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Early Iron Age Tablet Weaving in Denmark

Introduction

The following is a report on my doctoral research, undertaken at the School of Conservation at the Royal Academy of Fine Arts in Copenhagen and completed in November 2014. In this work, I used a multidisciplinary approach combining archaeology, conservation and material culture studies.

Aim

The aim of the dissertation was to achieve new knowledge on textiles, tools, technological development and human relations in the early Iron Age within the area of modern Denmark. The research questions were as follows:

- Do the few large and well-preserved textiles with tablet weaving have characteristics in the thread course that aid in the interpretation of the many smaller fragments? (Fig. 1)
- Can technical analysis of all available finds from the Danish area offer new knowledge about regional and/or period differences in tablet weaving technique?

- Can technical analysis of archaeological tablet woven textiles/tools related to tablet weaving provide new knowledge on textiles, tools, technology and human relations in the early Iron Age in the current Danish territory?

Theory

The theoretical approach is based on the theory of '*chaîne opératoire*', in which the tablet-woven textiles are seen as the result of a chain of actions. Based on especially lithic studies of stone tools and their manufacturing technology, this theory has been developed so that knowledge of production processes can lead to an understanding of the craftsmen who made the objects. Through the craftsmen's mental perception of these processes and the methods thus implied, we may reach an understanding of the ethnicity, tradition and social organisation of which they were a part.

When using the *chaîne opératoire* method, three levels are often used in the interpretation process: the objects, the actions that formed the objects and

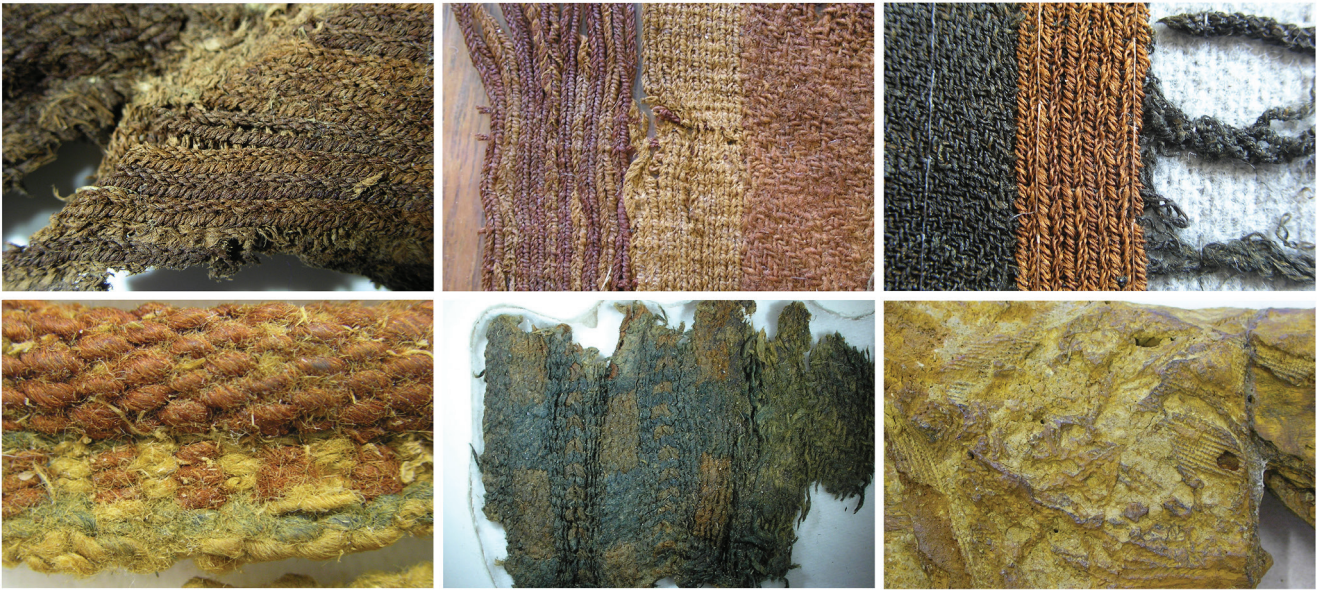


Fig. 1. Early Iron Age tablet-woven textiles from Denmark. Top: Vrangstrup NM C 23594e, Vrangstrup NM C 23585 c, Rovsbjergvej ÅHM 1260; Bottom: Lønne Hede NM C 33259, Lønne Hede NM C 33308, Lærkenfeldt NM C 19679. (Photo: Lise Ræder Knudsen).

the ideas of the person who performed the actions (Fig. 2). The description of these ideas is often referred to as the *schéma opératoire* and constitutes the overall mental perception (the scheme) of how to produce an object – something that may differ from one cultural environment to another (or from one period to another). From *chaîne opératoire* studies of a prehistoric object it is thus possible to reach some understanding of the society in which the object is produced. This level of interpretation is referred to as the anthropological level. The anthropological level contains all the elements that derive from ethnicity, transmitted knowledge, tradition, constraints, taboos and socio-political organisation of a given society *etc.* (Sørensen, 2006a, 15-26; Sørensen 2006b, 40; Desrosiers and Sørensen, 2008, 8-12). The *chaîne opératoire* for tablet-woven textiles is defined as follows:

- Providing the necessary raw material (wool for weaving and wood for tablets)
- Production of threads and tablets
- Production of tablet-woven band or border (setting up the warp, weaving the band, finishing the ends of the weaving)
- Use as an integrated border in another textile or as an independent band
- Recycling
- Deposition (grave goods, sacrifice, discarding).

The archaeological data, the *chaîne opératoire*, the individual and environmental factors, the concept, intentions and *schéma opératoire* of the craftsman in combination give a framework that in some cases makes it possible to reach a deeper understanding of the social context in which some of the finds were produced.

Method

The research undertaken includes studies of all known tablet-woven bands and tablets dated to the early Iron Age found in Denmark. The textiles were recorded and statistics were compiled based on the recorded data. For the analysis of the tablet-woven textiles, I developed a method I call 'preservation-weighted comparative analysis'. In short, the method works like this: in the database, all finds are sorted into groups according to their state of preservation. The thread courses and the production method of the well-preserved finds are analysed. If the macrostructure of a well-preserved tablet-woven band belonging to a certain kind of textile has a specific thread course that other bands/textiles do not have, then the possibility is high that small and less well-preserved fragments having the same thread course would also originally be part of the same kind of feature/textile. For instance, all well-preserved tablet weavings analysed in this study that had two threads as weft and double threads as warp were cloak edgings. This thread course was the same in German and Polish finds of cloaks with

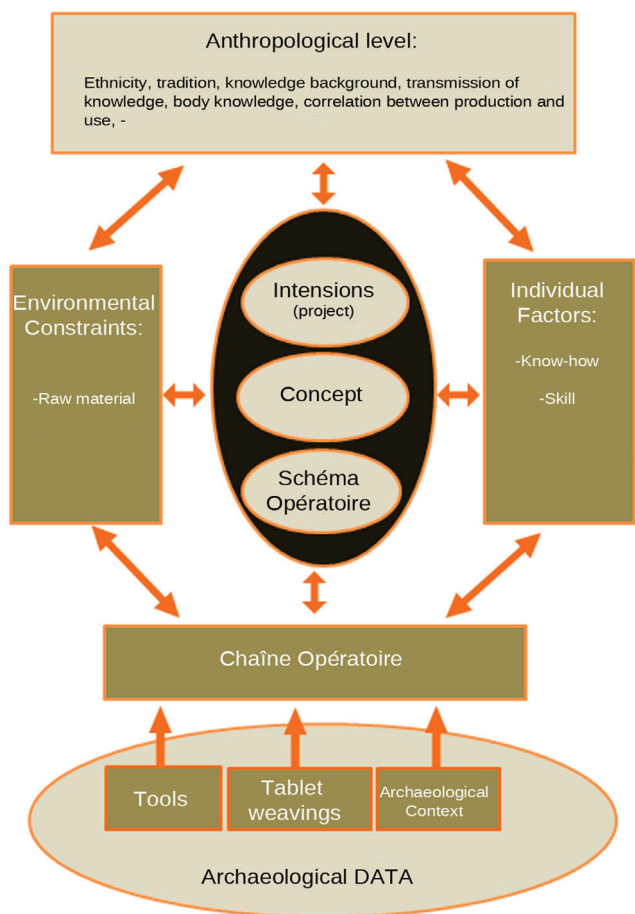


Fig. 2. Desrosiers and Sørensen’s model as used in the study of tablet weaving (After: Desrosiers and Sørensen 2008, 10).

tablet weaving whenever it was registered. Therefore, also small fragments of tablet-woven bands with two threads as weft and double threads as warp were with some certainty also defined as cloak edgings.

A method for evaluating the normal quality of an early Iron Age tablet-woven textile was also developed. This was possible due to a great deal of personal experience in the practicalities of tablet weaving and the analysis of ancient tablet-woven textiles (> 10,000 hours of work). Using this experience, a ‘good, normal-quality’ tablet-woven textile during the early Iron Age was defined and this made it possible to see if a tablet-woven border was made in a more or a less elaborate way according to the norm (Ræder Knudsen 2013, 19-25). If a tablet-woven textile does not follow the typical quality, then a thorough technical analysis of the weave might give information that makes it possible to interpret the reason why – and it might be precisely in the answer to the question ‘why’ that there is the possibility of new knowledge (Bender Jørgensen 2007, 8-9).

Results

The results of the research on tablet-woven textiles in Denmark show that tablet weaving can yield information on a number of issues beyond the technology of the weaving method itself, for instance that the method came to Denmark in an already-developed state around the beginning of the Common Era. One find is dated to the Pre-Roman Iron Age (the blanket from Skærsø, Mannering *et. al.* 2010, 265), a few weavings to the early Roman Iron Age, and significantly more to the late Roman Iron Age (Bender Jørgensen 1980, 34-58; Bender Jørgensen 1986, 194-204). In the early Roman Iron Age, 84 % of the tablet weavings were made such that they were integrated into other textiles and only 16 % were woven as independent bands.

The statistics show that in the late Roman Iron Age tablet weaving can be divided into two different handicraft traditions which use different yarn types, band widths and numbers of tablets per cm, even though there are examples of both handicraft traditions preserved in the same context (Vorbasse grave 4 (VKM and NM Vorbasse grave 4) and Vrangstrup grave III (NM C 23594)). The two tablet weaving handicraft traditions are:

- Tablet weaving as an auxiliary technique for the warp-weighted loom, in which it served a primarily practical function and was executed as part of household production. The tablet weavings had warps of single yarn.
- Tablet weaving as a work of prestige, in which it had a primarily decorative function. The tablet weavings had warps of 2-ply yarn.

This means that if the warps can be observed on small, less well-preserved tablet woven fragments we may be able to interpret if they were originally made in the context of household or prestige production. Further, it was demonstrated that tablet weaving with a 2-ply warp and two single weft threads most certainly was part of cloaks with wide tablet-woven borders – the so-called ‘*Prachtmanteln*’. Fragments of 14 cloaks of this type have been found in the analysed material, and thus the number of known ‘*Prachtmanteln*’ has increased substantially.

It has hitherto been assumed that if a piece of textile has a tablet-woven upper border it must have been woven on a warp-weighted loom because this loom requires a stable starting border holding the warp (Wild 1970, 55; Schlabow 1976, 44; Bender Jørgensen 186, 138; Walton Rogers 2007, 87). The other loom used during this period – the two-beam loom – produces textiles without a stable starting border. The starting



Fig. 3. The starting border of a large cloak from Skærsø in Denmark (MKH 366 dated to the pre-Roman Iron Age). The starting border was woven very accurately and without weaving mistakes. Is this the work of an experienced weaver – the master? (Photo: Lise Ræder Knudsen).

point of the two-beam loom consists of warp loops. In previous research, it is assumed that an upper border was woven *before* the remaining textile. This PhD project has shown that the upper border of cloaks with wide tablet-woven borders was woven to the edges of the textile *after* weaving the entire ground fabric using the upper loops of the fabric as wefts of the tablet woven upper border. Therefore, some of the weavings that have previously been interpreted as having been produced on a warp-weighted loom were probably woven on a two-beam loom instead. The results of my work indicate that the change of weaving technology and the change from the two-beam loom to the warp-weighted loom was probably not as sudden as previously believed (Bender Jørgensen 1980, 25; Bender Jørgensen 1986, 31, 140). The two types of looms may have co-existed for a considerable period of time.

The *chaîne opératoire* approach was applied to reach an understanding of the weavings at the level of ideas and psychological processes with the aim of contributing to our understanding of human relations in the early Roman Iron Age. Two examples serve to illustrate the approach:

The large cloak from Skærsø in Denmark (MKH 366 belonging to Museet på Koldinghus) has four tablet-woven borders of straight, warp-twined tablet weaving. The starting border was woven first and held the warps of the cloak (Fig. 3), the side borders were integrated with the fabric (Fig. 4) and the finishing



Fig.4: The right-hand border of a large cloak from Skærsø in Denmark (MKH 366). Even though the side border should be the easier to produce than the starting and finishing borders, there are multiple weaving mistakes where the tablets were turned in the wrong direction. Is this the work of an inexperienced weaver – the apprentice? (Photo: Lise Ræder Knudsen).

border was woven after the whole cloak was finished using the remaining warp threads of the twill fabric as wefts in the border. The twill fabric was woven by two weavers – one on each side – as there are weft crossings in the middle of the fabric (Hald 1950, 63; 153; 1980, 67; 152). The analysis of the tablet-woven borders shows that the starting and finishing borders had been woven in a more regular and precise way than the side borders, which had numerous weaving mistakes and errors. This begs the question as to why there are so many weaving mistakes in these borders, which were the easiest to produce. The answer is that possibly several people with different levels of experience worked on the cloak. It is possible that the difficult parts of the weaving, like the starting and finishing borders, were woven by an experienced weaver (the master) and the easier middle part was woven by two



people with less experience (apprentices). Thus, this weaving can be seen as an indication of a learning process (Ræder Knudsen 2014, 28-29).

A leg wrap found in Thorsberg in North Germany (F.S. 3692 belonging to Stiftung Schleswig-Holsteinische Landesmuseen Schloss Gottorf), is woven in tabby and edged along the sides by small tablet-woven borders. The leg wrap is 13.5 cm wide and the technical analysis revealed that the side borders were woven simultaneously with the ground weave. This means that the leg wrap was not cut to size, but was woven as a very narrow fabric on a warp-weighted loom. The fabric has numerous weaving mistakes (Möller-Wiering 2011, 59) even though the weaving method and the size of the fabric would have made it very easy to produce compared to other weavings. The interpretation is that the leg wrap is most probably the result of an unexperienced person learning the weaving craft. Furthermore, it is possible that the loom used was very small – this could be evidence of a child weaving on a small-sized loom. In future when excavating contexts in which the remains of looms could be expected, archaeologists should be aware of the possibility of a small-sized loom, for instance indicated by a few loom weights lying in a row.

The doctoral thesis was written in Danish but I am currently trying to raise funds for an English translation and publication.

Acknowledgements

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