Dark Age Tablet Weaving

for Viking and Anglo-Saxon re-enactors

1 Introduction

Tablet weaving, also known as card weaving, is a method of using square tablets with holes in the corners to weave narrow decorative bands made of wool, linen or silk threads.

Tablet weaving was widespread in Europe and Britain in the first millenium AD and is an excellent craft for historical re-enactors as it is portable, interesting, little known nowadays and you can make beautiful bands to decorate your outfit.

However, creating replicas of Dark Age bands is challenging. Many of the surviving historic bands are difficult to weave, and so most re-enactors either buy in tablet-weaving or weave simplified bands, and may use patterns and techniques that aren't appropriate to the Dark Ages.

The aim of this document is to describe the characteristic styles and methods of Dark Age tablet-weaving. There is also information about materials, equipment and tablet-weaving techniques.

Perhaps the most striking theme of the historic bands is inventiveness, and the advantage of the historic techniques is that they allow the weaver to create a far wider range of patterns than the modern methods, which were mostly developed in the 19th and 20th centuries as tablet-weaving was 'rediscovered' in Europe[1].

This document isn't exhaustive, and I recommend that the interested reader explore further patterns and techniques. There are many good patterns available online.

Just remember, as I once read on the internet, the first instruction in tablet weaving is “remove the cat”.

Please contact me with any comments or corrections.

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2 The origins of tablet-weaving[2]

Tablet-weaving seems to have originated in Europe during the early Celtic Iron Age, with examples from Austria[3], Germany[4] and France[5]. Fabrics with warp-twined starting borders have also been found in Greece[6] and Spain[7].

In the first and second centuries BCE, tablet-weaving seems to have been most common in the north and north-west of Europe, in particular England, Germanic areas and Denmark.

During the migration period of the fourth to seventh centuries, tablet-weaving became popular in Scandinavia and was also known in Denmark, Ireland, Finland and Lithuania, and even Israel and Egypt.

1 Tablet-weaving never disappeared entirely. For example it is still practised in Pakistan and Turkey.
2 For a more detailed account, see Spies 2000.
3 Hallstatt, 700 BCE
4 Hochdorf and Hochmichele, sixth century BCE.
5 Mardié and Apremont, sixth century BCE.
6 Kerameikos, fifth century BCE.
7 El Cigarrelejo, fourth century BCE.

The earliest bands were purely functional, forming starting borders for textiles, but gradually weavers learned to create decorative patterns by using different coloured threads and turning the tablets individually. The sixth century weavings of Scandinavia in particular show great sophistication in the weaving method with complex patterns in four colours of warp thread.

The next big step was the introduction of brocading, in particular with gold, which probably originated in Frankish fabric workshops in the sixth century. These workshops or “gynaecea” seem to have continued in an unbroken tradition from the Roman empire into the high Middle Ages as organised workshops in which women produced textiles for state, military and domestic use. In the Dark Ages these were established by royalty, the church, or nobles. Fine textile work was an expected accomplishment of the noble woman and this will have included tablet-weaving.

Although silk and precious metal threads came from the eastern Mediterranean, tablet-weaving does not appear to have been widely practised outside Europe: the luxurious bands were almost certainly woven in Europe.

In England, the Kentish kingdom was closely associated with the Frankish culture and indeed there is a particular body of brocaded tablet-weaving from sixth century Kent.

Brocading spread and other examples include the eighth to tenth century brocades from Birka, notable in using a lot of silver as was so popular with the Vikings, and gold-on-red-silk brocades from Wessex in the ninth and tenth centures. By the end of the Dark Ages, brocading seems to have been the most common tablet-weaving technique, although the bands could also have warp patterns, usually woven in sophisticated 3/1 broken twill.

High-status weaving remained the domain of women until the twelfth to fifteenth centuries, when a growing body of men became professional weavers and gradually women were banned from textile production, a trend probably associated with the stricter cloistering of nuns.[8] However in the Dark Ages, the woman weaver was well known and respected for her skill.

2.1 Early words for tablet-weaving

There is some evidence in literature for early words for “tablet” as used in weaving.

Pliny the Elder[9] wrote:

> “plurimis vero liciis texere, quae polymita appellant, Alexandria instituit, scutulis dividere Gallia”. (Alexandria introduced weaving with many heddles, but Gaul began to divide with small shields.)

Not only does this give us a Roman word for tablets - “scutula” or “little shield”, which generally means either a small platter or any square or diamond shape, but it also fits well with the archeological evidence for tablet-weaving being closely associated with Gaul.

From stanza 26 of the twelfth / thirteenth century Icelandic poem “The Second Lay of Gudrun” we have:

> “hunskar mayjar/pær's hlaða spjoldum/ok gøra fullfagrt”. (“Hunnish maidens with weaving tablets who weave gold threads for your pleasure”).

8 Spies quotes a number of legal prohibitions, including thirteenth-century Parisian regulations stating that any silk woven by a woman “is false and bad; and it should be burned if found”.

9 Book Eight of “Historia Naturalis”., first century AD.

Here we see the Icelandic word “spjald” meaning “card”.[10]

Finally, an old French song probably from the eleventh century describes Queen Edgitha, the wife of Edward the Confessor, as being famous for her handiwork from England to Alexandria:

> “U d'agoille u de taveus”, (“with needle and tablets”).

“Taveus” has previously been translated as “patchwork” but “tablets” seems far more likely. The Old High German term was “spelte”.[11]

3 Techniques and styles – Viking

By “Viking”, I mean people from Denmark, Norway and Sweden in the late 8th to late 11th centuries, including raiders and traders, and settlers from those countries living in the British Isles during the same historical period who retained their native crafts and costumes.

There are many examples of different techniques and motifs found in Viking tablet weaving, but in general:

- All pattern tablets are threaded identically.
- The motifs are constructed from diagonal lines and are created either by individual turning of tablets or surface weft decoration.
- There is a border on each side made using two or more tablets, each border tablet being threaded with a single colour and turned in the same direction until forced to reverse by build-up of twist. The borders on the two sides may or may not be identical. There are exceptions: for example the Humikkala band has a patterned border, the outer tablet carrying pale purple and white threads,the inner red and white, oppositely threaded.

Common motifs include:

- Key patterns
- S and Z shapes
- Broken crosses
- Diamonds
- Diagonal lines

Within these broad themes, the bands vary greatly and weavers sometimes used different types of thread and other textural techniques to enhance a band's appearance.

10 In North America, “card weaving” is the usual term.
11 Crowfoot, G. M., in “The Relics of St Cuthbert”.

The most common techniques from the Viking Age / early Northern Europe are:

1) Pattern tablets all threaded with two light and two dark tablets. Wider bands may have stripes in the background warp colours. This threading arrangement allows for a wide variety of weave structures and patterns.

- Mammen woollen band (Denmark, 10th century)
- Evebo animal frieze (Norway, 6th century)
- Elisenhof band (Germany, 10th century)
- Kekomaki, Kaukola band (Finland, 1000 – 1200 AD)
- Humikkala band (Finland, 11th century)

2) Surface weft decoration, often using metal thread, usually on a plain ground weave.

- Many bands from Birka (Sweden, 10th century)
- Broad and narrow bands from Mammen (Denmark, 10th century)
- Band from the Køstrup apron-dress (Denmark, 10th century)

Surface weft decoration is when an extra weft thread is passed over the top of the band. It makes efficient use of highly valued materials such as gold and silver, or may be worked with a dyed textile purely to add pattern complexity as on the Køstrup band. 'Brocade' is when the extra weft goes all the way across the band, passing under some warp threads to hold it in place and define the pattern. 'Soumak' is when the extra weft warps around some warp threads to make a narrow motif – rather like working embroidery as you go along. Warp patterns may be combined with surface weft decoration.

The most popular ground weave for brocade in medieval bands is to thread each tablet in all four holes and arrange them alternately S and Z[12]. The tablets are turned together creating a chevron surface that resembles knitting.

The ground weave in the more sophisticated examples is often 3/1 broken twill, which may be used both as a ground weave for brocade and to create motifs.

Other popular ground weaves include: all tablets threaded with four threads and arranged in alternating S Z blocks of four tablets, turned forward for say 5 turns and then backwards for 5 turns to make a chequerboard pattern in between brocaded areas; a herringbone effect created by threading each tablet with two threads in opposite holes, arranged alternately S Z and with adjacent tablets offset by a quarter turn so that the threaded hole of one tablet is opposite an empty hole in its neighbour.[13]

Other popular techniques include:

3) 'Missed hole' with threads in only two or three of the holes in each tablet.

Two-hole:

- Hochdorf (Germany, 6th century BCE)

12 S and Z refer to the direction the threads enter the cards. You can 'flip' a tablet from S to Z by rotating it about its vertical axis.

13 Spies, Ecclesiastical Pomp and Aristocratic Circumstance.

- Snartemo II , Norway (6th century)

Three-hole with a pattern thread opposite the empty hole:

- Hofdi (Iceland, Mediaeval)
- Uvdal (Norway, Mediaeval)

4) Three or four different colour threads in each tablet, typically red, yellow, blue, green.[14]

- Snartemo V, Norway (6th century)
- Øvre Berge, Norway (6th century)
- Leksand, Sweden (11th – 13th century)

In almost all non-brocaded bands, the pattern is created by turning individual tablets forwards or backwards.

4 Techniques and styles – Anglo Saxon

By "Anglo-Saxon", I mean settlers from Germanic tribes living in England between the 6th and 11th centuries, and earlier inhabitants of the British Isles who adopted the culture and language of the immigrants.

4.1 Sixth and seventh centuries

Tablet-weaving was very common in the early Anglo-Saxon period. Tablet weaves comprise 10-11% of textile finds in all regions[15], being more common in the north eastern areas[16] and less common along the western border[17]. The weaves in the north east had a more Scandinavian character (horse hair soumak, 3/1 twill), and those in Kent had a more Danish (double-faced repp-effect) or Merovingian (gold-brocaded) style. Walton Rogers suggests that the incoming Germanic peoples gave the long-established technique fresh impetus and expanded the range of techniques and usage in England.

Brocaded bands have been found at sites including Sutton Hoo, Taplow and many bands from Kent. Non-brocaded finds include Laceby, Cambridge[18] (St John's fragment, Crowfoot) and Suffolk (Mildenhall wrist clasps, Crowfoot). A group of repp-effect bands from Dover Buckland and a fragment from Saltwood (England, early Anglo-Saxon) use the two light, two dark threading to weave double-sided patterns[19].

Archaeological examples include:

14 Øvre Berge used red, blue and two yellow in adjacent holes.
15 Walton Rogers, p110
16 Norfolk, Lincolnshire and the Yorkshire Wolds
17 Warwickshire, Wiltshire, Worcestershire
18 Walton Rogers considers this strap-end fragment to be mediaeval based on technique. P125. Owen-Crocker accepts it as Anglo-Saxon (p152).
19 The same technique is known from a 12th century seal tag at Durham Cathedral. These bands are unusual in having rectilinear patterns. Walton Rogers p90, and Saltwood report.

- Anglian brocade fillets (Kent and nearby areas, 6th century)
- Taplow brocade (Buckinghamshire, 7th century)
- Cambridge belt fragment (Cambridgeshire, 7th century)
- Laceby (Lincolnshire, 6th century)
- Mildenhall tunic cuffs (Suffolk, 6th -7th century).[20]

Many of the preserved bands are brocaded, often only the gold thread surviving, so we have to speculate about other types of bands. It seems reasonable to use similar techniques and styles to continental finds. Recreating a relatively simple band like that from Laceby would also be a good option.

4.2 Eighth to eleventh centuries

For the later period, eighth to eleventh centuries, there are far fewer finds. These include:

- St Cuthbert's vestments (Durham)[21], early tenth century. Gold brocade on silk, warp patterning with brocade, and soumak.
- Edging to the embroidered vestments of Sts Harlindis and Relindis (Maaseik, Belgium), identified as English work from the eighth – ninth centuries.
- Finds from Winchester and Worcester.
- A bone weaving tablet and a fragment of silk that may have been tablet woven from Coppergate, York (11th C).
- A woollen band found in excavations at Lloyds Bank, York.[22]

The Durham[23] and Maaseik[24] finds are notable for having a different style of motif from both earlier finds and most of the contemporary continental finds. Instead of geometric patterns based on diagonal lines, we see more figurative motifs including vines, birds, and animals.

Contemporary manuscript illustrations show that the aristocracy were still decorating their clothes with narrow bands. Tablet weaving was well known in England in the later mediaeval period. So why is there so little evidence from the mid to late Anglo-Saxon period? Possible explanations include:

20 These are un-patterned, and perhaps were dyed with a bright colour such as red to offset the bronze wrist-clasps which were attached to them.

21 Hansen considers the Durham band to have been done under Scandinavian instruction, because of flaws in the design and his opinion that tablet weaving had been forgotten in England by this time. (p60). However I have not found any other author presenting this view. The stole and maniple were originally made for Bishop Friithestan of Winchester, and offered in honour of St Cuthbert by King Athelstan in 934.

22 This is largely plain weave but there are occasional warp twists that indicate the band was woven on tablets, each threaded in two holes.

23 Hansen p69-70.

24 Spies p125-126

- Much of the early period evidence comes from cemeteries; in the later period, Christians in England are buried in simple shrouds without grave goods and fancy clothes.[25]
- Tablet-woven edgings may have been preferentially preserved in graves because they were in contact with brooches.[26]
- Poor soil conditions, meaning we have few textiles of any sort in the absence of metal.
- Maybe tablet weaving fell out of use, then returned a few hundred years later. In defence of this idea, the Anglo-Saxons did develop a notable embroidery style, so we can say that insular traditions were not the same as in Europe.

I suggest that there are two plausible options for the re-enactor:

- **Option 1:** based on the physical evidence, tablet weaving was specialist work, reserved for nobles and important churchmen.
- **Option 2:** based on the history of tablet weaving in England, the York finds, and connections with continental Europe, tablet weaving was also popular in a domestic context.

4.2.1 Option 1: Tablet weaving as specialist work

The archaeological evidence shows tablet-weaving to be worn by nobles and senior churchmen, or to be part of religious relics.

Bands would be usually gold thread brocaded over silk, most commonly red although other colours were used (Spies).

Bands would be woven at specialist workshops, quite possibly by nuns.

For the rest of society, clothing would be decorated with embroidery, stitching and cording, strips of cloth or narrow warp-faced bands[27].

4.2.2 Option 2: Tablet weaving as a domestic craft

The extent of tablet-weaving in the early Anglo-Saxon period, on the continent at this time, and in mediaeval England, suggests that tablet-weaving was still a popular craft at all levels of society, perhaps particularly where there was a Scandinavian influence such as at York.

Continental evidence can be used as guidance for Anglo-Saxon tablet weaving in this period, although the insular evidence should be respected.

The highest status bands would still have been woven by specialists as per Option 1.

25 Furnished burials end in England around the 670s or 680s, probably due in part to the influence of Theodore of Tarsus, then Archbishop of Canterbury. Kind Edward is pictured on the Bayeux Tapestry wrapped in a shroud. Burials on the continent continued to be furnished, for example the Gokstad ship burial.

26 The urban finds from York were preserved by de-oxygenated soil, so may not have been biased towards garment borders in the same way.

27 It makes far more sense to weave narrow wares such as leg-bindings and decorative bands to the desired width, than to cut larger pieces of cloth up and have to sew down the edges. The exception would be silk cloth which was imported and then had to be cut for use.

4.2.3 Patterns and techniques

The patterned two-hole weaves from Hochdorf and the elaborate warp-float techniques from Snartemo seem to have fallen out of use.

Generally speaking, brocade was very popular in the later period, and also warp-patterned bands are known from places including Mammen (Denmark, 10th C) and Leksand (Norway, 12th C). Brocade and 3/1 broken twill are perhaps the most characteristic techniques.

Brocade is not technically difficult but is time-consuming, exacting work. Plain 3/1 broken twill is only moderately difficult, but as soon as you add patterns it becomes very challenging.[28]

Having said that, finds such as the narrow Oseberg band (late ninth century) band show that there were many variations in pattern and technique.

4.2.4 Possible regional variations

The evidence is scanty, but some regional variations can be tentatively suggested if you want to give your costume a regional character.

Scandinavian styles are cool in the North-east

Scandinavian-style geometric patterns seem most appropriate for Norfolk, Lincolnshire and the Yorkshire Wolds. In the earlier period, tablet weaving in these areas had a more Scandinavian character, and in the later period, Scandinavian-style female dress items were popular in the late ninth and tenth centuries and indeed were manufactured in England (Kershaw, conclusion) .[29]

Alfred the Great and Wessex

The Maaseik textiles and the finds that originated in Winchester suggest that in the central areas dominated by Wessex and Mercia, a more Anglo-Saxon character can be provided by using:

- Embroidered decoration combined with tablet-woven edging.
- Patterns of vines, birds and animals, with a more organic look.[30]
- Gold brocade on silk (very high status).[31]

Danish patterns may be favoured over those from the Scandinavian mainland.

Less of this foreign stuff on the borders

Towards the western borders, the lesser use of tablet-weaving in the earlier period may suggest a continuing preference for plain and warp-pickup bands. These can be woven with tablets, on an inkle loom, with a rigid heddle, string and leash or with the fingers. Note that we do not have evidence of rigid heddles at this time, and inkle looms are modern.

28 A reasonable compromise for the re-enactor is double-faced weave, which is not a period technique but allows the same type of patterns to be woven. The surface texture is less pleasing and the patterns come out less square, but it passes the three-foot test and the threading and fundamentals of the technique are the same: two light, two dark threads, double sided geometric patterns made by turning tablets in different directions.

29 York itself seems to have been typically English in dress style, Scandinavian accessories being a rural feature (Kershaw P206, quoting Tweddle 2004, 450-2).

30 Avoid ram's horns and running dog. They are 19th century Turkish, and very distinctive.

31 For mid status, use silk or wool on wool.

5 Variety and creativity

Of the hundreds of historic finds of tablet woven bands, I am not aware of any exact duplicates except for a very small number of Anglian brocaded bands from the 6th century AD[32]. It seems that generally, each band was a unique creation. There are recurring motifs such as swastikas and diamonds, but the design details vary, especially in the more complex bands.

This is in contrast to metalwork such as “tortoise” brooches, where standard types are known. Metal casting naturally leads to repeating designs, but tablet weaving is never automated and the archaeological record suggests that weavers routinely took advantage of the opportunity to create new designs.

It is also uncommon to repeat a single motif along a band: generally there are at least two motifs and often more.[33]

6 Small is beautiful

Historic tablet weaving was executed in smooth, relatively fine thread. Thinner thread is slower to weave but not more difficult, because you still use the same size tablets. It is better to use a small amount of high quality tablet weaving on your costume, placed somewhere highly visible, than miles of bands woven with thick fluffy knitting wool.

7 Status

Styles, techniques and materials varied with the rank of the wearer. It seems likely that the middle rank bands were produced by domestic weavers and the noble rank bands by specialists.

Textiles were immensely valuable and the best tablet weaving would have been regarded in the same light as jewellery, making as much of a show as a gold buckle or brooch.

Even within the lower status bands, creativity and variety would be the norm.

7.1 Middle rank

- Smaller numbers of pattern tablets (e.g. 5-10).
- Thicker yarn.
- Woollen thread (but still relatively fine and spun for weaving).
- Simpler warp twined patterning.
- Fewer colours, e.g. dyed blue and white, red and yellow.

32 Crowfoot and Hawkes. See Bifrons 5, p68 and Faversham 8-12, iv, p69, three rows of regularly alternating crosses, fig 13 no 4. Even here, the repeats are a small proportion of the total body of work.

33 Many brocades are an exception, with simple regular patterns repeated along the band. The narrow Oseberg band also repeats, because the pattern is threaded-in and so cannot be varied apart from pattern reversals to counter twist. The Cambridge diamond fragment is too small to know for sure, but again it is a threaded-in pattern and it's not clear to me that it can be varied.

7.2 Noble rank

- Larger numbers of pattern tablets (e.g. 20-40)[34].
- Finer yarn.
- Use of linen, silk, gold and silver thread as well as fine wool.
- Complex patterns and more advanced techniques, e.g. weft decoration, 3 / 1 broken twill.
- Combination of techniques, e.g. weft decoration with warp patterning.
- More colours in a single band, e.g. red, yellow, blue, green.[35]

8 Recommended patterns

There are a few historic bands that are reasonably easy to weave, such as the narrow Oseberg band and the Cambridge belt fragment. These are unusual in that the pattern is defined by the arrangement of the colours in the holes, not by individual turning of the tablets.

Figure 1: reproduction of the narrow Oseberg band

Figure 2: reproduction of the Cambridge diamond fragment

Other good bands to weave are:

1. Period motifs such as the Birka twined pattern adapted to an easier authentic technique.
2. Simplified versions of period motifs using authentic techniques.
3. Bands from Iron Age Finland such as the “SZ” pattern from Kaukola and the Eura meander.
4. Bands using techniques more common in an earlier time, but with suitable diagonal motifs, such as two-hole weaving known from the Hallstatt salt mines.

34 This is not an absolute rule. For example the narrow band from Oseberg used only 10 tablets but was woven in silk and vegetable fibre. From the materials and the context, it must have been high status.

35 Again this is not a fixed rule. High status bands such as the Evebo animal frieze were worked in only two colours.

Diamond and chevron patterns are acceptable. There are a number of bands with diamond motifs, including bands from Mammen (10th century Denmark), Laceby (early Anglo-Saxon) and Kaukola (12th century Finland). Kaupang 800 AD Norway has diamonds and chevrons. Crowfoot[36] mentions that one of the Durham fragments has “traces of a diamond pattern”.

Earlier techniques of plain stripes, checks and blocks are not recommended because they are noticeably different in style and seem to have largely fallen out of use by the Dark Ages.

9 Patterns best avoided

The following patterns are sufficiently distinctive and different from period bands that they will be instantly identified as inappropriate by anybody who knows their historic tablet weaving. It is not recommended that they be used in a Dark Age context.

- **“Ram's Horns” and “Running Dog” threaded-in repeating spirals:** these are double and single versions of “kivrim” from 19th century Anatolia (Turkey).
- **Most of the “four forward, four back” threaded-in patterns:** these are 19th and 20th century inventions. The exception is two or three colour diamonds, which is an acceptable substitute for the Cambridge diamonds (early Anglo-Saxon)[37]. Other diamond patterns are known from Mammen (10th century Denmark), Laceby (early Anglo-Saxon) and Kaukola (12th century Finland), making diamonds a good motif.

10 Materials and Equipment

In addition to yarn, tablets, shuttles and looms, many weavers use warp spreaders and other devices. Here I only describe the most essential items.

10.1 Yarn

The threads used were relatively fine and smooth, spun for weaving (worsted) rather than knitting / nalebinding (woollen). Single and two ply were common. Two ply machine knitting wool can be used but is prone to breaking: weaving wools are better if you can get them. Try to match the band to the garment in terms of materials and status.

The most common material was wool, followed by silk and vegetable fibre, commonly flax: note however that silk was not used before the ninth century. All types of thread may have been dyed. Blue, red, yellow and white were popular colours, with green and purple appearing occasionally.

Wool or silk threads could be combined with vegetable fibre in the same band to save expensive dyed materials or to achieve a textural effect. For example two holes might be threaded with silk, two with linen. There is some debate about this but there are a number of bands where it appears that there was originally a vegetable fibre thread that has decayed where wool or silk has survived. As far as I know the threads themselves were only ever made of a single type of fibre.

36 This is a side comment in her description of the Laceby find.

37 The Cambridge diamond fragment is woven in an unusual technique using two packs, which produces a thick band with exactly the same pattern on both sides (but offset by half a cycle). The flax original had a dark blue outer, white diagonal lines and a light blue inner to the diamonds (the find is in the care of the Cambridge Museum of Archaeology and Anthropology, and if you ask nicely they may well let you examine it, as I did).

Gold and silver were applied as surface weft decoration on some high status bands, including noble burials in both Anglo-Saxon and Viking contexts. In the seventh century Kentish bands the gold was in the form of thin foil strips. At Birka, a large number of garments were decorated with bands brocaded with gold and silver[38] wire. However from the eighth century the most common kind of metal brocade weft comprised thin gold or gilt-silver strips wrapped around a silk or horsehair core to make a flexible thread. Spun-silver was also known in Scandinavia and Ireland.

It is fine to use imitation metallic thread; the only way you can tell easily the difference is that metal thread feels slightly cooler to the touch.

Surface weft threads may be worked double to improve coverage.

Yarn sizes are generally expressed as two numbers, one giving the number of individual threads that have been plied together, and the other giving the size of the threads. The higher the “size” number, the thinner the threads.

How the size of thread is expressed can vary. In the “NM” metric system, the “size” number indicates the length of 1 g of each thread. A fuller explanation can be found at the Handweavers Studio: https://www.handweavers.co.uk/shop/wools.pdf. English and American numbering is different, and it's also historically different for linen, wool and silk, plus the order of the numbers may vary. Most shops will send you a sample card, which is also the only way to be sure what the colour will be.

- Wool: 2/18 is a good size for trim. 2/6 would give a thick band, suitable for a belt. 2/24 is a very fine yarn.
- Silk: generally worked finer than wool. 30/2 to 60/2 is good. 60/2 is similar to a thickish sewing thread.

10.2 Tablets

Historically, tablets were generally made of wood or bone, and varied in size between perhaps three and five centimetres, bone tablets usually being smaller than wooden ones.

10.3 Shuttles

There are many designs of shuttle and little evidence. Any simple wood or bone shuttle will be acceptable.

10.4 Looms

The Oseberg find included a wooden frame comprising two vertical posts set into a wooden base around two metres long. A horizontal crosspiece partway up provides stability. This loom is similar in form to tablet weaving looms shown in later mediaeval manuscript illustrations, so it seems very likely that this loom was used for tablet weaving. It works well and the posts allow easy warping using the continuous warping technique.

Smaller versions can be made for table top use.

The popular “box” looms are loosely based on mediaeval looms used for rigid heddle or tapestry weaving, and do not seem to have any association with either tablet-weaving or the Dark Ages. They are not recommended for display use.

Backstrap weaving also seems likely.

38 Silver was more common and appeared on women's garments: gold more rarely, on men's. Hagg, 1983.

At home, tablet weaving can be warped on an 'inkle' loom which although modern, is a convenient way to manage tablet weaving. Other simple options are to place two chairs upside down at opposite ends of a table, or to attach two G-clamps to a plank or the side of a table (make sure to pad the jaws of the clamp to prevent marking your table).

11 Tips and tricks

- Let the tablets “breathe” as you turn them: do not push the deck together, let the tablets spring apart. The only force you exert should be to turn the tablets. This will reduce wear on the threads and greatly decrease the chance of breaking a warp thread. If you slide the deck to and fro to clear the shed, again keep the tablets well spaced out so that the force on the threads is very gentle.
- The technique of continuous warping makes a big difference to warping time and quality. This method makes warping a quick and easy process, usually under half an hour. It is especially suitable for bands with all pattern tablets threaded the same. Instructions can be found online.
- Beat hard to get a square, tight band. Use a beater to avoid straining your wrists – the back of a knife will do.
- Tighten the weft and check the width of the band just after turning the tablets and beating. Then pass the weft through and leave it lying loose.
- Give the band a plain border whose tablets always turn in the same direction, so the band will have a regular edge. When the unwoven border warp threads become twisted, flip the outermost border tablets, weave another turn or two, then flip the inner border tablets. As you continue weaving, the warp twist will be undone.
- Look at the band as you weave each pick, and check that the pattern looks right. The sooner you spot a mistake, the easier it is to fix.
- Ironing a completed band from the back side can make it lie flatter.

12 Troubleshooting

12.1 Fixing a broken warp thread

If a warp thread breaks, don't panic, it's pretty easy to fix.

1. Unthread the broken warp from the tablet and push the broken end to the back of the cloth.
2. Put a pin sideways in the cloth about 2cm from the fell[39].
3. Fasten a new warp thread to the far end with the other warps, thread it through the tablet and then wind it in a figure 8 around the pin, making sure the tension is the same as in the other warps.

39 The fell is the leading edge of the woven fabric.

Now start weaving again: after a few picks, you can remove the pin. When the band is finished, thread the loose ends on a knitters needle and sew them into the back of the fabric. The join should be invisible.

If the warp threads are twisted around each other, you may find it easier to replace all four warp threads at once (Figure 3).

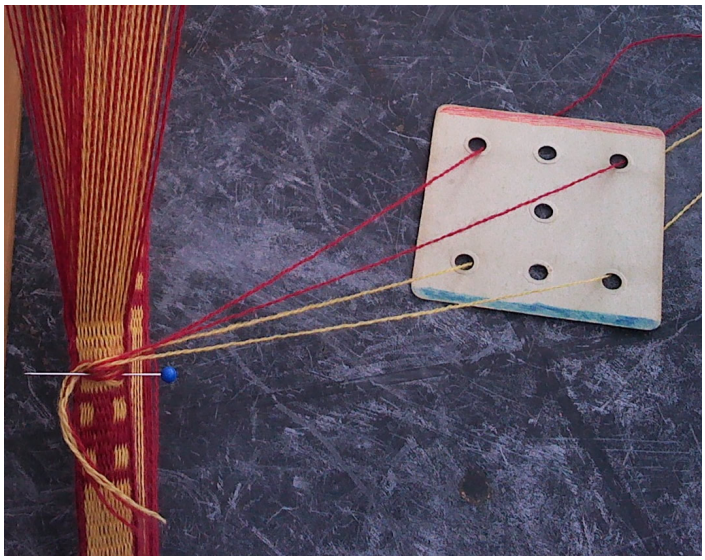

Figure 3: pinning new warps to the band.

12.2 Pattern on the underside of the band

If you do not see the pattern you expect, take a look at the underside of the band. If your pattern looks clear on the underside but not the upperside, the problem is one of “handedness” and you have two options:

1. Turn the band over and weave on the other side.
2. Re-arrange the tablets so the pattern appears on the top.

This problem happens because the holes of a tablet can be labelled either clockwise or anticlockwise. Neither is wrong, but you need use the same direction as the pattern you are following. Many books label the holes ABCD clockwise as seen from the left as shown in Figure 4.

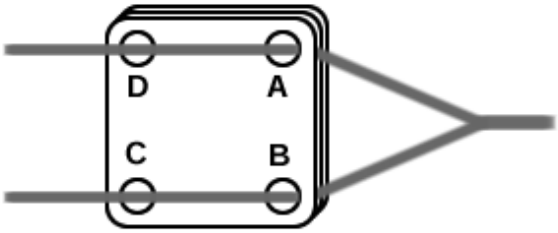

Figure 4: tablets labelled clockwise as seen from the left side.

If your tablets are labelled as seen from the right instead, as shown in Figure 5, then labels are effectively going anti-clockwise and the pattern will appear on the underside.

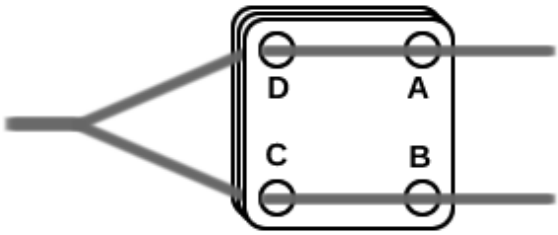

Figure 5: tablets labelled clockwise as seen from the right side.

To fix this, turn individual tablets as necessary so that your ABCD match Figure 4, and start weaving again.

If your threading is for the colours to make diagonal lines, with each tablet offset from the one before by a quarter turn, then the fix is simply to give every other tablet a half turn. In this arrangement the colours run in a spiral from tablet to tablet, and this will reverse the direction of the spiral.

The fix is **not** to flip all tablets, exchanging S and Z. This will just reverse the pattern.

13 References

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