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Margrethe Hald: the quest for the tubular loom

Abstract

The aim of this paper is to shed light on the research and travels of the pioneering Danish textile researcher Margrethe Hald regarding the rare and ancient warping technique known as the tubular loom. It retraces Hald's steps on her quest for the tubular loom from the study of Danish bog finds through Egyptian textile remains to surviving weaving traditions in Syria and South America. Hald's method of combining archaeology, ethnology, textile craft, and art history in her research created new understandings of past and present textile traditions and paved the way for modern interdisciplinary research. By revisiting Hald's published and unpublished work on the subject, as well as letters and notes, this paper demonstrates how archival studies can improve understanding of the work carried out by early textile researchers.

Keywords: tubular loom, tubular weaving, archival studies, Denmark, Syria, South America, women in archaeology, interdisciplinarity

Introduction

Thanks to a grant from the Agnes Geijer Foundation, the research project *Margrethe Hald: the Life and Work of a Textile Pioneer: new insights and perspectives* began in September 2020 at the Centre for Textile Research (CTR), the Saxo-Institute, University of Copenhagen. Since the CTR opened in 2005, researchers have continued to use Hald's groundbreaking work as inspiration, and her doctoral thesis *Olddanske Tekstiler* (Ancient Danish Textiles) still represents a cornerstone for the research carried out at the centre (Hald 1950a).

Margrethe Hald

Margrethe Hald (1897-1982) was a Danish weaver and textile researcher who worked as a curator at the National Museum in Copenhagen from 1947 to 1967. As a young woman, Hald had learned to weave during stays at Vrigsted Højskole and Askov Højskole. During her studies at Tegne- og Kunstindustriskolen for Kvinder (School of Applied Arts for Women), she was encouraged by her teacher Elna Mygdal (1868-1940),

a researcher of traditional Danish folk embroidery and the first female curator at the National Museum of Denmark in Copenhagen, to study the National Museum's textile collection.

Hald began her career with the National Museum of Denmark as a weaver hired to reproduce archaeological textiles in the late 1920s and early 1930s. She made reproductions of the textiles from the Egtved Girl and Skrydstrup Woman finds for exhibitions. Hald's investigations and analyses formed the basis for her first published work "Brikvævning i danske Oldtidsfund" (Tablet Weaving in Danish Antiquities), 1930. In 1935, she published the book *Danske Bronzealders Dragter* (Costumes of the Bronze Age in Denmark), which was followed by *Skrydstrupfundet. En sønderjydsk Kvindegrav fra den ældre Bronzealder* (The Skrydstrup Find) in 1939, both co-authored with lifelong friend and collaborator H. C. Broholm (1893-1966), keeper at the Department of Danish Antiquities at the National Museum.

The finds at Skrydstrup were made in 1935 and it was



while working with this material that Hald discovered inconsistencies between the woven fabrics and the suggested weaving technique of the warp-weighted loom. In 1937, she was sent to Berlin by the National Museum to study Egyptian textiles and make comparisons to the Danish finds of the Bronze Age. This marked the first of several travels abroad Hald made on her quest for what would later be named “the tubular loom”.

Over the decades, her quest would lead her as far as the Middle East and South America, and her research was to be collected and published in a book on the subject, which unfortunately she did not get to finish. The unfinished manuscript remains in the National Museum of Denmark to this day. The aim of this article is to retrace Hald’s steps in her quest for the tubular loom and to present her published results as well as some of her unpublished research and observations.

Source material and archival studies

The source material for this article consists of a number of publications by Hald and a number of unpublished archival sources stemming mainly from Hald and to a lesser extent from her sister Anna Hald Terkelsen (1894–1982). After Hald’s death in 1982 her belongings were administered by her nieces Inge Hald Jensen and Else Hald Sørensen and by the textile researcher Karen-Hanne Stærmosse Nielsen, who undertook a distribution of the material. The main recipients were the Danish National Archives and the National Museum of Denmark, where Hald’s correspondence, notebooks and manuscripts are kept. Several smaller portions of the material were given to a number of

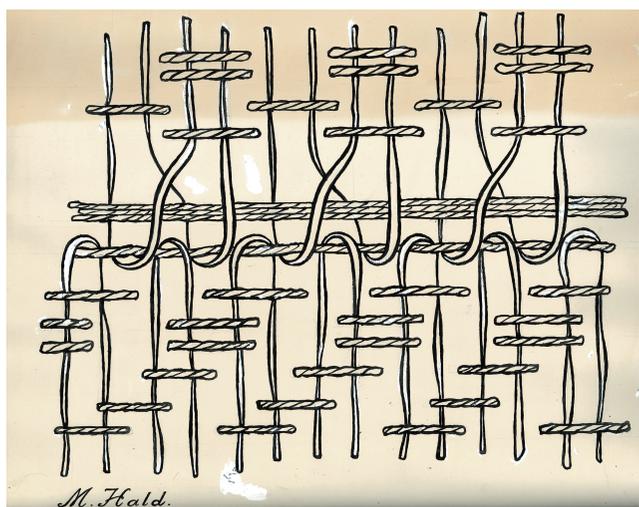


Fig. 1: This image illustrates the warp-lock from the Borremose C cloth. Original illustration painted by Hald, showing a tubular warp set up for 2/2 twill. (Hald 1955, 11, Fig. 12)

institutions and private persons or kept by the family. The Centre for Textile Research (CTR) received a collection of articles, books, diapositives, transcripts of letters, and objects from South America, in the 2000’s from Hald’s niece, Inge Hald Jensen, which make up the Margrethe Hald Archive at CTR. A number of books from Hald’s private library have also been donated to CTR since the original distribution of her belongings.

The Danish National Archives hold a personal archive for Margrethe Hald (the Hald Archive) as well as one for her sister and her sister’s husband: Anna Hald Terkelsen and Frede Terkelsen (the Terkelsen Archive). The two personal archives consist of several boxes of written material and documents relating to the sisters, where the letters are of particular interest in relation to this article. The Hald Archive contains eight boxes of correspondence, including postcards and letters, mostly written to Margrethe Hald but also a number of drafts for letters written by Hald on a typewriter and usually corrected and annotated by hand. These drafts are very important, as they give us an idea of how Hald replied to the letters she received, and as the corrections made to the typewritten drafts are very minor, it may be presumed that these more or less represent the finished letters. This archive also contains actual letters written by Hald to her mother, Marie Pedersen. These letters were probably returned to Hald sometime after the death of her mother in 1947.

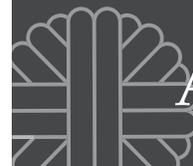
The Terkelsen Archive is not yet open to the public but, fortunately, we were granted access to part of it in December 2020 before the Danish National Archives closed down as a result of Covid-19. Box 17 contains letters from Margrethe Hald to her sister during her extensive travels in South America in 1965–1966 and the Middle East (mainly Syria) in 1960 and 1961, to study the extant tradition of tubular weaving. A transcription of the letters from South America made by Inge Hald Jensen is in the archive at CTR.

The National Museum of Denmark’s department for Ancient Cultures of Denmark and the Mediterranean holds in its archive a number of original manuscripts of Hald’s books and some unpublished material, as well as some notes and notebooks (a greater number of notebooks are in the Hald Archive at the Danish National Archives) and a few letters and miscellanea.

The technique of tubular weaving

Remarks on terminology

During our research for this article, we have noticed that the concept of the tubular loom and tubular weaving requires a thorough explanation of not just



the technical aspects of this ancient warping method but also of the terminology used.

According to Strömberg et al. 1967 (first edition of *Nordisk Tekstilteknologisk Terminologi* (NTT)) the Danish term 'rundvæv' corresponds to the fabric produced on a loom set up for tubular weaving and the corresponding English term is 'circular fabric', while according to the latest version the term is 'tubular fabric' (Strömberg et al. 1979). 'Rundvæv' meaning tubular loom does not have a separate entry, as it is not a distinct loom but rather a set up for a two or three-beam loom (for further explanation please see the following section on the technique of tubular weaving). Even though Hald was one of the editors of the first edition of NTT in 1967, her writings on tubular weaving do not reflect the definition given in this work. Instead, she uses the terms 'rundvæv' and 'rundvævning' in Danish and 'tubular loom' and 'tubular weaving' in English. 'Rundvævning' is used to refer both to the technique and the fabric produced (Hald 1952, 196; Hald 1964, 95). It is thus very likely that the English terms originated with Margrethe Hald as translations of her preferred Danish terms. She probably chose the Danish terms to better differentiate between the weaving device (rundvæv) and the technique/fabric produced (rundvævning) because of the ambiguity of 'væv'. In Danish, the word 'væv' means both weave/fabric and loom, which is not the case in Norwegian or in Swedish, where vev/väv means fabric and vevstol/vävstol means loom. The Swedish term 'rundväv' meaning tubular fabric can thus not be confused with the term 'tubular loom', and the corresponding Norwegian term 'rundvevd tøy' rules out any misunderstanding by adding 'tøy' (fabric). It is thus only the Danish term 'rundvæv' that leaves room for confusion as to whether it refers to a weave/fabric or a loom. Furthermore, it is interesting that Hald's use of the English terms, using 'tubular' rather than 'circular', precedes the NTT definition (Hald 1962b), and that this definition later replaced the one from 1967 completely as evidenced by the 1979 version of NTT.

The English terms used by Hald are not direct translations of the Danish; the Danish terms' literal meaning are "round loom" and "round weave". It seems the Danish terms may come from the process of weaving around a two-beam loom, whereas the English term describes the fabric produced, which is in Danish also often referred to as tubular (rørformet). The entry from NTT 1967 does, as mentioned, show an alternative English synonym: circular fabric. The word 'rund' (round) in Danish may also be understood as 'circular'.

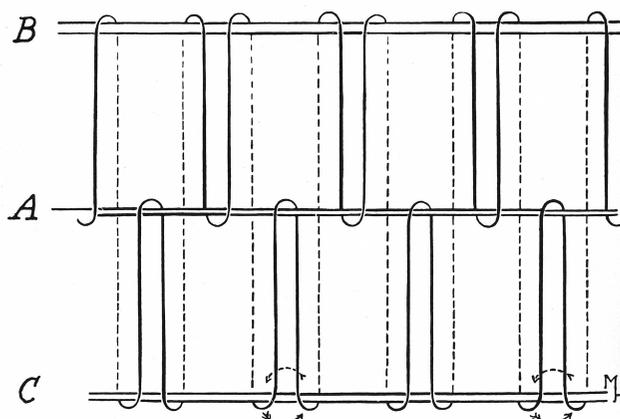


Fig. 2: The principle of a tubular warp set up according to the looping method (Hald 1980, 166, fig. 174)

As mentioned, tubular woven fabrics were not produced on a round loom or a loom shaped as a tube, but rather on a vertical loom with at least two and sometimes three horizontal beams and a warp mounted for tubular weaving. The use of the term 'tubular loom' is thus problematic, as it does not in reality refer to a specific loom type. This may be the reason why several misunderstandings concerning the concept of tubular weaving have appeared in articles on textile research over the years.

The term 'tubular loom' has, however, been used by both Hald and later textile researchers. Hald seems to have been aware of the problems concerning the designation, and either explains the tubular loom to be a 'weaving device' rather than a loom (Hald 1962b, 11; Hald 1967, 10), or names it as 'the so-called tubular loom' (Hald 1964, 105), so that the term 'tubular loom' in this case does not designate a specific loom, but a device prepared for tubular weaving. The term 'tubular loom' has, however, been used by later scholars without Hald's caveats, which may lead to the misunderstanding that this is a specific type of loom and not a certain way of setting up a two or three-beam loom. This problem has been raised by Stærmosse Nielsen, who argues that the term is misleading and must be avoided (Stærmosse Nielsen 2005, 133). The term does, however, serve a practical purpose of simplifying the arguably more correct but much more complex description 'a two-beam loom set up for tubular weaving', which may very well be the reason for Hald to use the term 'tubular loom'.

In this article we have chosen to adopt Hald's designations, as she is the author of the source material, and even though the term 'tubular loom' may be seen as imprecise or even problematic, it does



allow for a better flow. Stærmose Nielsen's suggestion of avoiding this term may be problematic in itself, as it can leave the work of Hald (and others) even more confusing for modern readers, as they may not have come across the term or its usage before. Therefore, the most sensible solution seems to us: to use the terms used by Hald with clear definitions of these terms in order not to cause further confusion about the meaning of 'tubular loom' and 'tubular weaving'.

The technique(s) of tubular weaving

The Margrethe Hald Archive at CTR includes a copy of an incomplete and hitherto unpublished manuscript for a book that Hald worked on for many years. The original manuscript belongs to the National Museum of Denmark's department for Ancient Cultures of Denmark and the Mediterranean.

The manuscript is for a book which would probably have been entitled either "Tubular Weaving around the Globe" or "The Tubular Loom – A Comparative Study in Primitive Weaving" (CTR: 1984-85, 1). The book should have dealt with the use of a prehistoric warping method that Hald refers to as "the Huldremose Technique" in a letter from Colombia to her sister Anna in 1966 (NA2 1966). Hald refers to the warping technique as "the tubular loom" or just "tubular weaving".

It is in fact neither a distinct form of loom, nor a special weaving technique or a particular binding, but an unusual way of warping. Among weavers it is common knowledge that the way the warp is mounted is of immense importance to the final result. According to Hald, there were two methods of setting up the warp for tubular weaving: the loop method (also type A) and the spiral method (type B). This ancient warping method is especially remarkable

because, when setting up the vertical two-beam loom by the loop method, the warp yarn is passed round the loom and back, the turning loop being anchored by a thin rod or strong cord the width of the loom. The warp thread is passed so it alternately loops the cord or stick from above and from below resulting in a row of loops, which face each other alternately along the stick or cord. The cord works as a "warp-lock" to keep the tubular warp together both during weaving and afterwards (figs. 1-2).

This method of warping the vertical loom has the advantage that it enables the weaver to produce a much larger piece of cloth than a usual set up on a two-beam loom without revolving beams. The usual set up allows just one layer of warp between the upper and lower beams, but with the warping method of tubular weaving the warp will be twice as long as the distance between the loom's upper and lower beams. If a third horizontal beam is brought into play, the length of the tubular warp can be increased considerably - as Hald experienced during her stay in a tent weaver's workshop in Syria, 1960 (Hald 1961a, 111; Hald 1962b, 41-46; Hald 1964, 93, 105).

Another advantage for the prehistoric weaver is the fact that working with the tubular warping system, there will be no waste of warp thread at all because the warp is not fastened to the beams but only to the warp-lock. Thus, the horizontal beams only serve to hold the warp threads taut during work.

When a fabric woven utilizing this warping method is entirely finished and removed from the two-beam loom, the weaver will have a tube of fabric open in both ends ready to serve as a dress or funeral shroud without any cutting or sewing if the warp-lock is not removed from the fabric. This is named the primary state.

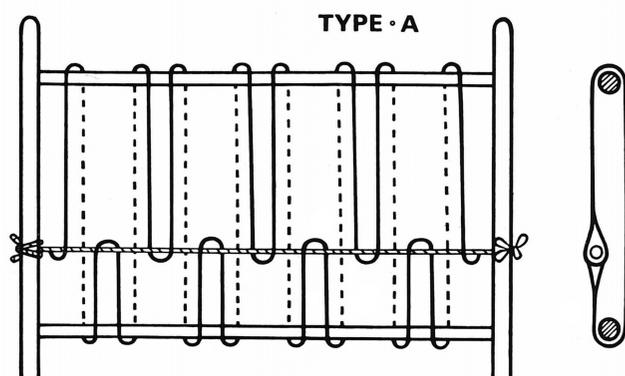


Fig. 3: The principle of a tubular warp set up according to the looping method including a cross section of a two beam-loom (Hald 1980, 211, fig. 213)

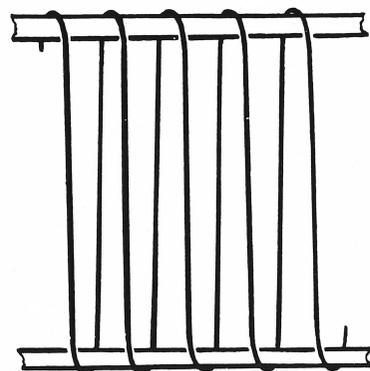
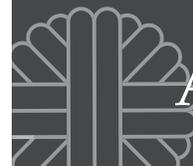


Fig. 4: The principle of a tubular warp set up according to the spiral method (Hald 1980, 213, fig. 216)



When the warp-lock is pulled out of the tubular fabric, the tube will be turned into a flat piece of fabric with four closed edges. This is named the secondary state. In this way, tubular woven fabrics can be used in both their primary (tubular) state and in their secondary (square) state. In Antiquity, Hald points out, a tubular fabric could be used first in its primary state with the warp-lock still in place and then later, if a square fabric was needed instead of a tube, the warp-lock could be drawn out and the fabric could serve another purpose in its secondary state. Once the warp-lock had been removed from the tube, it could not be put back (Hald 1955, 32; Hald 1962a, 72).

An important point is that the warping principle for tubular weaving, the so-called loop method or type A method described above, was not the only way of tubular weaving studied by Hald. In her 1942 article on looms in the Ethnographic Collection of the National Museum of Denmark, she describes a different warping method that also results in a tubular fabric. This is what she defines as the “spiral method” or type B method (Hald 1960, 224, 240–242; Hald 1962b, 11–13; Hald 1967, 15) which has been practiced by, for instance, the Navajos of North America for weaving narrow bands on a loom which is made out of a forked branch and a few sticks (Hald 1942, 52–55).

There are several differences between the loop method and spiral method and their results:

The spiral method of tubular weaving is produced with a warp thread running spirally around the two beams of the loom in one direction as shown in figs. 3 and 4.

If a tubular fabric made with the spiral method in its primary, closed state is desired, it must be removed from the loom without cutting the warp threads, just like tubular fabrics produced by the loop method method. If, on the other hand, a rectangular fabric lying flat is desired, it is necessary to cut the woven tube open as there is no warp-lock to remove.

Hald’s fascination with the different techniques of tubular weaving seems to have arisen many years before her journeys to the Middle East and South America, most probably during research for her doctoral dissertation *Olddanske Tekstiler* (Hald 1950) which she defended in 1950. She discovered that the renowned Huldremose dress, which was excavated in 1896, had an almost invisible unifying cord that held the fabric together as a woven tube (fig. 5) This discovery led her to work out that the Huldremose tubular dress and several other finds from the Danish Iron Age must have been woven utilizing the loop method described above.

Not only did Hald come to understand how the

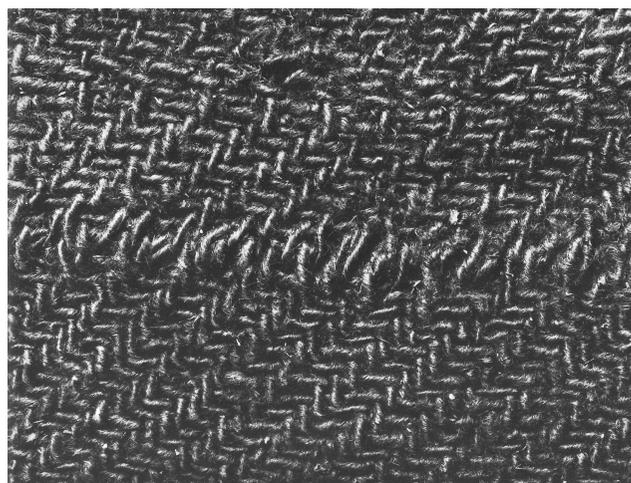


Fig. 5: Photograph showing the warp-lock from the Huldremose Dress (Hald 1980,165, fig. 172.)

tubular woven textiles from Danish prehistory were produced, but she also realized that they must have been produced on a type of loom other than the warp-weighted loom: the vertical two beam-loom.

No fragment of such a loom has been found in a Danish archaeological site so far, and it is only the surviving textiles that prove that it was in use during the Iron Age.

The vertical two beam-loom consists of two upright posts to which two horizontal beams are secured thereby creating a frame. In prehistory, all pieces of the loom were made of wood and therefore not preserved due to the humid climate.

The warp-weighted loom, on the other hand, with only one horizontal beam to hold the warp has left us numerous clay loom weights as evidence of its existence and use in the area of what is now Denmark. In the 1940s, at the time when Hald began systematically studying the principles of tubular weaving, not much had been published on the subject. Furthermore, she did not always get to know about publications relevant to her own research, maybe due to the German occupation of Denmark 1940–45.

An example is the article published in 1941 by Grace Crowfoot. This article dealt with the vertical looms of Palestine and Syria, which were warped according to the loop method of tubular weaving (Crowfoot 1941). In her article, Crowfoot does not use the terms “tubular loom” or “tubular weaving” but explains the warping method in detail. Crowfoot states that a third beam placed somewhere behind the two horizontal beams, but not connected to the side posts, was a defining feature for the loom in Syria and Palestine (Crowfoot 1941, 141–142). However, it has been suggested that the



third beam would be a possible addition to the loom but not necessarily a defining feature for the tubular weaving of the Middle East (Stærmosé Nielsen 1999, 123).

Hald briefly mentions Crowfoot's article in the post scriptum of *Olddanske Tekstiler* in 1950 and points out that the author's illustrations on setting up the vertical loom correspond well with her own conclusions.

Journeys abroad

Over the many years Hald worked at the National Museum of Denmark in Copenhagen, she came into contact with the principles of tubular weaving a number of times, both while analysing the archaeological textiles in the museum's collection, but also during her trips to foreign museums, such as the Ethnographical Museum of Sweden and Schleswig-Holsteinisches Landesmuseum für Vor- und Frühgeschichte. According to her article entitled "Dragtstudier" (Hald 1961b), Hald visited the latter in 1959, 1961 and 1962 in order to study Iron Age textile fragments.

In the 1960s Hald embarked on three major study trips to the Middle East and South America. During her travels, she had the opportunity to observe the ancient warping methods of tubular weaving practiced by local weavers and experience the surviving tradition of "the tubular loom" in authentic surroundings.

How it all began. Wedges and loops in the Bronze Age and a trip to Berlin

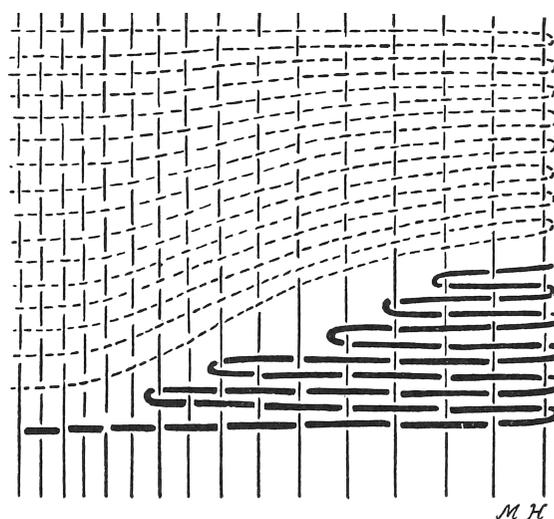
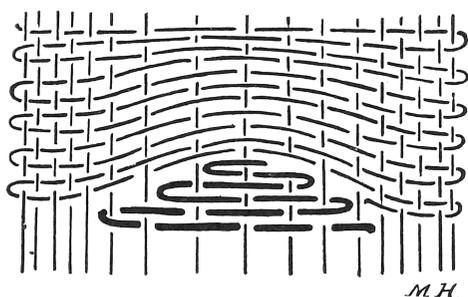
In 1935, Hald mentions irregularities in the woven fabrics of the Bronze Age, which she calls wedges and double-wedges (Broholm and Hald 1935, 310–311). In her doctoral treatise she writes: "When these are found within the fabric's surface and are forming

pointed ends towards both edges, I call them double wedges (...) [fig. 6]; when they begin in one side of the fabric and forms a pointed end towards the rest of the surface, I call them single wedges (...) [fig. 7] (Hald 1950, 154)."

A single wedge is created when a varying number of wefts beginning from one of the edges turn somewhere across the width of the fabric instead of passing from selvedge to selvedge. A double wedge is created by passing wefts back and forth somewhere on the width of the fabric without going from selvedge to selvedge. The reason for weaving single and double wedges into the fabric is to make up for either a group of warp threads with uneven tension which result in poor sheds or to make up for groups of warp threads which are pulled too closely together thereby making it difficult to beat down the wefts equally over the width of the cloth. The overall goal is to enable the weaver to pass the wefts in a straight line from edge to edge avoiding getting the cloth wobbly and/or crooked.

In 1939, she presented the argument that these wedges indicated the use of a loom other than the warp-weighted loom (Broholm and Hald 1939, 83–84). This unknown loom, she theorized, would have been a two-beam loom in order to explain the high frequency of wedges in the woven textiles. If a warp-weighted loom had been used, there would have been several other ways to combat the irregularities occurring in the fabric due to 'tightening' and thus leave the high-frequency occurrences of wedges unexplained. The two-beam loom was well-documented elsewhere but its existence in Northern Europe was yet to be proven. The Skrydstrup find was excavated in 1935 and its contents studied by Broholm and Hald in the following years. As part of these studies, Hald was sent to Berlin by the National Museum of Denmark in the summer

Figs. 6a and 6b: The so-called single wedges and double wedges that Hald found both in the fragments of Danish Bronze Age textiles and in Egyptian textiles at the Kaiser-Friedrich-Museum in Berlin. (Hald 1950a, 155, figs. 146 and 147)



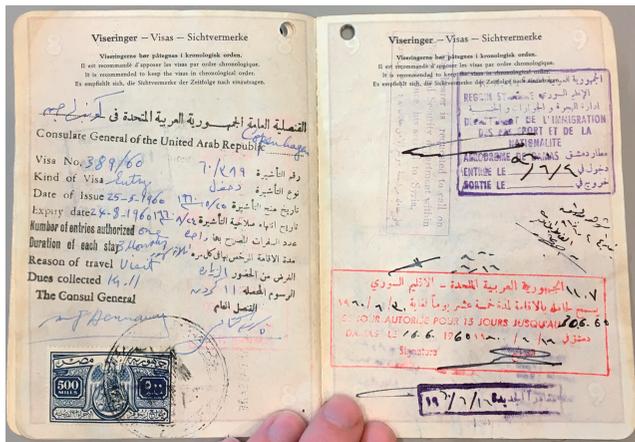


Fig. 7: Hald’s passport with her visas for the United Arab Republic and Lebanon, 1960 (NA 1 1963)

of 1937 to identify possible comparisons in Egyptian textile finds. In a letter to her mother written during her stay in Berlin she eagerly shares her findings:

Yesterday was the highlight of the trip with regard to academic benefit. I found the same cross and wedge-weavings in some Egyptian tabby fabrics, as the one we have in Danish Bronze Age clothes – I found it to be one of the most interesting finds in the examinations and it is very amusing, that I am now able to detect the same features in the Egyptian fabric (NA1: 1937).

It seems likely that these findings in Egyptian textiles are what made Hald present the idea of the existence of another loom in Bronze Age Denmark, her find of the so-called wedges being the onset of her studies on tubular weaving. Some of her notes made in Berlin can be found in the archive at the National Museum of Denmark alongside a letter from Dr. Helmut Schlunk, Kaiser-Friedrich-Museum, today the Bode-Museum, who seems to have acted as a host and collaborator for Margrethe Hald, where he states that he sends her some drawings she had forgotten.

In the publication *Skrydstrupfundet* from 1939, Hald deals with several irregularities in the woven Bronze Age fabrics. She examines the fabrics’ thread counts, selvedges and fringes thoroughly. She even opens up a few fringes of *Trindhøjtæppet*, and discovers that the warp ends that form the fringes still have loops (Broholm and Hald 1939, 74–77). If the textile had been produced on a warp-weighted loom, the loops on the end of the warp threads would have been cut up in order to create the two large sheds necessary for weaving plain weave on this type of loom. Hald therefore comes to the conclusion that some of the textiles might not have been produced on a warp-weighted loom.

Travels to the Middle East and South America

In the summer of 1960 Margrethe Hald left for the first of three major study tours in search of the tubular loom. A travelling visa for entering the United Arab Republic (fig. 7) was issued for Margrethe Hald valid from 25 May until 24 August 1960, and she left Denmark for Syria on 3 June 1960 (NA1: 1963). Here she was housed by the Danish hospital in the small town of Nebk. (The United Arab Republic was a political union between Egypt and Syria from 1958 until 1961, when Syria left the union. Afterwards Egypt was known officially as the United Arab Republic until 1971).

According to an article published the following year (Hald 1961a, 108), Hald had chosen Syria as her starting point, after a woman told her that she had observed looms similar to the tubular loom described by Hald in her doctoral treatise on a recent trip to Syria. Hald was, as mentioned, already aware that the tubular loom had been observed by Grace Crowfoot in Palestine and Syria before the Second World War but she was intrigued to learn that the tradition might still be alive some 20 years later (Hald 1961a, 108; Crowfoot 1941). Fortunately, Hald found that this was indeed the case, and on 8 June she wrote to her sister Anna: “Dear Anna! Well – now I am well on my way. Already on the 2. day of Pentecost I was with the family in a town, which lies c. 80 km north. There we found a loom of “my type”, and I immediately began photographing(...) (NA2: 1960a).”

During this trip Hald was introduced to Michael Arbash, a weaver of tent-canvas in Yabroud (NM: 1960). Their first meeting probably happened between the 12 and 15 June, on the latter date Hald wrote to her sister: “We have been to 2 desert towns and gone for 3 days. We saw a lot of things, but the best was a weaver of tent-canvas in Yabroud (NA2: 1960b).” Hald later bought a vertical loom with three beams and a warp of goat’s hair mounted for the loop method of tubular weaving from Arbash (NA2: 1960c). The loom was sent to the National Museum of Denmark, where today it is registered in the Ethnographical Collection as item F.853 (fig. 8). Objects collected by Hald during her journeys to the Middle East and S. America were part of Hald’s final exhibition at the National Museum entitled *Oldtidsvæve* (Archaic Looms) in 1967 (Hald 1967; Paulli Andersen 1967). These were finally registered under her name by a guest scholar at CTR, Susanne Klose, and Inge Damm from the National Museum of Denmark in 2012. From her letters, it can be gathered that Hald spent several days in June in Arbash’ workshop in Yabroud getting acquainted with the weaving process. In a draft for an unpublished



Fig. 8: Three beam-loom set up with a tubular goat hair warp for tent canvas. The loom was acquired by Hald in Syria in 1960 and belongs to the National Museum, Copenhagen, where it was exhibited in 1967. (Slide no. 550 in CTR's collection)

article about the trip, Hald wrote about her time with the weaver: "The weaver in Yabroud was a very careful and helpful teacher, who did not just demonstrate his work with all its subtleties for me but also allowed me to try my hand with the tools (NM: 1960)." On 9 July 1960 Hald returned to Denmark, and the following year, she wrote: "I had moved 3–4000 years back in time – and among living people. Did time stand still here in the shadow of Lebanon (Hald: 1961a, 116)?" The year after, she published her article for *Nationalmuseets Arbejdsmark* 1961 in which she thoroughly described all stages of work for production of the famous black bedouin tents, from the spinning



Fig. 9: Women from the Colorado tribe wearing tubular woven skirts. Picture taken by Hald in Ecuador, 1965. (Slide no 305 in CTR's collection)

of goat's hair and setting up the loom for tubular weaving to the knotting of leashes and the weaving itself (Hald 1961a). Hald referred to her research in the Middle East a number of times in her publications and lectures, one of the last times was in 1981, where she described the methods of spinning goat hair at the Syrian tent weaver's workshop (Hald 1981).

In October 1965 Hald embarked on the last and longest of her tours in search of the tubular loom. The trip lasted five months and took her through Peru, Bolivia, Ecuador, Colombia, and Guatemala, before she returned to Denmark on 16 March 1966 (Grymer-Hansen and Mokdad 2021). Hald had already turned her eyes towards South America around the same time she travelled to the Middle East, as she published an article on a tubular woven fabric in the Swedish Ethnographical Museum in 1962 (Hald 1962b). The first four months Hald did not observe the tubular loom in use in South America and instead focused her attention towards band weaving and the looms used for this work. She was, however, able to buy a costume made from tubular woven fabric in Peru in November 1965 (NA2: 1965). In February the following year, she



Fig. 10: Two beam-loom set up for tubular weaving. The loom was acquired by Hald in Ecuador in 1965 and belongs to the National Museum, Copenhagen, where it was exhibited in 1967. (Slide no. 524 in CTR's collection)

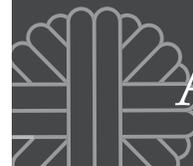


Fig. 11: Guambiano woman in Silvia, Colombia weaving a tubular skirt at her two beam-loom (Slide no 376 in CTR's collection)

visited the Colorado tribe in Ecuador, who wove on a tubular loom, which was probably set up with a warp of the spiral/B type (figs. 9–10; NA2: 1966a). Hald and her small group had a hard time trying to buy one of the looms, which they eventually did, but something went wrong, however, and they were followed to a river crossing by the tribe's shaman, who stared at them from the other side of the river (NA2: 1966a).

In March, Hald finally found an example of the 'right' type of tubular loom in use, the A type, when she visited the Guambianos people in Colombia (figs. 11–12). Here she was able to procure two looms for the National Museum (Grymer-Hansen and Mokdad 2021). On 2 March 1966 she wrote to her sister:

[I] Have now been on a lovely trip down South West in Colombia – 2 hours by plane and 2 days of planning – 2 hours drive out into the country. Found with the help of a teacher (Indian), a woman teacher [Da. lærerinde] (mulatto) 2 looms – tubular looms with loops from the warp gathered across a string, i.e. Huldremose-technique – bought them, though it was difficult, also got 1 piece with the lock preserved, that is cylindrical – 2 women skirts – open and 1 man's poncho made from 2 pieces of tubular fabric. This is what I have

been looking for but have not seen until now. Now N.M. [the National Museum] will get 2 "Huldremose-ooms" (NA2: 1966b)!

The looms that Hald collected on her travels were included in her last exhibition at the National Museum in Copenhagen: *Oldtidsvæve* (Archaic Looms) in 1967 (Hald 1967). The exhibition's centerpiece was the so-called Huldremose-peplos, a tubular woven fabric with the warp-lock intact, which was exhibited among a number of other textile finds from Danish bogs (Hald 1967, 3). Since no remnant of an ancient tubular loom has been found in Denmark, Hald's observations on tubular weaving as it survives around the world, was of paramount value for textile researchers and archaeologists in order to understand the European textile finds. The exhibition illustrated the different sizes, techniques, and forms of tubular looms around the world, and it is a prime example of Hald's combination of ethnology, archaeology and textile craft in her research and dissemination projects.

Concluding remarks

"Your works on folk traditions, whether you have found them in your own country or outside Europe where you learned to weave on the tubular loom or to make David's sling, have delighted me very much. We have experienced the joy of meeting living people, not just products from distant times. I regard that as a great privilege. It has also – I believe – heightened our understanding of the old techniques" (NA1: 1981).

The above quote is from a letter written by the Norwegian textile researcher Marta Hoffmann to Margrethe Hald. It demonstrates the urgency, also expressed by Hald, in documenting the surviving ancient techniques across the world before they die

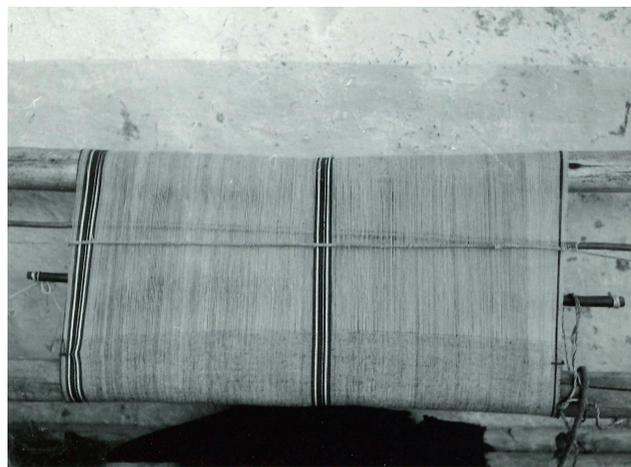


Fig. 12: Tubular warp for Guambiano man's poncho, Colombia, 1966. Photograph from CTR's Archive



out in order to understand the archaeological textiles in European collections. Hald's efforts in this regard were crucial to the correct identification of tubular fabrics of the Danish Iron Age, as well as to better comprehension of the production methods of ancient textiles in general.

In this article, we have demonstrated how published and unpublished sources when combined can enlighten and revitalize the work of one of the early pioneers in the field of textile research. It is our sincere wish that our efforts have proved that archival studies can serve as a valuable contribution to the field of textile archaeology.

Suggestions for further reading: Hald's publications on tubular weaving

In a number of her publications through the years, Hald dealt with the subject of tubular weaving accompanied by drawings and photos. Since Hald's research on the subject is spread across many decades and publications, we have elected to bring a summary of these publications as a guide for scholars, who wish to continue the study on the tubular loom. Most of the publications are in Danish, but quite a few of her articles were published in both Danish and English. Several of her Danish articles have summaries in English.

1942: The first time Hald mentions tubular weaving in a publication is her article "Væve i Etnografisk Samling," where she very briefly presents a small band loom from the Navajo tribe of North America. This band loom is set up with a tubular warp utilizing the spiral method (Hald 1942, 52–55).

1950: *Olddanske Tekstiler, Komparative tekstil- og dragthistoriske Studier paa Grundlag af Mosefund og Graefund fra Jernalderen*. Copenhagen: Gyldendal. In her doctoral treatise, Hald for the first time published her research on the "tubular-woven fabrics," the dress from Huldremose and another tubular fabric without provenance. She raises the question of what kind of loom was used for weaving these curious tubes of fabric – and concludes that it must be a loom with two horizontal beams: the two beam-loom. She also reveals that several other Iron Age bog textiles in the National Museum's collection must have been produced the same way though they appear flat (because their warp-locks have been removed after weaving). Text in Danish pp. 1–409 and English summary pp. 409–486 (Hald 1950a).

1950: After the publication of her doctoral treatise in 1950, she writes a 10 page summary of it entitled "Gamle Textiltekniker" which is published in *Tidskrift for Textilteknik*. In the summary, she briefly explains

the loop method of tubular weaving (Hald 1950b, 104–105).

1955: Her article "Olddanske Tekstiler. Fund fra Aarene 1947–55" is published in *Aarbøger for Nordisk Oldkyndighed og Historie* in 1955. The Huldremose dress and a textile fragment from Borremose with a warp-lock still in place are described and the loop method of tubular warping is explained in detail. The article is written in both Danish pp.1–44 and in English pp. 44–60 (Hald 1955).

1960: Another article entitled "Nogle Bemærkninger om de danske Mosefund. Svar til Dr. Birket-Smith" is published in *Aarbøger for Nordisk Oldkyndighed og Historie* in 1960. This article deals with the use of tubular weaving in South America and both principles of tubular warps, the loop method and the spiral method are explained. The article is written in both Danish pp. 223–234 and in English pp. 234–243 (Hald 1960).

1961: Hald published an article on her stay in the Middle East entitled "I Libanons Skygge." She describes her first authentic experiences with the living tradition of "the tubular loom" in a tent weaver's workshop in Syria. The loop method of tubular warping is explained in both photos and drawings (Hald 1961a).

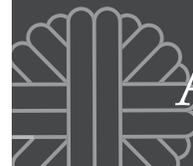
1961: Hald also published an article on archaeological textiles from Northern Germany: "Dragtstudier." Once more, the loop method of tubular warping is explained in detail. The article is written in both Danish pp. 37–76 and in English pp. 76–89 (Hald 1961b).

1962: The National Museum of Denmark publishes a booklet by Hald entitled *Jernalderens Dragt*, in which she presents some of the research and conclusions from her treatise in a popular way. Both the warping systems of the warp-weighted loom and the tubular loom are explained. (Hald 1962a).

1962: The Ethnographical Museum of Sweden published *An Unfinished Tubular Fabric from the Chiriguano Indians, Bolivia*. In this booklet, Hald deals with a loom set up utilizing the loop method of tubular weaving. The loom was brought to Sweden by Erland Nordenskiöld in 1908–09. Hald explains both the loop method and the spiral method of tubular weaving. This booklet is published entirely in English (Hald 1962b).

1964: an article entitled "Vævning over Gruber" was published in 1964. Hald explains the loop method of tubular weaving in the Middle East on looms with either two or three horizontal beams. Text in both Danish pp. 88–101 and English pp. 101–108 (Hald 1964).

1967: An exhibition catalogue is published by Forhistorisk Museum Moesgaard in Aarhus. In



1967, Margrethe Hald curated and organized a large exhibition at the National Museum in Copenhagen on the occasion of her retirement. The exhibition, which afterwards travelled to Forhistorisk Museum in Aarhus was entitled *Oldtidsvæve* (Archaic Looms). A number of looms were shown at the exhibition, among them several looms set up for tubular weaving (Hald 1967).

1980: Hald's doctoral treatise was translated into English and published by the National Museum of Denmark under the title *Ancient Danish Textiles from Bogs and Burials. A Comparative Study of Costume and Iron Age Textiles* (Hald 1980). In the chapter "Woven Fabrics and their Construction" (Hald 1980, 148–186), she thoroughly describes the mounting of several tubular warps which were used for weaving specific Iron Age textiles, such as the Huldremose dress and the Arden checkered scarf. In the chapter Looms and Fabrics, (Hald 1980, 203–225), Hald explains both the loop method and the spiral method of tubular weaving in detail.

All Hald's publications on tubular weaving (except for her doctoral treatise) can be accessed here: <https://ctr.hum.ku.dk/research-programmes-and-projects/previous-programmes-and-projects/the-margrethe-hald-archive-digitalization-and-dissemination/>

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Unpublished sources

NM = National Museum of Denmark

NA = National Archive of Denmark

CTR = Centre for Textile Research

NM: Department for Ancient Cultures of Denmark and the Mediterranean

Boxes II-III:

Presentation of journeys to the Middle East (1964).

Notes from Berlin (1937a).

Letter from Dr. Schlunk (1937b).

Fra en Rejse i Syrien 1960 (1960). Draft for an article.

Undated but as it only mentions Hald's first trip to Syria it was probably written in either 1960 or 1961 before her second journey.

NA1: Personal archive for Margrethe Hald

Box 1:

Passport (1963). Valid until 15 September 1963.

Box 9:

Letter from Berlin to MH's mother (1937). Dated "Berlin, Sunday evening". Probably 5 September 1937.

Letter from Marta Hoffmann to MH (1981). Oslo, 24 September 1981.

NA2: Personal archive for Frede Terkelsen and Anna Hald Terkelsen

Box 17:

Letter from Syria (1960a). 8 June 1960.

Letter from Syria (1960b). 15 June 1960.

Letter from Syria (1960c). 1 July 1960.

Letter from Pucallpa, Peru (1965). 5 November 1965.

Letter from Quito, Ecuador (1966a). 12 February 1966.

Letter from Bogota, Colombia (1966b). 2 March 1966.

CTR: the Margrethe Hald Archive

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