

Fashioning the Viking Age

## Annual report 2020

1<sup>st</sup> of January 2020 – 31<sup>st</sup> of December 2020

### Introduction

The 1<sup>st</sup> of January 2020 the *Fashioning the Viking Age* project, funded by THE VELUX FOUNDATIONS, continued with Project Part 1 and 2. The main participants were continuously:

- Ulla Mannering (UM), Project Leader, NM
- Charlotte Rimstad (CR), Project Coordinator, NM
- Eva Andersson Strand (EAS), Director of CTR, UCHP
- Ida Demant (ID), Leader of the Textile Workshop, LL

Further, two new crafts people were included in the project:

- Marie Wallenberg (MW), Weaver, Sweden
- Signe Vind (SV), student at University of Copenhagen

In the spring term Pernille Højfeld Nielsen, student at University of Copenhagen was linked to the project as intern at the National Museum of Denmark.

The year has been marked, but not completely stopped, by the COVID-19 pandemic. Many planned conferences and seminars have been cancelled, though it has been possible to carry out the teaching online via Teams or Zoom. The crafts people have more or less been able to continue their work from home, resulting in only a slight delay of the project.

### Status of the sub-projects

#### **Part 1: Viking Age Textile Production**

This project was paused from December 2019 until September 2020, as ID was until then working with Project Part 2. In the autumn a new Textile Laboratory was established at Centre for Textile Research, University of Copenhagen, where the last part of the Project Part 1 is taking place. This include the weaving of two new textile samples. Textile sample 3 is a reconstruction of Fragment H39 from Hedeby, a diamond twill. Like the two first textile samples, the best match between the wool fibres from a modern sheep breed and the quality of the fibres from the original textile has been prioritized. Once again, a fleece from the Spelsau sheep was chosen. ID has been in charge of spinning the wool on a drop spindle, mounting the threads on the loom and weaving the sample. The yarn was spun on a 20 g spindle whorl. Spinning for this project already began in the autumn of 2019 and was finished in November 2020. The loom was setup during the weeks 48 to 50 in 2020. Due to the more complicated pattern and finer and denser quality the speed of weaving was a bit slower than in the previous samples; approx. 3 cm/hour. The ca. 60 cm long sample will be finished during the first week of January 2021.

Another sample was produced on a second loom by MW. The aim was to investigate the production of a larger piece of textile, looking at the time required, and wear and tear on the warp threads and loom weights. The sample is based on Fragment 11 from Hedeby, a 2/2 twill with 5 wefts per cm. We decided to weave 1 m x 3 m (ca. 2 x 6 ell), which is the equivalent of a legal Icelandic Viking Age cloth measure. Since the aim of this sample was slightly different from the earlier samples and required a higher amount of yarn, it was decided to use machine spun yarn given extra twist on a modern spinning wheel. SV added twist to the weft yarn in September and MW added twist to the warp yarn in November. The weaving speed was 10-15 cm/hour. Sample 4 was ready to take off the loom on the 18<sup>th</sup> of December 2020.

In addition to the ordinary photo documentation used in the previous experiments, the production processes of these two samples were also documented using a time-lapse camera.

One last weaving experiment will be included in the project, that is to test in which way the weavers' capacity and experience influence the appearance of the weaving. The test is designed to provide information on if and how different techniques such as various warping and heddeling methods and the use of different tools such as different types of loom weights and weaving beaters, affect the appearance of the final fabric. This experiment will take place in January/February 2021.

All of the textile samples will be included in the Textile Tool Box, which was finished in December 2019 by Søren Ravn.

## **Part 2: Viking Age Male and Female Clothing**

Most of the analyses of the textile and skin fragments from Bjerringhøj and Hvilehøj, which form the basis of the reconstructed outfits, were more or less finished in the late 2019, but a few special analyses were executed in 2020.

Chemist Michelle Taube (MT) from NM carried out XRF-analyses (X-ray Fluorescence Spectroscopy) on several of the objects from Bjerringhøj and Hvilehøj. This is a non-destructive analytical technique used to determine the elemental composition of materials. MT tested the 2/1 twill with embroideries from Bjerringhøj C135a (fragment 7 and 9). In these textiles, a lot of iron was detected as well as large amounts of copper, especially in the embroidery yarns and this may possibly derive from the dyeing process.

The bead necklace from Hvilehøj (C4278) was analysed by Archaeologist Ulla Lund Hansen, University of Copenhagen and Conservator Torben Sode, who also made the reconstruction. During the analysis it was discovered that apart from the known preserved white, green, blue and yellow glass beads in combination with the amber and mountain crystal beads and the silver coin, the necklace also contained several gold foil beads. Altogether, this exclusive combination of beads has created a beautiful decoration that must have been placed in a row on the chest of the deceased.

Archaeobotanist Peter Steen Henriksen analysed samples from the inside of the Bjerringhøj pillow in order to detect and determine preserved macro fossils. Unfortunately, only mould was found and the pillow fill is thus still unknown.

In the autumn, we received the results of the 14C-dating samples taken last year. Physicist Marie Kanstrup, Department of Physics and Astronomy at University of Aarhus, analysed the samples. The results showed that all samples were dated to the later part of the Viking Age.

## *Reconstructions*

Reconstructions can be made on different levels, depending on how closely they should resemble the original textiles. In the Project Part 2, it was decided to focus is on the garment shape and visual details, whereas it was possible to cut corners in the production processes, as many different garment types were to be reconstructed. However, it quickly turned out that several of the fabric qualities were not available in any fabric store and therefore these were produced within the project. The yarn was either spun on a spinning wheel or a machine spun yarn was given extra twist on a spinning wheel in order to match the very hard twisted threads used in these textiles. Fibre analyses of the original textiles were compared to the yarns selected for the reconstructions. In this way, fibres and other materials used for the reconstructions match the original ones, whereas the production processes in most cases were optimized using modern tools.

The majority but not all textiles and fur/skin objects from Bjerringhøj and Hvilehøj were included in the construction of the two outfits. The excluded textiles are in most cases interpreted as not belonging to the clothing. As the textiles and fur/skin objects from Bjerringhøj and Hvilehøj are so fragmented and only contain few construction details, such as seams and sign of reuse or repair that can be related to the design of the original garments, it was decided to use known Scandinavian and contemporary more or less complete clothing finds as inspiration for the design and pattern for the outfits. The dye analyses guided the selection of colours chosen for the many different clothing items. When no dye results were available, the choice of colour is based on best match with the overall design, adjusted to what colours that could have been present under the specific preservation conditions.

The male outfit includes the following items: A beaver fur caftan, a linen tunic, a wool kirtle, a belt in wool and silk, a wool belt, a pair of trousers, two silk wrist cuffs and leather boots. The female outfit includes the following items: A linen dress, a red wool tabby dress with in-woven decorations, a marten fur cape with beaver fur edges and decorations in padded red tabby silk, red samite, a purple 3/1 twill band and a blue silk/silver/gold tablet-woven band, and goat skin shoes with the fur still on. The leather boots and the linen undergarments are not based on archaeological finds from the specific burials, but are based on comparative material. No headwear was made for the outfits.

The two models, Mads Dengsø Jessen and Sigrid Mannering have continuously been called in for fitting sessions of the different garments. From September to December 2020, Sigrid Mannering could not return to Denmark from her studies in Switzerland, due to the COVID-19 pandemic. Therefore, another female model was found, Ida Rebekka Mikkelsen, who is a student helper at the National Museum of Denmark.

Even though the textiles from Bjerringhøj and Hvilehøj are some of the most well-preserved from a Danish Viking Age burial context, there is still quite a gap between the archaeological finds and the finished reconstructed outfits. The many analysis results have been a great help and guide for the different production processes and the final design – but also somewhat of a millstone around the neck. Once the results of the fibre and dye analyses were ready, they could not be disputed and had to be incorporated in the design of the outfits, no matter what modern aesthetics would say. Although a lot of research, analyses and crafts work is put into the outfits, they are possibilities, not final truths.

### *Researchers and crafts people*

The archeological and scientific analyses are the base upon which the reconstructions are built. Luckily, many skilled researchers agreed to assist along the way. Some were already employed at the National Museum of Denmark, while others came from collaborating institutions such as University of Copenhagen, the Technical University of Denmark and University of Aarhus. Other analyses had to be done abroad, especially the dye analyses which were conducted in Brussels. Some again were conducted by independent researchers in Denmark.

The details and exquisite execution of the Viking Age textile work is striking and it is clear that materials were valued over working hours at the time. Much experience was needed to produce items of this quality. Finding modern crafts people with the same skills therefore proved to be a challenge, though luckily not impossible. Land of Legends in Lejre already housed several experienced crafts people within the fields of spinning, weaving, dyeing, embroidering, braiding, pattern constructing and wood and metal crafting. Experts in tablet weaving, needle binding, bead making, samite weaving, shoe making and fur tanning had to be found elsewhere in Denmark and the rest of Europe, such as Sweden, Norway, Poland and Great Britain. We are grateful for the expertise of all the people participating in the project:

- Anne Batzer, **Textile Dyer**, Denmark: Dyeing of textiles
- Anne Lisbeth Schmidt, **Conservator**, National Museum of Denmark: Microscopy of skin and fur
- Katerina Krizova (Ariadne Kordélla), **Textile Craftswoman**, Czech Republic: Tablet weaving
- Arne Jouttijarvi, **Materials Scientist**, Heimdal-archaeometry: Analysis of iron and gold objects
- Birgitte Kjelstrup, **Seamstress**, Denmark: Sewing of garments
- Carla Dove, **Scientist**, Smithsonian Institution, US: Analysis of feathers and down
- Carsten Gundlach, **Physicist**, Technical University of Denmark: CT scanning
- Chiara Villa, **Forensic Anthropologist**, University of Copenhagen: CT scanning
- Espen Kutschera, **Skin Craftsman**, Norway: Shoe making
- Fria Gemynthe, **Textile Technician**, Land of Legends: Embroidery
- Ida Demant, **Archaeologist**, Land of Legends: Weaving and pattern design
- Ida Rebekka Mikkelsen, **Student**, University of Copenhagen: Model for the female outfit
- Ina Vanden Berghe, **Scientist**, KIK-IRPA, Belgium: Dye analysis
- Irene Skals, **Conservator**, Emerita, Denmark: Fiber analysis and sewing of garments
- Lise Ræder Knudsen, **Conservator**, Vejle Conservation Centre: Analysis of tablet weaves
- Lone Bjørnskov-Bartholdy, **Textile Craftswoman**, Denmark; Needle binding
- Lone Brøns-Pedersen, **Clothing Constructor**, Land of Legends: Pattern construction
- Luise Ørsted Brandt, **Archaeologist**, University of Copenhagen: Species identification of skin and fur
- Mads Dengsø Jessen, **Archaeologist**, National Museum of Denmark: Model for the male outfit
- Marie Kanstrup, **Physicist**, University of Aarhus: 14C-dating
- Marie Louise Schjellerup Jørkov, **Forensic Anthropologist**, University of Copenhagen: Bone analysis
- Marie Wallenberg, **Weaver**, Sweden: Weaving of tablet-woven bands and other textiles
- Mia Lohse, **Textile Craftswoman**, Denmark: Fibre preparation
- Roberto Fortuna, **Photographer**, National Museum of Denmark: Photo and object documentation
- Signe Nygaard, **Conservator**, National Museum of Denmark: X-ray
- Signe Vind, **Archaeology Student**, University of Copenhagen: Spinner

- Sigrid Mannering, **Student**, University of Copenhagen: Model for the female outfit
- Theresa Emmerich Kamper, **Archaeologist**, UK: Analysis and sewing of skin garments
- Torben Sode, **Conservator**: Production of gold pendants and bead replicas
- Ulla Lund Hansen, **Archaeologist**, emerita, Denmark: Analysis of beads
- Vivi Lena Andersen, **Archaeologist**, Museum of Copenhagen: Analysis of shoes
- Åse Eriksen, **Hand Weaver**, Norway: Production of samite and silk tabby weaves

### *Exhibition in 2021*

A planned exhibition from December 2020 to March 2021 of the two outfits at the Museum of Cultural History in Oslo was first planned but eventually cancelled, due to the COVID-19 pandemic and the closing of the museum for the public. However, the museum is planning to show the outfits on their online webpage in 2021.

The two finished garments will be part of the new Viking Age exhibition at the National Museum of Denmark, planned to open in June 2021. Here, they will be exhibited in close relation to the original finds from Bjerringhøj and Hvilehøj.

## Meetings and collaborations

We have during 2020 had project meetings approximately once a month, either physically at NM, UCPH or LL, or online on Teams or Zoom. Minutes were taken at all meetings. Further we have held different meetings with our collaborators in Brede to show them the relevant archaeological objects, when this was physically possible.

## Photography and filming

Two photography sessions with Roberto Fortuna took place at NM in Brede. The first one, in February, photographing objects from Hvilehøj and textiles from the bog find of Vong. The second session, in November, focused on documenting the reconstructed outfits, with and without the models.

In October, UM and CR had a film session at NM in Brede and UM and EAS in the Viking Ship Museum on Roskilde with Micha Fuglede and her team, who is making films for the NM Viking exhibition.

A small film about the project and its crafts people is about to be finished. The raw film with the crafts people has been shot and only the clipping is missing.

## Workshops and conferences

Many planned workshops and conferences have been cancelled due to the COVID-19 pandemic.

- 14/3, Outreach workshop at the National Museum of Denmark. CANCELLED
- 18-23/5, NESAT in Oulu, Finland. CANCELLED
- 13/6, Outreach workshop at the National Museum of Denmark. CANCELLED
- 8-9/7, UM and CR participating in Fur Workshop in Jyderup with Theresa Emmerich.

- 17-21/8, CTR conference. Old textiles, more possibilities. CANCELLED
- 2/10, 38<sup>th</sup> Interdisciplinary Viking Symposium at the National Museum of Denmark. CANCELLED
- 30/10: Fashioning the Viking Age seminar, presentation the results of Project Part 1 & 2 for the public at the National Museum of Denmark. CANCELLED
- 30/10: Presenting Project Part 1 & 2 for the board members of the VELUX FOUNDATION at the National Museum of Denmark.
- 31/10: Fashioning the Viking Age seminar, presentation of the results of Project Part 1 & 2 for the press at the National Museum of Denmark. CANCELLED
- 25/11: Presenting the project for Her Majesty Queen Margrethe II at the National Museum of Denmark (private visit).

## Media and publications

### Instagram

Our Instagram profile, @fashioningthevikingage has expanded during the year and on the 31<sup>st</sup> of December 2020, the project had 1500 followers and 106 posts, the latest being the 18<sup>th</sup> of December about the weaving of Sample 3 at the Textile Laboratory at CTR. Our followers generally seem to like the profile and comments have only been positive.

### Facebook

The project has posted five new feeds on the Facebook site of DMO, NM until 31<sup>st</sup> of December 2020, the latest being a post about from the 23<sup>rd</sup> of June about the kirtles from Moselund and Kragelund, resulting in 832 reactions.

### Media and other outreach

The 24<sup>th</sup> of September, CR and UM made a Viking Age Fashion Quiz at the National Museum of Denmark for the general public.

The 11<sup>th</sup> October, Rane Willerslev mentioned the project on "Go' Morgen Danmark". Pictures of some of the replicas were shown.

### Lectures

- 17/6, CR presenting the project online, hosted by CTR at Zooms.
- 17/10, UM, EAS & MW presenting the project at Trelleborg.
- 6/9, ID presenting the project for "Tenen" in Lejre.
- 4/12, CR presenting the project online for SAXO students at UCPH, and other interested.

### Publications

In 2020, the following article was published:

Brandt, L. Ø., Mannering, U. 2020, Taxonomic identification of Danish Viking Age shoes and skin objects by ZooMS (Zooarchaeology by mass spectrometry), *Journal of Proteomics* 231, 104038.

<https://doi.org/10.1016/j.jprot.2020.104038>

Another article was submitted to *Antiquity* and will be published in the beginning of 2021:

Rimstad, C., Mannering, U., Jørkov, M.L.S. and Kanstrup, M. Lost and found: Viking Age human bones and textiles from Bjerringhøj (Mammen), Denmark. *Antiquity*.

Several other articles about the fibre and dye analyses are in progress and will be published in 2021. We are currently also working on an anthology about the new research results from Hvilehøj and Bjerringhøj. The book will be published by Jysk Arkæologisk Selskab, for which the project will need to raise 167.000 kr. Several applications for this funding have already been accepted, resulting in the following grants:

- Lilian og Dan Finks Fond: 25.000 DKK
- Farumgaardfonden: 25.000 DKK
- Den Letterstedtska Föreningen: (15.000 SEK) 11.000 DKK
- Elisabeth Munksgaard Fonden: 20.000 DKK.

Further, an application is sent to Queen Margrethe's II Archaeological Foundation with a deadline in February 2021.

## Preliminary results and future goals

The two project parts have worked in different ways reconstructing textiles and garments which has generated important new knowledge about how techniques, tools and materials affect the finished products and what elements are needed in order to give textiles and garments an authentic appearance. If a reconstruction is meant to have authenticity and a scientific value it is important to work systematically with relevant and correct archaeological sources or historical data. In this project it is the analyses results that have directed the design of the finished products, and these guidelines have resulted in a somewhat different look than what is usually experienced as a Viking Age design. In this way, a new and research-based foundation has been created for discussions on design and authenticity of Viking Age garments. Especially the analysis of the female burial from Hvilehøj has shown more extensive international contacts, regarding the use of exotic dye stuffs and decorative elements, than what is usually seen in relation to Scandinavian Viking Age women. This gives a new perspective to the role of Scandinavian women in a European context.

In spite of the COVID-19 pandemic the finishing of Project Part 1 and 2 has almost proceeded as planned. Online meetings have especially been used to keep in contact with the craftspeople in a period where working conditions have constantly changed and been restricted. Generally, our many collaborators have seen the participation in this project as a bright spot in an otherwise difficult time period. We are proud that we have been able to include and engage so many different peoples and capacities in the project, and we thank everybody involved for their efforts, patience and enthusiasm.

Project Part 3: Viking Age Clothing and Textile Catalogue is now scheduled to begin in January 2022 when CR returns from maternity leave. Fashioning the Viking Age is thus more or less paused one year from March 2021 to January 2022, while the publication plan is maintained by UM and EAS.

You can follow us on Instagram @fashioningthevikingage

*31<sup>th</sup> of December 2020/ Charlotte Rimstad and Ulla Mannering*