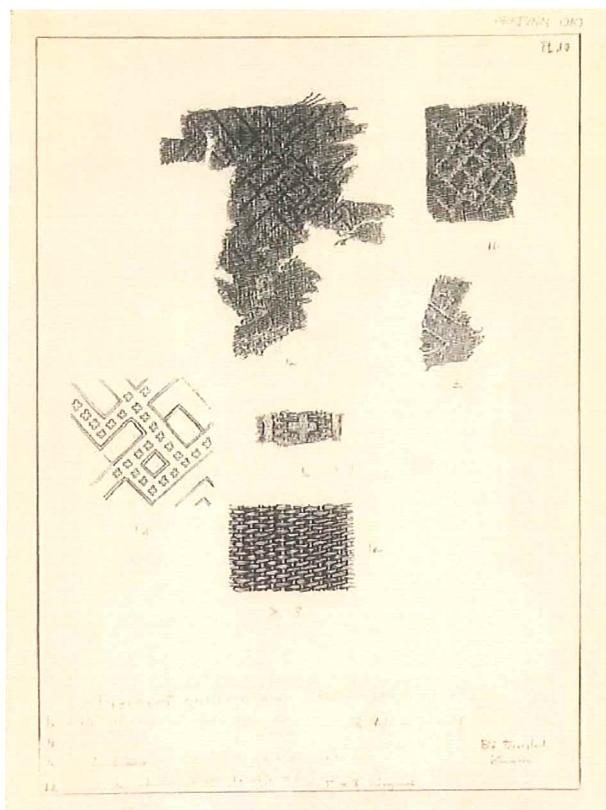
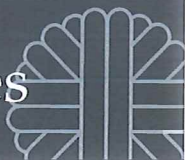


Fig. 17 (left): Plate 10 (museum no. By 10036_12) fragments of tabby with an imprint of a pattern B 5758 g Grønhaug, Rogaland. The pattern is reconstructed

Fig. 18 (right): Tabby with an imprint of a pattern as on Plate 10 (Images: © University Museum of Bergen, Adnan Icağic)

and the settlement; they date to the late ninth and throughout the tenth centuries (Hägg 2015, Tables 4 and 6). The napped 2/1 twill from Grønhaug is thus an early example of this type of fabric in Scandinavia. Plate 10 (fig. 17) shows fragments of the fabric described by Bødtker as *brosjert spjellvev* which translates as brocading woven on a rigid heddle. She further notes that the brocading weft has disappeared. According to Bødtker, drawings no *a* and *b* show the front and reverse of the fabric with an imprint of a pattern of another textile item. Drawings 1c and 1d are reconstructions, only drawing no 2 depicts a fabric with a pattern. The yarns are right twisted (z). The magnification shows a fine repp. This fabric was not described by Johan Hiorth or Lise Bender Jørgensen. Lukesova found this to be her type 1 – a fine tabby-rib weave with an imprint of another fabric (fig. 18). The imprint of the pattern is reminiscent of fine wool fabric with decoration in weft pick-up found in a late Viking Age burial at Hvilehøj in Denmark (NM C 4280a), described by Margrethe Hald (1980, 111-119).

Plates 11-13 form a group. The textiles are all described by Bødtker as *brosjert spjellvev* but are actually fragments of a fine tapestry made of left-plied (s) yarns. Plate 11a with 11b inserted (fig. 19)

shows a mounting of three fragments (the front and reverse sides). According to Bødtker's notebook (By 20036_30), she interpreted these as depicting a bird. The same fragments are shown in fig. 21 and fig. 22, along with the fragment depicted on plate 12a (fig. 20). Plate 12a (fig. 20) is another piece of tapestry (no 1) with a sketch of how she understood the motif (no 2), which can be compared with fig. 21, the fragment to the right.

Plate 12b (fig. 23) presents one fragment (no 1) and a draft reconstruction of its pattern (no 2). Nos 3 and 4 are the front and reverse of the same fragment magnified four times in watercolour (compare with fig. 24). Bødtker's interpretation of what is front and reverse is contrary to that of Lukesova (see below).

Plate 12c (fig. 25) presents two more fragments of the same fabric and magnifications in colour.

Plate 13a (fig. 26) shows three more fragments (all of them are in fig. 27) depicted in different ways: nos 1 and 2 show organic fragments containing several layers of different materials; no 3 shows a fragment adhering to no 2 magnified four times; no 4 is the same fragment in watercolour; nos 5 and 7 are probably lifted off no 1 or 2; and nos 6 and 8 are magnifications of these.

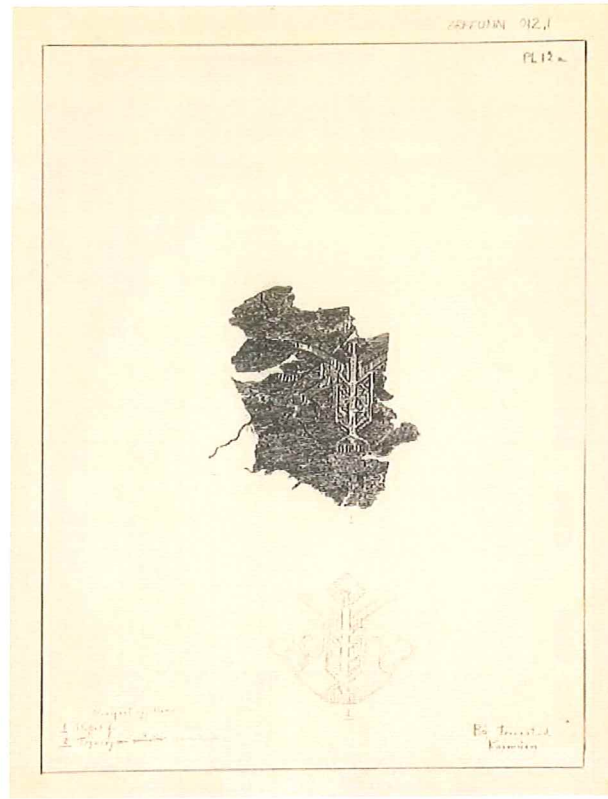
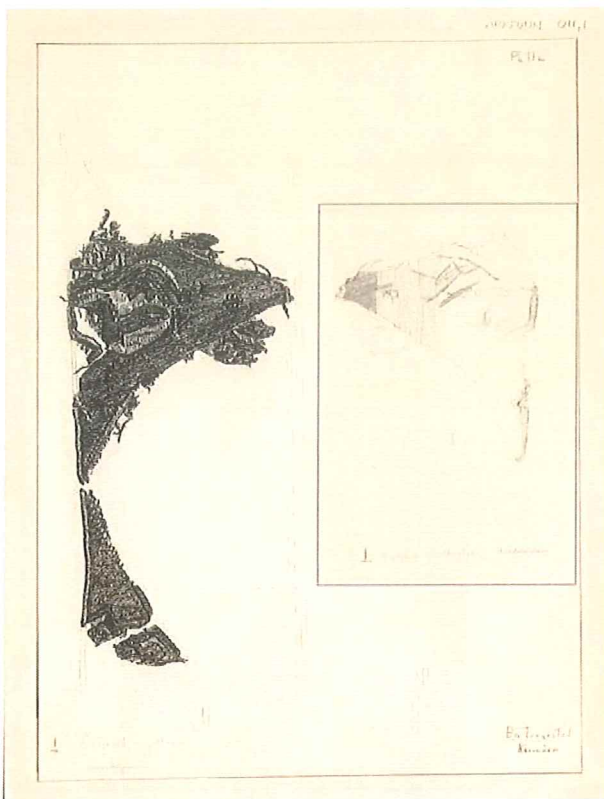


Fig. 19 (left): Plate 11a with 11b inserted (museum nos. By 10036_13 and By 10036_14) fragments of fine tapestry from B 5758 g Grønhaug, Rogaland

Fig. 20 (right): Plate 12a (museum no. By 10036_15) fragment of fine tapestry from B 5758 g Grønhaug, Rogaland (Images: © University Museum of Bergen)

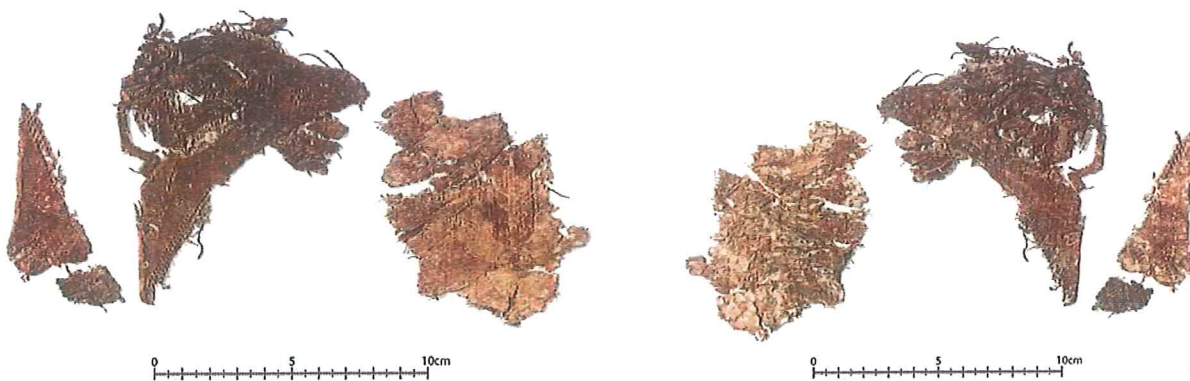


Fig. 21: Fragments of fine tapestry, face side, as on Plates 11a-b and 12a (Image: © University Museum of Bergen, Adnan Içagic)

Fig. 22: Fragments of fine tapestry, reverse side, as on Plates 11a, b and 12a (Image: © University Museum of Bergen, Adnan Içagic)

Plate 13b (fig. 28) shows one fragment (no 1), with magnification in watercolour (no 2).

The textiles in plates 1 –3 correspond to Bender Jørgensen's type 2 (fine wool repp in S-plied yarn, 28/12 threads/cm with brocading/figured tapestry). They also match Lukesova's type 3: Tapestry-like patterned

weave I with a twill-effect on the front side and a tabby-rib-weave-effect on the reverse. The reverse side can be distinguished due to the loose pattern yarns. Both warp and weft are plied in S from 2z. Lukesova mentions red and ochre colour in weft. However, the colours are heavily faded, and it is possible there

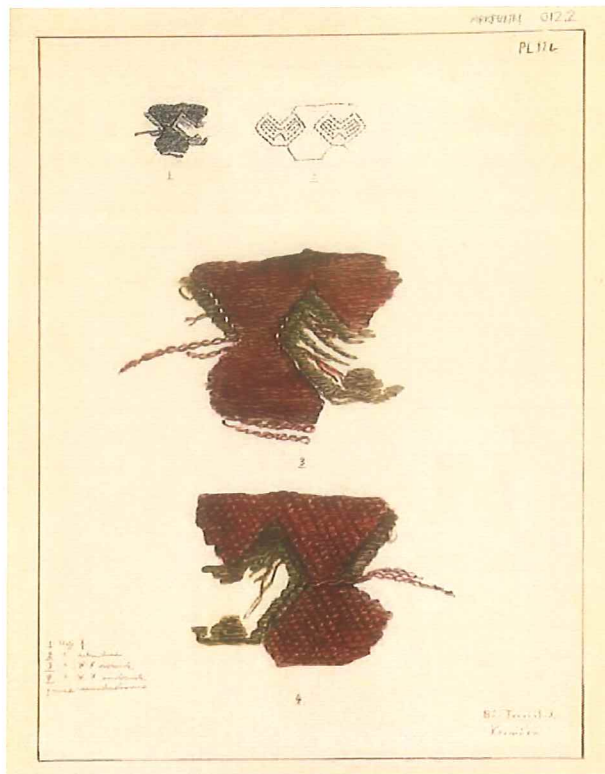
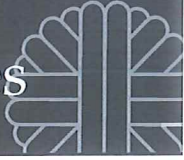


Fig. 23 (left): Plate 12b (museum no. By 10036_16) fragment of fine tapestry from B 5758 g Grønhaug, Rogaland
 Fig. 24 (right): The fragment of fine tapestry on Plate 12b
 (Images: © University Museum of Bergen, Adnan Içagici)

were more that cannot now be distinguished. She also mentions the remains of feathers and some black substance on the surface of some fragments. Parts of these textiles, in particular Plates 3a- b, have close parallels among the figured tapestries found in the Oseberg burial (see, for example, Hougen 2006, 61–63; Vedeler 2019, 36). Hougen was aware of the textiles from Grønhaug. He mentions that several of

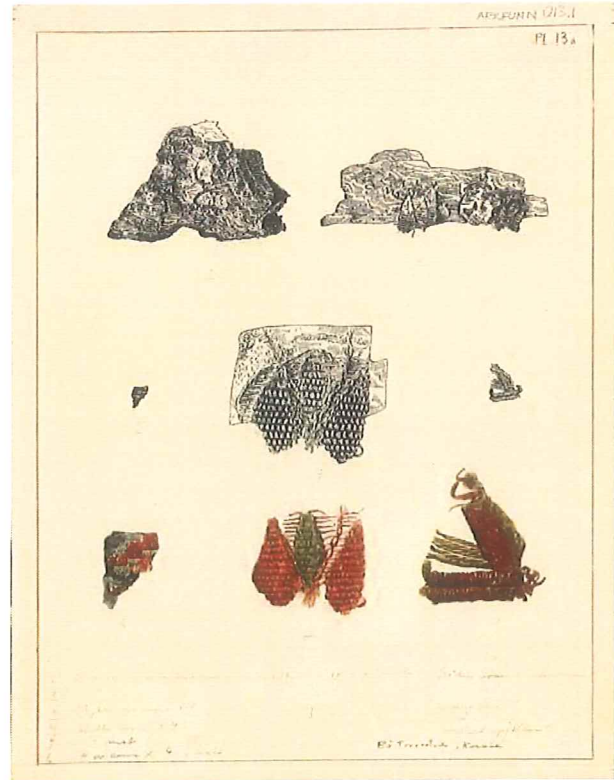


Fig. 25: Plate 12c (museum no. By 10036_17) fragments of fine tapestry from B 5758 g Grønhaug, Rogaland
 Fig. 26: Plate 13a (museum no. By 10036_18) fragments of fine tapestry from B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

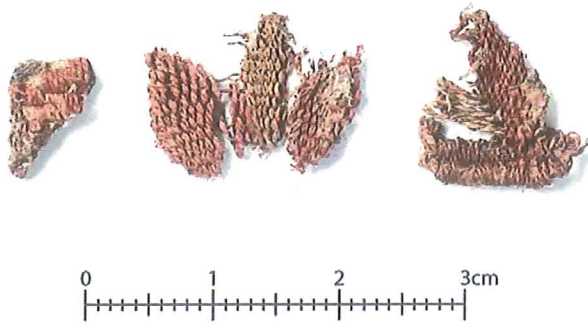


Fig. 27: Three very small fragments of fine tapestry as on Plate 13a (Image: © University Museum of Bergen, Adnan Icgagic)

them are figured tapestries and that they comprise what he terms ground pattern 1, remains of figured motifs and the characteristic slinging outline termed *snürjing* (soumak) in Swedish (Hougen 2006, 75). He also mentions a similar find B 4772 c from Jåtten, Hetland, Rogaland (Hougen 2006, 75). The Jåtten find is interesting because all textile remains from this find are remarkably similar to the Grønhaug textiles

in quality: type 1. rib weave; type 2. 2/2 twill; type 3. tapestry-like weave – soumak (weft twining over a changing number of warp threads in this case); and 4. braid (Lukesova 2012).

The figured tapestries depicted in Plates 11 to 13 differ from the fragments of fabrics with geometric patterns shown in Plate 1. The Oseberg tapestries often combine different elements, but as the textile remains shown in Plate 1 are much coarser, it is unlikely that they represent bands of geometric motifs framing the figured parts of the Grønhaug tapestries.

Plate 14 (fig. 29) shows two fragments (with magnifications) of what Bødtker terms *gåseøiemønster* (lozenge twill) but is actually diamond twill (for the difference, see Bender Jørgensen 1986, 14 and 288), made of right-twisted (z) yarns. Neither of these pieces has been described by Hiorth or Bender Jørgensen. Lukesova ascribed this group of several small fragments to type 6. diamond twill, pattern approximately 20/14 threads, 40/14 threads/cm, z/z (fig. 30). These textiles can be attributed to the Birka type, fine diamond twills made of z-twisted yarns that

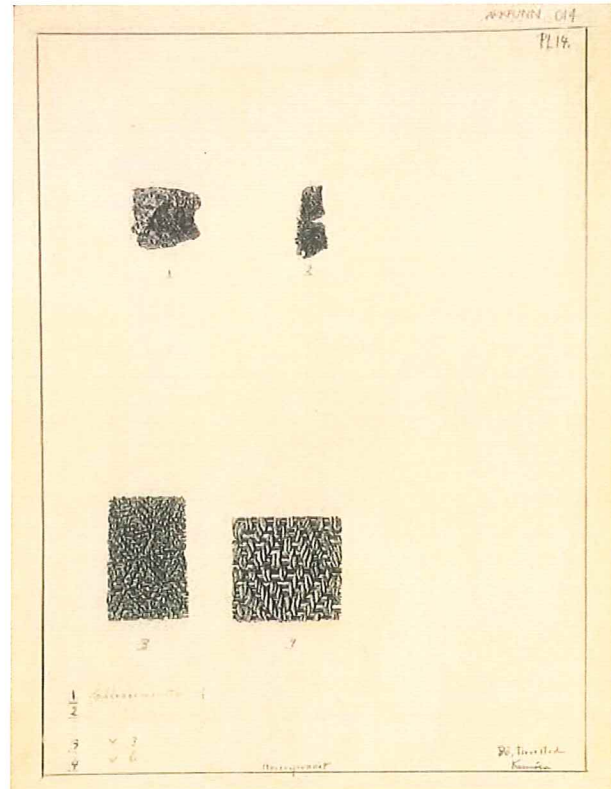
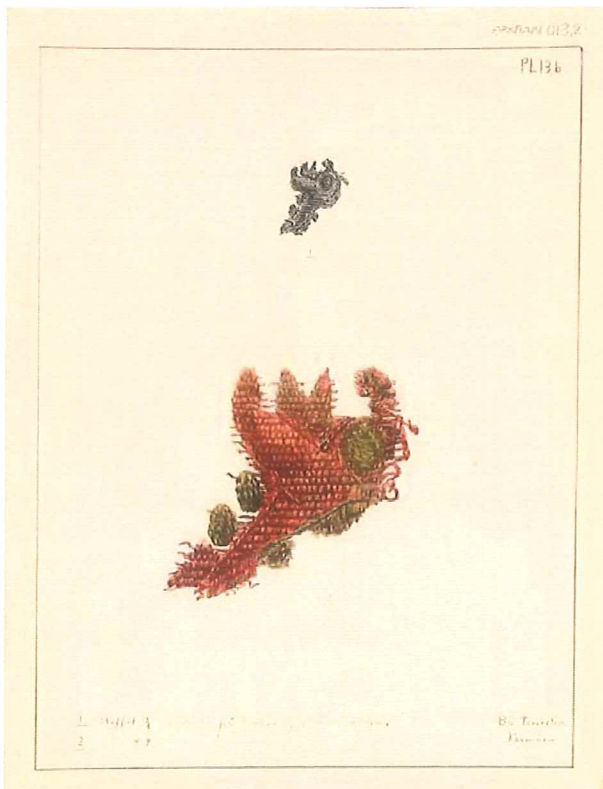


Fig. 28 (left): Plate 13b (museum no. By 10036_19) fragment of fine tapestry from B 5758 g Grønhaug, Rogaland
 Fig. 29 (right): Plate 14 (museum no. By 10036_20) fragments of diamond twill from B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

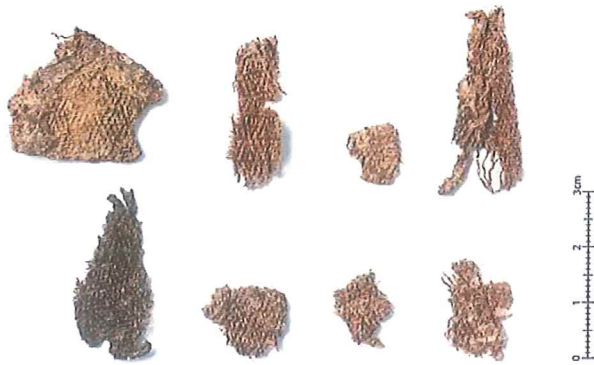
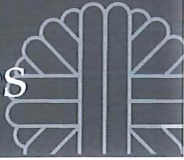


Fig. 30: Fragments of diamond twill as on Plate 14 (Image: © University Museum of Bergen, Adnan Içagic)

have been found in numerous Scandinavian burials from the Merovingian and Viking Age Periods from 600 CE to 1000 CE (Bender Jørgensen 1986, 357–360). They were first observed among the textile finds from Birka (Geijer 1938) and were long thought to be imported luxury fabrics deriving from places as

diverse as Frisia, Syria, the British Isles and western Norway. Recent light stable isotope analysis indicates that they were produced in north-western Europe (von Holstein 2012).

Plate 15 (fig. 31) shows ‘boat remains with wool’ and represents caulking in the form of lumps of wool and thick, z twisted wool thread. This is another example of parts of the Grønhaug find that have been overlooked by scholars. The fragments depicted on this plate are still preserved. Wool and rags were commonly used for caulking as noted in a number of other finds such as the boat from Øvre Tofte, Halsnøy (Magnus 1980), the Oseberg ship (Ingstad 2006, 235), and in the harbour of Haithabu (Hägg 1984, 15).

Plate 16 (fig. 32) shows a solid wool fabric in diagonal twill made of right-twisted (z) yarns with a much denser warp than weft. It displays a seam sewn with s-twisted thread. The fabric might be a sample of Bender Jørgensen’s type 4 that includes a seam, and Hiorth’s type C. Lukesova described this fragment as type 4 (2/2 twill, 32/7–8 threads/cm, z/z, red-brown colour in both systems, the denser system is darker). The sewing yarn is plied S2z. Bødtker only shows a

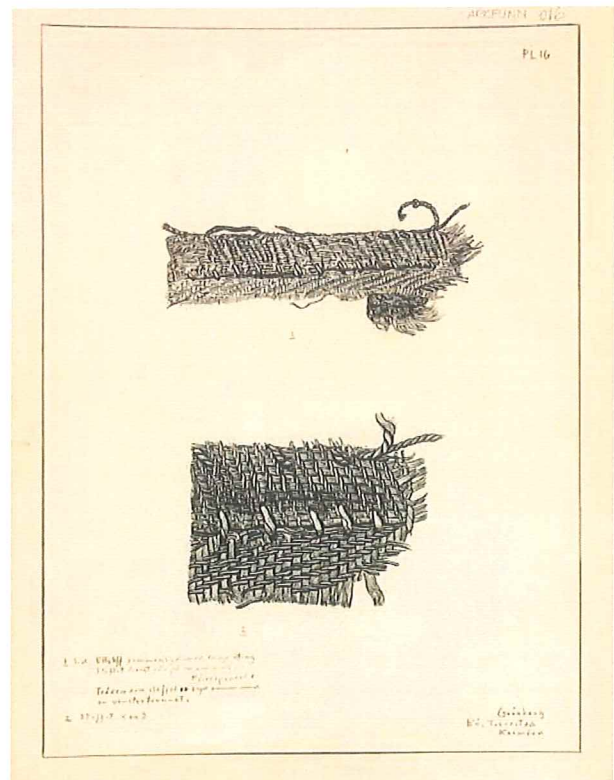
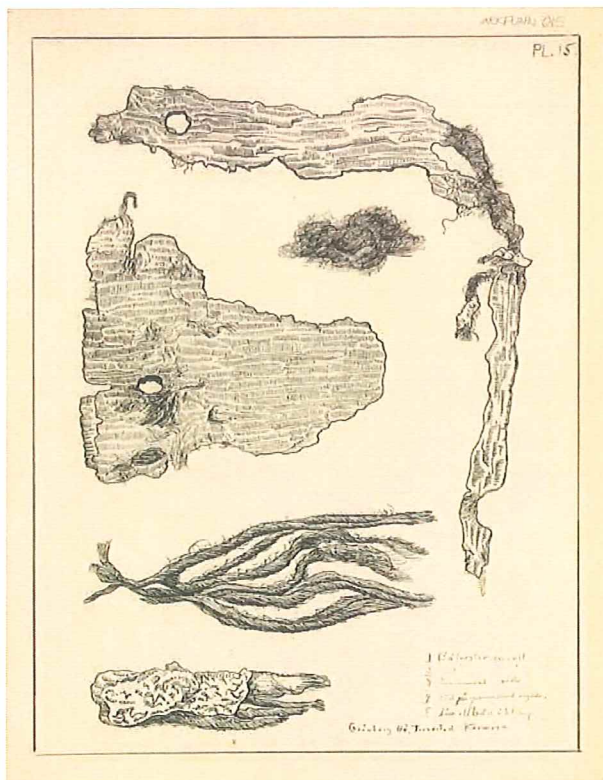


Fig. 31: Plate 15 (museum no. By 10036_21) fragments of caulking from B 5758 g Grønhaug, Rogaland
 Fig. 32: Plate 16 (museum no. By 10036_22) fragments of caulking from B 5758 g Grønhaug, Rogaland
 (Images: © University Museum of Bergen)

Fig. 33: Arkfunn 019 (museum no. By 10036_25) fragment of 2/2 twill with a ring-shaped pattern from B 3106 b Dale, Sogn and Fjordane (Image: © University Museum of Bergen)

section of one fragment but there are several fragments preserved in the find and they are obviously cut in long strips. This makes it likely that they also derive from caulking.

Two unnumbered plates also belong to the Grønhaug find (Bender Jørgensen and Moe 2020, 185–186). All fragments are described as ‘unclear fabric’. They are all tiny, but according to the authors some appear to be tabby and one is half-basket weave.

Dale in Norway

Dale, Ytre Holmedal, Sunnfjord, Sogn and Fjordane (B 3106 b) is a man’s burial dating to the Viking Age complete with weapons, tools, and rivets and roves which show that a boat was part of the burial. Finds also included three fragments of textiles, the largest piece 22 cm x 16 cm. The find was made in 1875 by landowner Peder P Dale who was removing a burial mound, originally 4 ells high and built over an irregular heap of stones (Lorange 1877, 51–52). Archaeologist Anders Lorange described the textiles

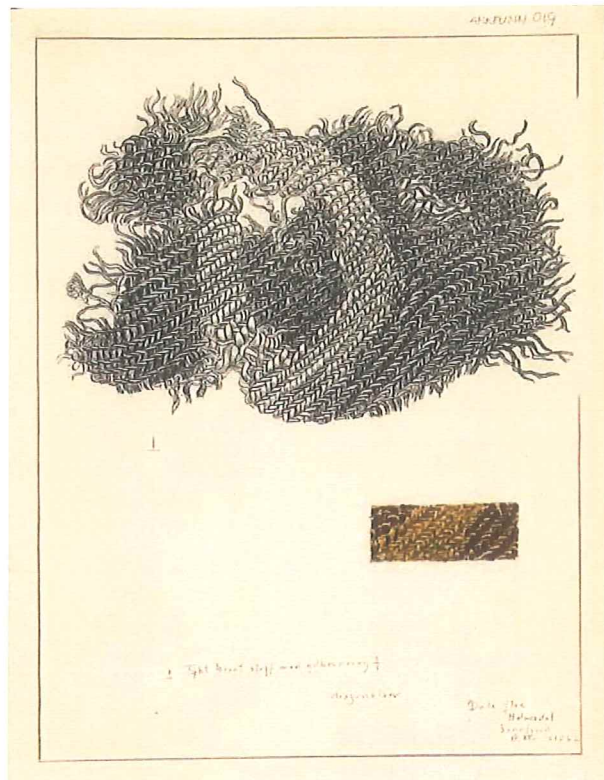
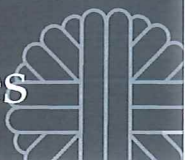


Fig. 34: Three textile fragments from B 3106 b Dale, Sogn and Fjordane. Two are 2/2 twill and one is tabby, left face sides and right reverse sides. One of the twill fragments has a ring-shaped pattern as in fig. 33 (Image: © University Museum of Bergen, Adnan Içagic)



as three fragments of woollen cloth, one yellow, the other two brown with yellow stripes; the largest piece, 7 inches (17.75 cm) long and 4 inches (10 cm) wide has a yellow ring about $\frac{3}{4}$ inches (2 cm) wide and an inner diameter of $1\frac{1}{2}$ inches (3.75 cm). The threads on the back form long loose loops (Lorange 1877, 52).

This corresponds well to Miranda Bødtker's drawing and description of 'thick brown fabric with the yellow-brown ring, diagonal weave'. The drawing (fig. 33) shows a fragment with a ring-shaped motif made in lighter yarn. A detail shows a part of it. Bødtker does not supply information on yarn twist, or what she thinks is warp and weft. Based on the drawing, the horizontal threads appear to be the warp, the vertical threads weft. The ring-shaped motif is thus created by the weft. Bødtker's drawing suggests that the motif was made in an interlinking technique (compare fig. 33).

In 1982, Lise Bender Jørgensen examined the Dale textiles, describing them as 2/2 diagonal twill with a woven-in motif, z/z-twisted yarns, 8/6 threads/cm, and three different colours (Bender Jørgensen 1986, 265, catalogue N:V:74). Lukesova (2012) described two different textile structures in this find: 1. two fragments, one of them with a ring pattern, both in 2/2 twill, 8/6 threads/cm, z/z, warp: light brown, weft: dark brown in the background, light brown in the pattern (fig. 34). She also mentions long, loose, weft-pattern threads on the reverse side, not loops as indicated by Lorange. A selvage has been preserved on the fragment without a pattern together with a sewing yarn plied in S2z following two edges of the fragment in a way that suggests buttonhole stitch. The sewing yarn has a light brown colour similar to the pattern weft thread. Lukesova interprets the wedge shape of this fragment together with the seam as a possible indication of a tailored garment. 2. Plain weave, 5/4 threads/cm, z/s, warp: light brown, weft: light brown, one weft thread dark brown, which indicates a pattern.

Bødtker's drawings as archaeological sources

What do we learn from Miranda Bødtker's drawings? They give us an almost shocking wealth of detail, even for someone who has seen the original textiles and tried to describe them. Bødtker's drawings of the Grønhaug textiles show several elements that have eluded textile scholars and offer new insights into designs and weaving techniques of the past. Bødtker's drawings were made in 1941 and thus form a unique source for how these easily perishable textiles have withstood many years in museum stores and exhibitions. Although the material is extremely fragile, many fragments depicted in Bødtker's drawings are

still preserved in their original form as demonstrated by the photographs. Colours on the tapestry fragments appear more faded today than documented in the drawings. The dyestuffs may have degraded during the post-excavation period, even though there are no records of any wet treatment except to the fragments of caulking that were conserved in 1972. The drawings are thus important documentation of how the colours appeared in earlier times.

Adding several items to the previous records of the textiles from Grønhaug, Bødtker's drawings contribute to the record of Merovingian Period and Viking Age textiles from Norway. This applies in particular to the tapestries and other ornamented fabrics (fig. 2, fig. 19, fig. 20, fig. 23, fig. 25, fig. 26, fig. 28), the napped 2/1 twill (fig. 14) and the fine diamond twill of Birka type (fig. 29). The tapestries were buried some 40 years – a generation – earlier than those from Oseberg and offer a welcome contrast in terms of design and technique. This also applies to the imprint of fabric with a geometric pattern (fig. 17). The 2/1 twill is currently the earliest example of this cloth type in Scandinavia, while the diamond twill adds to records of the Birka type.

The fine tabbies and repps of fig. 4, fig. 6, fig. 8 and fig. 17, the napped 2/1 twill (fig. 14) and the fine diamond twill (fig. 29) might be remains of clothing and other textile items, while the tapestries and the imprint of patterned fabric (fig. 17) are likely to derive from soft furnishings, perhaps wall hangings. Bødtker notes on Plate 13 (fig. 26) that the fragments of tapestry were found with down remains. One of the items on fig. 7 also had remains of down. However, down was found everywhere and although it is evident the burial contained some kind of bedding, it is difficult to ascertain which of the textiles served as pillowcases or a duvet cover.

Neither Bender Jørgensen nor Lukesova have been able to identify the twill that Hiorth and Shetelig suggested could derive from a sail or a tent. The remains of the boat have been examined by Arne Emil Christensen (Christensen 1998). He suggested it was built to be rowed by eight rowers although he could not exclude the possibility that it had a small keelson and thus a mast. This makes it unlikely that a sail was deposited in the burial.

It must therefore be presumed that the person laid to rest in Grønhaug had fine garments and richly decorated soft furnishings including warm and soft bedding.

The main focus of Miranda Bødtker's drawings was on technical details, whereas it was the motifs that Sofie Krafft and Mary Storm concentrated on when

drawing the textiles from Oseberg (Christensen and Nockert 2006; Vedeler 2019). This means that they offer different information and opportunities for telling different stories. Bødtker's objects are far more fragmented, and it is difficult to discern recognisable motifs in the remains of figured tapestries from Grønhaug. Krafft and Storm had better preserved textiles to draw. Although their drawings do depict technical details, these were obviously not where they applied their main effort. Bødtker's eye for small details and her skills in tapestry weaving certainly also played a role. She applied her knowledge of textile art and her deep dedication to displaying what she saw accurately. Her skills qualified her to illustrate important botanical works such as *Norsk Flora*, and the same abilities emerge just as clearly from her drawings of the archaeological textiles.

Bender Jørgensen and Moe (2020) found several discrepancies between Bødtker's drawings and the analyses of the textile scholars. Some are caused by difficulties in comparing brief descriptions in words with detailed drawings of a large number of fragments that clearly derive from many more fabrics than the four types that both Hiorth and Bender Jørgensen settled on from Grønhaug. Some of these have now been resolved. Other discrepancies relate to the Øvre Tofte, Døsen and Blindheim finds and are not included in this paper. In sum, they demonstrate that interpretations depend on the ability and experience of the observer and that it is useful to re-investigate the original textiles with fresh eyes, updated knowledge, and new tools and methods. Investigations based on secondary sources such as historical scientific drawings are very valuable. They do however always include at least two sets of interpretation: those of the person who executed the drawing, and those of the one who is scrutinising it. Visual depictions, such as scientific drawings and photographs, should always be understood not as originals, but as secondary sources of information. Lukesova's findings from 2012 make it obvious that the textile finds from Grønhaug and Dale are under-researched and deserve much more attention. This also applies to the whole subject of archaeological textiles, a challenging field that requires knowledge from a wide range of disciplines and advanced scientific methods.

The drawings stand the test of time as scientific documentation and are still able to contribute to research. Miranda Bødtker's drawings, especially those of the textiles from Grønhaug and Dale, are a treasure chest and their subjects deserve to be fully investigated and appreciated as such.

Potential for further studies

It is noteworthy that Bødtker's drawings comprise several examples of textiles that have eluded the attention of textile scholars. This is emphasised by Lukesova's findings. This calls for further investigation – for example, into where these items were when Hiorth, Hougen and Bender Jørgensen went through the textiles from the same sites in Bergen Museum. Were they at that time being conserved, perhaps displayed in the exhibition or lent to another museum? As most of them are preserved and have been identified by Lukesova, it is likely that they were simply overlooked due to their fragmentary and fragile condition.

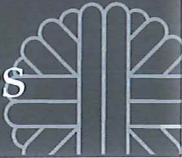
Bødtker's watercolours make it obvious that there is a rich potential for analyses of dyestuffs and mordants. As most of the precious fragments are very small in size, ethical considerations should be made before any sampling. The remains of figured tapestries from Grønhaug display similarities to those from the Oseberg burial and suggest a well-established style. As with the figured fabric from Dale, the tapestries have not been analysed in detail, the technique is still unidentified, and they all deserve a closer examination.

Acknowledgements

The drawings belong to *Olaf Grolle Olsens Legat til Universitetet i Bergen med tilførsel av arv etter Miranda Bødtker*. Thanks are due to the University Museum of Bergen, to Adnan Icajic who did the numerous photographs, to Aud Beverfjord who helped to merge two of Miranda Bødtker's drawings into one, and to John Peter Wild who transformed our Scandinavian/Czech text into proper English.

Bibliography

- Bender Jørgensen, L. (1986) *Forhistoriske tekstiler i Skandinavi* / Prehistoric Scandinavian Textiles. Copenhagen: Det Kongelige Nordiske Oldskriftselskab.
- Bender Jørgensen, L. and Moe, D. (2020) En glemte skat: Miranda Bødtkers tegninger af arkæologiske tekstiler. *Viking* 83, 179–218.
- Bonde, N. and Stylegar, F.-A. (2009) Fra Avaldsnes til Oseberg. Dendrokronologiske undersøkelser av skipsgravene fra Storhaug og Grønhaug påk armøy. *Viking* 82, 149–168.
- Christensen, A. E. (1998) Skipsrestene fra Storhaug og Grønhaug. In A. Opedal, *De glente skipsgravene: makt og myter på Avaldsnes*. Stavanger: Arkeologisk museum i Stavanger, 206–220.
- Christensen, A. E. and Nockert, M. (2006) *Osebergfunnet Bind IV. Tekstilene*. Oslo: Kulturhistorisk Museum, Universitetet i Oslo.
- Geijer, A. (1938) *Birka III. Die Textilfunde aus den Gräbern*.



- Uppsala: Almqvist and Wiksells Boktryckeri.
- Hald, M. (1980) *Ancient Danish Textiles from Bogs and Burials. A Comparative Study of Costume and Iron Age Textiles*. Copenhagen: The National Museum of Denmark.
- Hägg, I. (1984) *Die Textilfunde aus dem Hafen von Haithabu*. Berichte über die Ausgrabungen in Haithabu 20. Neumünster: Karl Wachholtz Verlag.
- Hägg, I. (2015) *Textilien und Tracht in Haithabu und Schleswig*. Kiel/Hamburg: Wachholtz-Murmann Publishers.
- Herzog, A. (1922) Zur Unterscheidung von Flachs und Hanf auf optischem Wege. *Textile Forschung* 4, 58–61.
- Hiorth, J. (1908) Undersøgelser af forhistorisk uld og tøjrester fundne i norske gravhauger. *Stavanger Museums Årshæfte* 1908(3), 1–24.
- Hougen, B. (1935) *Snartemofunnene: Studier i folkevandringstidens ornamentikk og tekstilhistorie*. Oslo: Universitetets oldsaksamling.
- Hougen, B. (2006) Billedvev. In A. E. Christensen and M. Nockert (eds), *Osebergfunnet Bind IV Tekstilene*. Oslo: Kulturhistoriske Museum, 15–131.
- Ingstad, A. S. (2006) Brukstekstilene. In A. E. Christensen and M. Nockert (eds), *Osebergfunnet Bind IV Tekstilene*. Oslo: Kulturhistoriske Museum, 185–276.
- Korsmo, E. K. (2006) Lar flere bli kjent med Miranda. *På Høyden*, <https://pahoyden.khrono.no/lar-flere-bli-kjent-med-miranda/309519> (Accessed 4 April 2021)
- Lorange, A. (1877) Fortegnelse over oldsager indkomne i 1876 til Bergens Museum. *Foreningen til norske fortidsminders bevaring, Aarsberetning for 1876*, 49–60.
- Lukesova, H. (2012) *Textile Finds in Viking Age Collection*. Unpublished report. the University Museum of Bergen.
- Magnus, B. (1980) Halsnøybåtens tekstiler. *Arkeo* 1980, 22–25.
- Moe, D. (2006) *Miranda Bødtker 1896–1996, 100 år i kunsthåndverkets og dokumentasjonens tjeneste*. Bergen Museums Skrifter 20. Bergen: Symbolon AS.
- Nordhagen, R. (1970) *Norsk flora. Illustrasjonsbind*. Tegninger av Miranda Bødtker. Del 1. Oslo: Aschehoug and Co.
- Opedal, A. (1998) *De glemte skipsgravene: makt og myter på Åvaldsnes*. Stavanger: Arkeologisk museum i Stavanger.
- Shetelig, H. (1902) En plyndret baadgrav. *Bergens Museums Aarbok*, chapter 8.
- Shetelig, H. (1912) *Vestlandske graver fra jernalderen*. Bergen: A/S John Griegs Boktrykkeri.
- Vedeler, M. (2019) *Oseberg. De gåtefulle billedvevene*. Oslo: Spartacus forlag/Scandinavian Academic Press.
- Von Holstein, I. (2012) *A light stable isotope (C, N, H, O) approach to identifying movement of medieval textiles in North West Europe*. Unpublished PhD thesis. York: University of York.

Authors:

lise.bender@ntnu.no

d.moe@online.no

hana.lukesova@uib.no