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Golden textiles from Gokstad

Abstract

Viking Age textiles with interwoven gold threads are rare in Scandinavia. Two such textiles were found in a Viking ship grave at Gokstad in Norway. Apart from brief overviews, the materials, techniques and find context of these textiles have not been described in detail before. The silk and gold embroidery was made with stem-stitch and simple laid-work. A madder-dyed silk thread was used to make the flower pattern, in combination with a thread consisting of 80% pure gold lamella with a core of silk. A similar gold thread was used in a narrow band found with the embroidery. The 4 mm to 4.5 mm wide band is probably a remnant of tablet weaving. Both embroidery and band were found hidden inside a hollow ridgepole holding up the roof of a grave chamber. The precious gold and silk materials and the time-consuming and specialised technology used to make the gold thread suggests that these textiles were very valuable.

Keywords Viking Age, embroidery, tablet weave, gold threads

Introduction

The renowned Viking ship grave from Gokstad in Norway was discovered in 1880 and first published in 1882 (Nicolaysen 1882). The man's grave, dating from about the year 900 CE (Bonde and Christensen 1993) revealed a variety of finds, including a very well-preserved Viking ship. The various textiles found in the grave have received little attention, apart from two articles summarising them and presenting an overview which date back to 1973 and 1988 (Hougen 1973; Ingstad 1988). This paper focuses on the materials, techniques and find context of an unparalleled embroidery and a golden band found at Gokstad.

A peculiar find context

Two textiles with gold lamella were found inside a burial chamber raised on the deck of the Viking ship. The timbered chamber was shaped like a tent, with a thick oak ridgepole running along the centre of the roof (fig. 1). The rafters were fixed to this horizontal beam, which was the highest point of the chamber (fig. 2). When the excavator, Nicolay Nicolaysen, and his team were about to remove this heavy ridgepole, it parted lengthwise into two equal sections. The massive tree trunk had been deliberately cut lengthwise, hollowed



Fig. 1: The Gokstad burial chamber as shown in The Viking Ship Museum (MCH) at Bygdøy, Oslo, Norway until 2021 (Image: Kirsten Helgeland, Museum of Cultural History, University of Oslo)



Fig. 2: The hollow ridgepole holding the heavy roof of the chamber roof (Image: Marianne Vedeler)

out and put together again, before it was raised in the chamber. Hidden from sight, inside the two sections, were blue clay and what would prove to be one of the Gokstad burial's greatest treasures (Nicolaysen 1882, 48). One half of the ridgepole revealed exquisite textiles in silk and gold threads of which one was an embroidery so far without close parallels. The other half contained the remains of a band made of gold-wrapped thread.

In the museum catalogue, written in 1881, the gold textiles are described as: 'Lumps of clay-mixed cloth that has been inter-woven with gold thread. On account of its current state, the only thing to be said is that it has been very fine and of dark color' (Nicolaysen 1882, museum number C10459). Unfortunately, only very few fragments of the underlying textile described as a fine cloth of dark colour are preserved (fig. 3). However, the techniques, materials, function and provenience of the golden textiles may provide useful information for an interpretation as to why the textiles were hidden in this location.

Embroidery

The embroidery is small, measuring approximately 2.8 cm x 3 cm. The motif is floral, made up of two circles, one inside the other, that are punctuated by smaller flower shapes (fig. 4). Combinations of stem-stitch and simple laid-work have been used to make the pattern. Laid-work is formed by laying one or more threads on the fabric and sewing over them at intervals with another thread to secure them in place. By using this technique, most of the precious metal will be visible on the surface of the embroidery. This is a technique that was commonly used in Chinese metal thread

embroideries in this period (pers. com. Yarong 2013). However, it is also present in embroideries with gold found in the Valsgärde boat graves in Sweden, dating to the tenth century CE and in embroideries without metal thread found at the Oseberg ship grave from Norway dating to the early ninth century CE (Nockert 2006, 325). Embroideries with metal in laid-work are also present in several other Scandinavian artworks from the later Middle Ages (Franzén and Nockert 2012, 42).

In the Gokstad embroidery, a gold-wrapped silk thread has been used in combination with threads of pure silk (Skals 2015). The high-quality materials used emphasise the high status of the grave for an elite member of Norse society. In sections of the embroidery, two gold threads lie parallel but are sewn separately with simple laid-work. Traces of red colour can be seen on the s-spun silk thread used to stitch down the gold lamella. There is approximately 1 mm between the couching stitches in the laid-work. An s-spun silk thread has also been used to form the stem-stitch contours of the flower pattern.

Two samples of silk thread have been analysed for dye. A high-performance liquid chromatography (HPLC) coupled to a diode array detector (DAD) was used. When the embroidery was studied in a simple stereo loupe, two colours were visible. One was a faint red colour and the other what seemed to be a golden colour. When the two samples were analysed, results showed that both samples had a very similar composition, consisting of alizarin purpurin, pseudopurpurin, and anthragallol. These are markers of madder dyestuff. But the quantity of alizarin and anthragallol turned



Fig. 3: Box containing remains of clay and fibres. A wool fibre was found here with one of the gold threads. The original museum label states "Remains of gold in-woven cloth" (Image: Marianne Vedeler)



Fig. 4: Gold and silk embroidery found inside the ridgepole (Image: Ellen Cathrine Holte, Museum of Cultural History, University of Oslo)

out to be much higher in the golden than in the red sample. The differing quantities of these components suggest that different recipes were employed to obtain different colours on the thread (Łucejko et al. 2021, 2284).

Madder can produce a wide range of colours from yellow and orange to scarlet red and almost brown (Eastaugh et al. 2008, 250). It is therefore difficult to know exactly what tint the embroidery once had but it is probable that it was made in two shades of red in combination with the gold thread.

The embroidered floral pattern does not have any near parallels in Nordic finds. Stem-stitch and laid-work were used in silk embroideries from the ninth century CE Oseberg grave but the patterns in these embroideries are either animals enclosed in medallions, geometrical patterns, crosses or a combination of animals and leaf vines (Nockert 2006, 325–337). Stem-stitch was also one of the techniques used in the wool embroideries found at Bjerringhøj/Mammen in Denmark dated to the late tenth century CE. However, no similar flower-patterns were identified. Instead, there are masks, animals and various acanthus leaves (Hald 1950). Embroideries detected in one of the two tenth century CE boat graves from Valsgårde in Sweden revealed a pattern of foliate derivation (Graham-Campbell 1980, 102).

Gold band

The other textile found inside the roof beam was a narrow band, approximately 4 mm to 4.5 mm wide and made with gold lamella (fig. 5). Five strips of the band were recorded, measuring 63.1 cm in length.

It is probably remnants of a tablet-woven band, but only the weft threads of gold remain. The lamella is made of narrow strips, about 0.4 mm to 0.5 mm wide. These were wound in an S-twisted spiral around a core, which is now missing. The core was probably made of silk, as is the core of the gold thread used for the embroidery. The band also once had a warp made of another material which is now lost. Only the metal threads in the weft are preserved. It is therefore not possible to reconstruct the precise pattern or the exact weaving technique used or even be sure it was made with tablets. However, there are several features which suggest that the Gokstad band is the remains of a tablet weave.

The tablets used in tablet weaving are usually square-shaped frames made from antler, bone or wood. These simple, punctured frames provide a surprisingly wide variety of technical opportunities. Although relatively few bands with metal thread dating to the Viking Age have been found, a variety of tablet-woven bands made of wool are preserved (Geijer 1938; Hald 1950, 227–242; Nockert 2006, 141–159). The ones that are in relatively good condition show a variety of techniques and a high degree of artisanship. They suggest that brocaded bands were most common during the Viking Age (Nockert 2006, 142–143). Weft threads can be woven to float so that most of the thread is on display on the surface of the fabric; this effect is called brocading. The band from Gokstad is quite narrow. It was possibly part of a broader band, forming a narrow brocaded patterned area within it. Other examples of this type, which date to the same period, also survive. Excavation of grave Bj 962 in Birka, Sweden, revealed



a man's burial dated to the tenth century CE. A tablet-woven band with a chequerboard pattern made with silver-wrapped thread was found on a penannular brooch in the chest region of the deceased. The silver *lahn* (metal wrapped thread) in the band was used as a brocaded weft that formed the chequerboard decoration (Larsson 2007, 175).

There are other examples of tablet-woven bands in which the metal-wrapped threads are almost covered by the warp; for example, five bands worked with silver and silk threads dated to the end of the tenth century CE were found in the Hørning grave in Jutland, Denmark (inventory number NM C31320, Hedeager Krag and Ræder Knudsen 1999, 164–165; Hedeager Krag 1999, 429–433). In one (band IV), the silver threads are partly covered by silk. The band is approximately 5 cm wide, and therefore much broader than the golden band from Gokstad.

Preserved patterns on surviving tablet-woven bands dating to this period are all geometrical. In Ness in Norway (Arntzen 2011, 33–42), Önsvala in Sweden (Nockert 1982, 204–206) and Tampere Vilusenharjo in Finland (Tomanterä 1978, 17) geometrical patterns were visible in the bands when documented. In the case of the Önsvala band, the pattern forms stars and zig-zag patterns made with alternating gold and silver threads worked into the 1.3 cm wide band (Nockert 1982, 204–206).

A number of tenth century CE bands made with another type of metal thread have been found in Birka, Sweden. These are made in drawn metal wire without a fibre core but, as with the types of bands discussed above, geometrical patterns dominate (Geijer 1938; Nockert 2006, 142–143). The same type of geometrical

patterns can also be found in a number of tablet-woven bands made of wool. These were probably made locally (Nockert 2006, 150–151). In Oseberg in Norway, a complete tablet loom with tablets and work-in-progress fabric on it were found in the grave. There can be no doubt that such bands were produced in Scandinavia. The question is whether the metal-wrapped thread was imported or locally produced. It is possible that the tablet-woven bands made with metal-wrapped thread were woven in Scandinavia, but with imported threads made of silk, gold and silver-wrapped *lahn*.

Gold-wrapping technology used in the threads from Gokstad

Metal thread was used in combination with other textile fibres in both the embroidery and the narrow band found in the Gokstad grave. The metal content used in the thread as well as the production techniques can provide valuable information about their provenance. There are several ways to make metal thread. In general, four kinds of gold and silver threads appear in fabrics from the early and high Middle Ages (Hardin and Duffield 1986, 233). Drawn metal wire, flat hammered strips, cut metal-wrapped thread and metal/membrane-wrapped thread. Two of these are made entirely of metal, either as drawn metal wire or as flat hammered strips. This type of thread dominates the finds from Birka in Sweden and was used in parallel with metal-wrapped silk thread (Larsson 2007, 146). In a tenth century CE find from Vangsnes in Norway, passementerie with drawn gold wire was found with thread made of flat strips (Hougen 1973, 79). The threads from Gokstad are of another kind. In

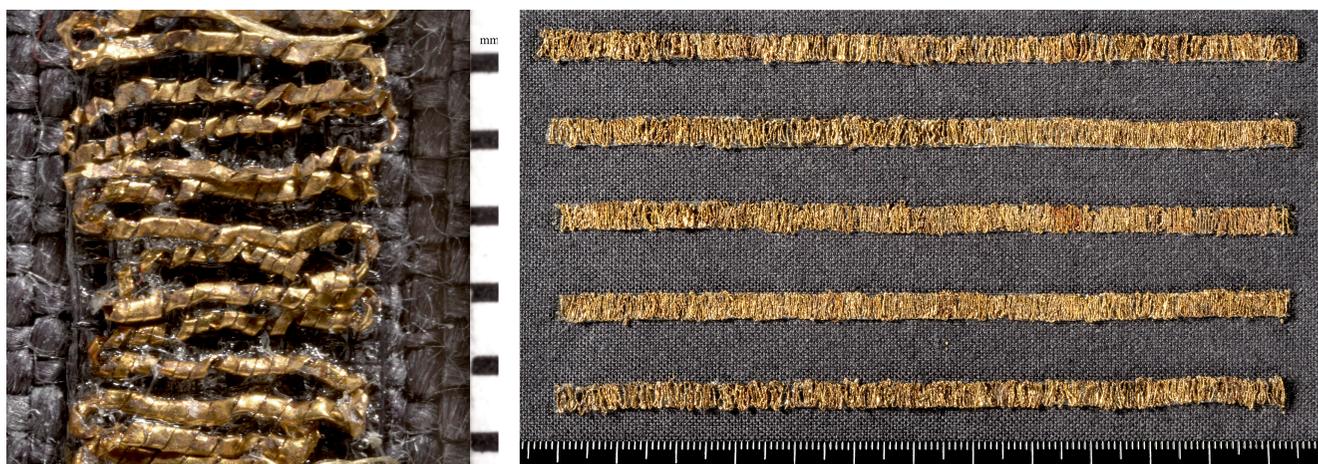


Fig. 5: Remnants of a tablet-woven band from Gokstad: a - with gold-wrapped silk thread used in the weft; and b - the warp and weft (?) threads that held the gold threads in place on the surface are not preserved (Image: Ellen Cathrine Holte, Museum of Cultural History, University of Oslo)

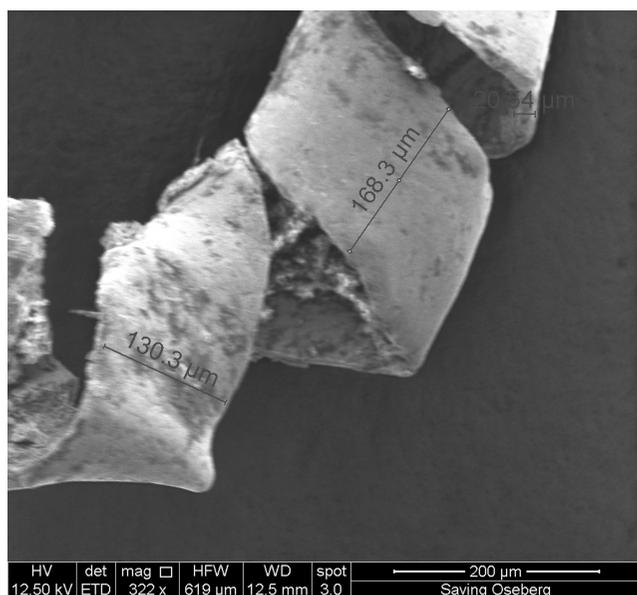
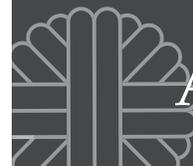


Fig. 6: Detail of the gold-wrapped thread used in the embroidery (Image: Calin Steindal, Museum of Cultural History, University of Oslo)

both the embroidery and in the band, the metal was wrapped around a fibre core forming a thread termed *lahn*. There are several ways to make a metal-wrapped thread with a core of fibre. One was to hammer out or cast plates of gold or silver into extremely thin sheets. The metal sheets were cut into narrow strips called

lamella and wound or “spun” around a core of silk (or linen) with a distaff. Another method, found in high medieval textiles, was to use gilt membrane strips that were created by beating gold sheets onto an animal membrane (Bravermanová et al. 2020, 126, 143). These were then cut into lamellae and wound or “spun” around a core of silk. In addition to these two types of metal wrapping, some Persian threads, mostly used in the 14th century CE, were made of gilded silver. In this type of thread, a thin layer of gold was laid over the silver strip. The process of “water-gilding” used an amalgam of mercury to fix the gold onto the silver surface (Hardin and Duffield 1986, 245).

To answer what kind of materials and techniques have been used to make the gold thread from Gokstad, the metal thread was investigated using scanning electron microscopy (SEM) and optical microscopy studies. The aim of these studies was to identify the chemical compounds of the metals and the method used for making the thread. The optical microscopy study revealed that the metal-wrapped silk thread from Gokstad is not rounded but consists of a flat lamella with a thickness varying between 11 μm and 25 μm (fig. 6). Sharp edges along the strips suggest that it was cut from a metal sheet (Karatzani 2008, 412). The gold lamella was cut into approximately 130 μm to 170 μm wide strips and then wound around a core of silk forming an s-twisted spiral. The same method was used to make the metal thread in both the embroidery and the band.

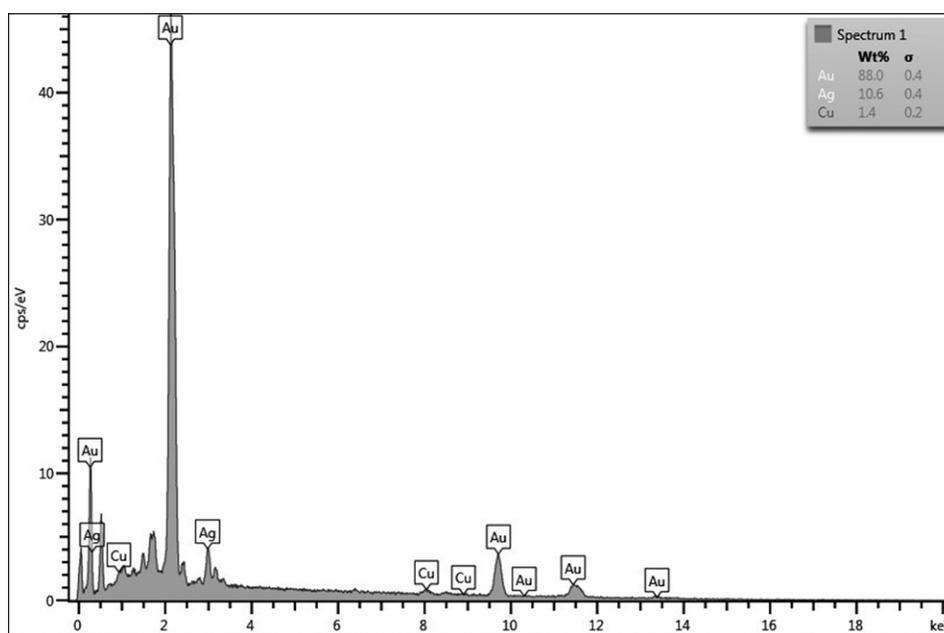


Fig. 7: Trace elements on the surface of a metal thread from Gokstad showing a high percentage of gold (Au) mixed with a smaller percentage of silver (Ag) and a very small percentage of copper (Cu) (Image: Calin Steindal, Museum of Cultural History, University of Oslo)



The next question was whether the lamellae were made of gilded silver, pure gold or a combination of metal and animal membrane. The gold thread from Gokstad contains a large quantity of gold. The SEM measurements show between 82% and 88% of gold mixed with a smaller quantity of silver (between 10% and 18%) which produced a soft and flexible thread. A very small amount of copper is also present but there are no traces of mercury (fig. 7).

The investigation revealed no traces of animal membrane. Cross-section SEM energy dispersive X-Ray spectroscopy (SEM/EDS) was used to obtain information about whether the threads were gilt or not. To detect any trace of layers in the lamella, a scan was made of the metal edge. If the gold had been beaten onto a membrane or if different layers of gold and silver had been used, traces of the different layers would be visible, at least in fragments where some of the organic core is preserved. The scan showed that gold and silver is evenly distributed right through the metal. The conclusion must therefore be that there are no traces of a foil made of other metals or substances in the thread. It is made from one single plate of gold mixed with a smaller amount of silver and an even smaller amount of copper. There were also significant quantities of silicates found on both the inside and outside of the metal thread. This could have come from natural ochre in the earth of the grave, or perhaps traces of an unknown dyestuff.

The gold lamellae were once wound around a core of organic fibre, which has now decomposed. This is especially so for the tablet-woven band. For the embroidery, the situation is better. Here, both the silk thread used in the embroidery and some small traces of the core inside the gold thread have been preserved. Fibre analysis of the fragments inside the gold lamella showed they were very degraded. It is most probably red-dyed silk (Skals 2015, 2, fig. 9). Red colour is visible under the fluorescence microscope but the fragment is too small to be analysed by HPLC.

In nearly half of all sites dated to Viking Age Scandinavia where silk was found, silk thread was used in combination with gold or silver thread. Silver metal thread, as well as gold, was used in both embroidered textiles and tablet-woven bands (Vedeler 2014, 55). The gold and silk-wrapped threads have several advantages over the solid drawn gold wire. First, the production demands less of the precious metal, and a lighter thread can be made. Such a thread is relatively flexible, making it easier to work on a textile fabric. The silk core makes the thread flexible and less likely to break than those without such a core.

Nevertheless, a wrapped gold and silk thread is still subject to abrasion.

The question of provenance

The method used to make the metal thread found at Gokstad corresponds with analysis of other historical samples, among those from an Islamic cemetery in Valencia dated to the 11th to 13th centuries (Martínez et al. 2018). The gold and silk threads found at Gokstad were probably imported but a thorough and broad comparison with other findings from the eighth to tenth centuries must be made to investigate the question of provenance further.

Bands made with metal-wrapped organic thread comparable to that in Gokstad are known from many European archaeological sites dated as early as the seventh century (Pritchard 1988, 152). Similar bands are also found across the Nordic area in modern Norway, Sweden, Denmark, and Finland. Either silver or gold was used, although in some cases, both metals are found in combination with silk (table 1).

The place of production for metal threads from Scandinavian Viking Age graves has so far been based on visual comparisons conducted before new electrochemical methods were available (for example, Geijer 1972, 275). Comparative studies of Scandinavian material are therefore limited.

The tablet-woven band and the embroidery from Gokstad may have been produced at different sites, even if the metal-wrapped thread used in the two is very similar. It is also possible that the gold and silk thread was produced with silk from one area and gold from another. The pattern and style of the Gokstad embroidery is different to other known embroideries found in the Viking world and may have been imported as a finished product. The floral pattern is unlike the animal styles and geometrical patterns that are typical of Scandinavia. However, the tablet-woven bands found in Viking Age graves are generally assumed to be Scandinavian products. Tablet-woven bands with geometrical patterns have been found in some Early Iron Age graves, and the tradition continues in Scandinavia into the Middle Ages testifying to the presence of a specific Scandinavian language of design and technique (Hald 1950; Hougen 1935; Nockert 2006; Raknes Pedersen 1988; Schlabow 1976). With this in mind, it is highly likely that the tablet-woven band from Gokstad was produced locally made of imported raw materials. There are several possible places of origin for the silk.

Metal-wrapped silk thread became popular in China from the eighth century CE. Gold for the decoration of silk textiles was extensively used in China during



Site (references)	Use of metal threads	Metal	Date (CE)	Body Gender	Used as
Gokstad	Embroidery, tablet weave	gold	Approx. 900 CE	Male	Clothing
Ness (Arntzen 2011, 33-42)	Tablet weave with geometrical pattern	silver	10th century	Male	Headdress
Birka Bj962 (Geijer 1938, 172, table 6; Larsson 2007, 175)	Tablet weave with geometrical pattern	silver	10th century	Male	Unknown
Birka Bj967 (Geijer 1938, 172)	Tablet weave with geometrical pattern	silver	10th century	Female	Head dress
Valsgårde 12 (Bender Jørgensen 1992, 160-161; Nockert 2006, 336)	Embroidery	gold, silver	10th century	Male	Clothing
Valsgårde 15 (Bender Jørgensen 1992, 160-161; Nockert 2006, 336)	Embroidery	gold, silver	10th century	Male	Collar/cloak trimming
Önsvala (Nevishög) 24 (Nockert 1982, 204-206)	Tablet weave with geometrical pattern	silver	Viking Age	Female?	Clothing?
Bjerringhøj (Hald 1950, 107-116; Rimstad et. al 2021, 14)	Tablet weave, needle binding	gold, silver	10th century	Male	Clothing?
Hvilehøj (Hedeager Krag and Ræder Knudsen 1999, 161-164)	Tablet weave	gold, silver	10th century	Female	Clothing?
Hørning Church (Hedeager Krag and Ræder Knudsen 1999, 164-165; Hedeager 1999, 429-433)	Tablet weave	silver	10th century	Female	Unknown
Slotsbjergby (Hedeager Krag 1998, 126)	Tablet weave	gold	Viking Age	Unknown	Unknown
Eura Luistari (Lehtosalo-Hilander 1982, 13, 237-240)	Tablet weave	silver	10th century	Male	Clothing
Tampere Vilusenharju (Tomanterä 1978, 17)	Tablet weave with geometrical pattern	gold, silver	Viking Age	Male	Clothing
Fyrkat 4 (Roesdahl 1977, 102-103)	Embroidery	gold, silver	10th century	Female	Unknown
Fyrkat 22a (Roesdahl 1977, 102-103)	Unknown	gold	10th century	Unknown	Unknown
Fyrkat 22b (Roesdahl 1977, 102-103)	Unknown	gold, silver	10th century	Unknown	Unknown
Ladby (Hedeager Krag 2004, 81-86)	Embroidery	gold	10th century	Male	Clothing

Table 1: Published graves dating to the Viking Age in Scandinavia containing “spun” metal-wrapped thread



the Song (969 CE to 1279 CE), Liao (90 CE to 1125 CE) and Jin (1115 CE to 1234 CE) dynasties (Chen Yan Shu 2011). Both hammered gold sheets wrapped around a silk core and gold sheets beaten onto animal membrane were used, especially in north-western China during the ninth and tenth centuries CE. A collection of beautiful silk fabrics with gold embroideries from this period is preserved in the Peking University Collection, Beijing. Gold thread is most often used in laid-work. One example of a gold and silk embroidery is a pair of exceptionally well-preserved boots decorated with gold and silk thread from Ye Mao Tai village, dating to the Liao Dynasty (916 CE to 1125 CE).

A geographically closer provenance for metal thread would be the large Persian production area, where many of the woven silk fabrics found in Scandinavian graves were made. Persia itself had very little gold and had to import it for use in textile production. Written sources from the late Middle Ages and Early Modern times mention India, Aleppo, Constantinople, Armenia and Georgia as sources of gold imported to Persia (Hardin and Duffield 1986, 233). Near Eastern metal threads contain little copper, as does the Gokstad thread. Unlike the gold thread from Gokstad, almost all gold and silver threads dating to early medieval period Persia which have been investigated were metals attached to an animal membrane (Hardin and Duffield 1986, 239). This makes it less probable that the gold and silver threads from Gokstad originated from this area.

Embroideries of gold and silk were probably also produced in England during the Anglo-Saxon period. Bands trimming the Anglo-Saxon embroideries attributed to St Harlindis and St Relindis are examples of textiles with “spun” gold threads (Spies 2000, 60-61). The same stitches were being used there as in Gokstad, although the surviving designs are different (Lester-Makin 2019). It has been suggested that silk embroideries found at Oseberg, a grave from the same district as Gokstad, have an Anglo-Saxon origin (Nockert 2006, 337). However, there are several difficulties in tracking the origin of these silk embroideries and their provenance remains uncertain (Lester-Makin 2019, 85).

A survey of early tablet-woven bands suggests that all preserved examples with spun gold threads dating from the eighth to the 11th centuries CE have a Germanic, Anglo-Saxon, Scandinavian or possibly Islamic provenance (Spies 2000, 60–61). The question of the origin of the materials used in the production of the bands is complex. Documented trade routes from central Europe to Scandinavia also raise the question of the potential production of gold threads

in Europe, which needs further exploration. An answer to the question as to where the Gokstad gold thread was produced may be provided by a thorough electrochemical comparison with other preserved finds dating from the eighth to the tenth centuries CE.

Use of the band and the embroidery

The band and the embroidery were probably sewn onto a textile at the time they were discovered because Nicolaysen reported that he had found a long piece of what he thought was silk (Nicolaysen 1882, 48). Unfortunately, very few traces of such a textile exist today, and the Museum of Cultural History has no documentation on any later separation of fragments. The textile was, according to the museum catalogue, mixed with blue clay. The gold-wrapped thread and the silk used in the embroidery and in the tablet-woven band were obviously more sturdy than the fabric to which they were probably once attached. However, when analysing the gold lamella, a small fragment of thread attached to the gold sample was found. There is no doubt that this is a tiny piece of wool. The characteristic cuticle in the fibres is preserved, and in many cases so are the medulla (Skals 2015, 2, fig. 4). This small fragment of wool could be remnants of the ground fabric to which the band and the embroidery were once attached. What Nicolaysen thought was silk was a piece of fine wool cloth.

Tablet-woven bands have been used for several purposes in the Viking Age. Apart from decoration on clothing, they were used as borders on the tapestries found in the ninth century CE Oseberg grave (Nockert 2006, 385; Vedeler 2019). None of these has remains of any metal-wrapped thread. However, examination of similar finds in Scandinavia in which metal-wrapped thread has been used makes it clear that when attached textiles are preserved, they have been interpreted as parts of clothing (table 1). They are, however, not associated with a specific type of garment. Embroidery and tablet-woven bands with metal-wrapped thread were most probably used as decoration on more than one type of clothing. At Valsgärde in Sweden, at least two graves contained metal-wrapped thread. In grave number 12, dated to the tenth century CE, there were fragments of silk samite interpreted as clothing (Grave Nos 12/918 and 12/973, Bender Jørgensen 1986). They are embroidered with a silver-wrapped silk thread. A total of 12 cast bronze buttons were also found. Another grave, similarly dated to the tenth century CE, contained a silk samite with metal embroidery depicted as either a collar or cloak trimming (Grave no. 15/5915, Bender Jørgensen 1986; Graham-Campbell 1980, 102). Traces of brocading in wool and gold have



also been found (Bender Jørgensen 1986, 161). Another example comes from Önsvala, Nevishög in Sweden. Two graves at this rich cemetery revealed textiles with metal-wrapped thread (Grave 24 and 2, Larsson 1982, 146–149, 155–167). In both cases, the textiles were interpreted as clothing (Nockert 1982, 204–206).

Embroideries and bands with metal-wrapped thread were sewn onto a variety of different textile qualities. The tablet-woven silk band with silver and gold threads found in a man's grave at Tampere Vilusenharju, Finland, is an example where the band was attached to a twill fabric (Tomanterä 1978, 17). A brooch attached to the band indicates that it was part of the man's clothing.

In Birka, Sweden, 53 very rich graves have so far revealed textiles with metal thread, all except two with thread made of metal wire (Larsson 2007, 163–175). Most of these are tablet-woven bands, which seem to have been used in the same way as the bands with metal-wrapped organic thread. Over 50% of these tablet-woven bands were found around or in connection with the deceased's head and were probably part of various forms of headdresses for both men and women (Larsson 2007, 176). Another 20% of the bands from Birka were found with a knife, a sword or other grave gifts. Approximately 20% were found in the body region often near the shoulders or breast. The latter were probably used as decoration on clothing (Larsson 2007, 177).

Fragments of gold embroidery found together with silver passementerie at a ship burial from Ladby, Denmark was also interpreted as remnants of clothing (Hedeager Krag 2004, 81). A grave found at Fyrkat in Denmark contained a gold-wrapped thread attached to a blue wool cloth. The textile could be remnants of an embroidery with an unknown function (Grave 4, Østergård 1977, 103).

A 1.5 cm wide band made with silk and silver threads found at Ness in northern Norway attached to the back of a man's skull (Arntzen 2011, 33–42), and could be remnants of a headdress.

These and several other examples indicate that embroideries and various bands made with metal-wrapped thread were used as decoration on different kinds of clothing and on different parts of the garments linked to both men and women.

What was the function of the textiles from Gokstad? How were they used? The golden textiles were certainly an extraordinary find - not least because of their original context. Why place the most precious of textiles hidden from sight inside the ridgepole? It must have required extra work to hide the textiles in this way. The significance of the location deserves

a study of its own. Nevertheless, the peculiar find context of the Gokstad embroidery and band also raises many questions about their purpose and use before burial. Finding textiles with ridgepole could lead to the conclusion that the textile had been used as a wall decoration, and that this function was continued inside the grave chamber by simply fixing the textile to the beam to hold it in place. Looking at the quality and nature of the textiles this seems highly unlikely. Furthermore, the golden textiles were found inside the hollowed pole, not attached to the outside. This makes it even more unlikely that the textile was used as a wall decoration. Similar finds across Scandinavia suggest that textiles like these were used as decoration on clothing. In the case of the Gokstad embroidery, it was probably originally sewn onto a garment made of fine wool. Considering the context and the quality of the golden decorations, it seems more likely that this was part of a garment hidden from sight between the two parts of the ridgepole.

Conclusion

The materials and techniques used in the golden textiles from Gokstad resemble a very limited number of other finds from high status graves dating to the Viking Age in Scandinavia. They bear witness to good artisanship and prosperity. The embroidery, formed in a floral shape, was made with red silk and gold thread. The silk thread may have been in two shades of red, while the gold lamellae was also wrapped around a core of red silk. The preserved band is probably a remnant of a narrow tablet weave, but only the weft threads of gold remain. It is, however, difficult to trace the place of production, especially of the gold thread. The spun gold thread used in both textiles could have been imported as thread and then used to craft the textiles locally but these could also have been produced in a number of different areas discussed above. The question of where the materials originated is complex, and their provenance remains uncertain. Both textiles were probably originally used as decoration on clothing. Small traces of remaining fibres indicate that the garment was made of fine wool cloth. The deceased was probably not dressed in this at the funeral. The peculiar find context inside a hollow beam in the burial chamber raises questions about the meaning and purpose of these textiles in life and death.

Acknowledgements

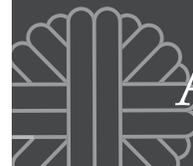
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