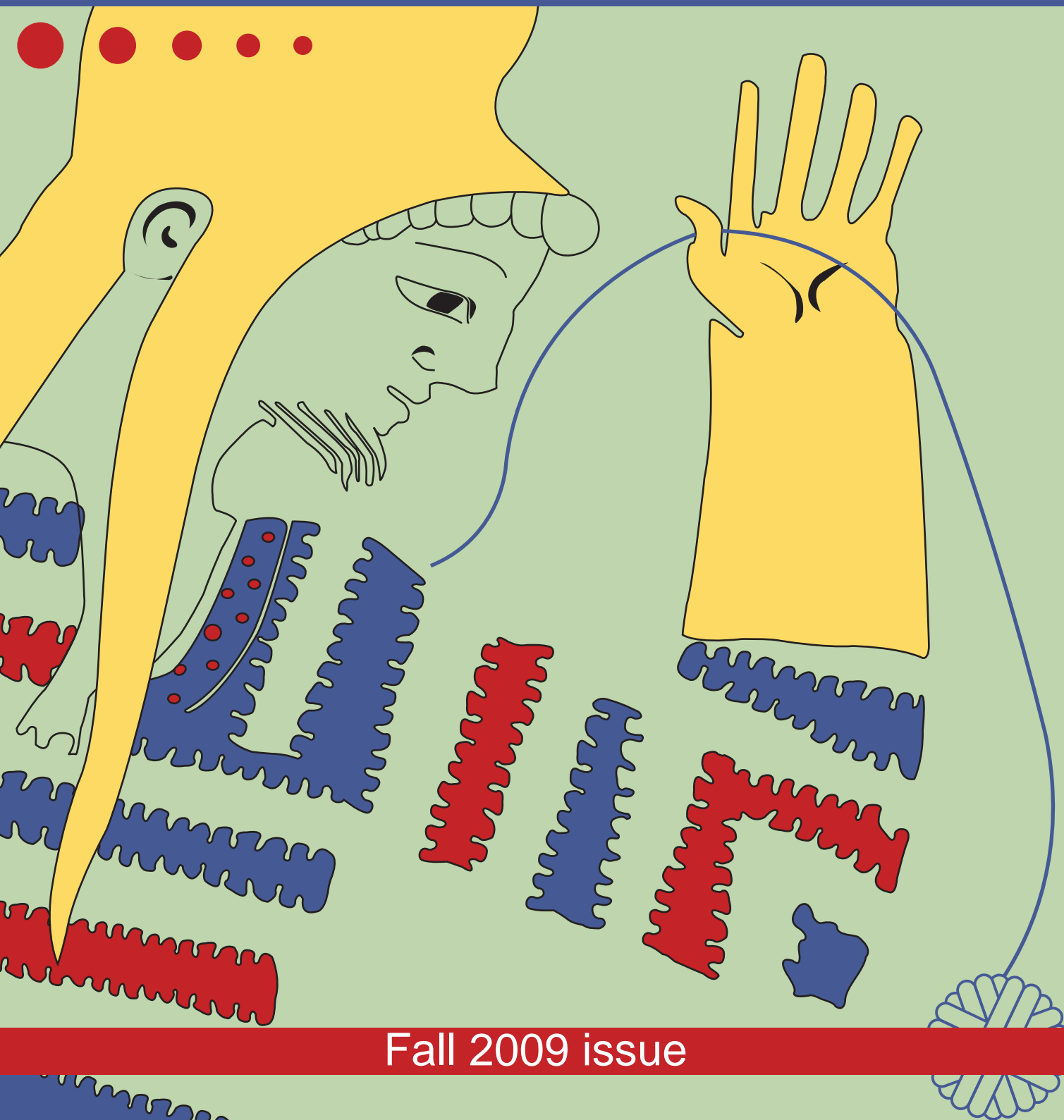


Nº  
49

# ARCHAEOLOGICAL TEXTILES NEWSLETTER



Fall 2009 issue

# Archaeological Textiles Newsletter

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Issue 49 includes articles about new radiocarbon dates and dye tests of old Migration Period finds from Norway, Roman textiles from the Varus battle in Germany, interesting new experiments in sprang technique and finally the latest news on the textiles from Qasr Ibrim in Egypt. We hope the readers will find the selection of articles interesting.

By now the ATN has found its present form and format in Copenhagen. We thank everyone for the support, comments, and the interesting contributions to the newsletter over the past two years. However, we would also like to strongly encourage researchers and readers to contribute with articles, reviews and news to the collection and creation of new and exciting information for the newsletter. Please also inform us about conferences, articles, books, websites and other relevant news.

As we frequently get requests from researchers about access to the articles published in the earlier ATN issues which are difficult to obtain in most public libraries, we have decided to create a new digital collection of prints of these issues: ATN 1-24 and ATN 25-49. These will be available from our website towards the end of 2010. We are glad to see the continuous interest in the newsletter thanks to the high standard of the contributions submitted over the course of its existence.

This year the CTR team went on a textile study tour to China. The purpose was to experience the Chinese textile culture, to learn more about silk production and meet new colleagues. The trip was successful in every way and has given us new perspectives on our own research and on other research traditions. We have also noticed that several travel agencies have understood the importance of arranging specialised textile tours that can be searched and found on the internet. We therefore encourage those of you who have already experienced exciting textile tours to share this with our readers, either through links to useful websites or short reviews.

After reporting the sad news about the closure of the Textile Conservation Centre in Southampton in the last newsletter, we are happy to announce that this summer The Danish National Research Foundation's Centre for Textile Research received funding for another five years research period. The CTR will thus continue to work at the University of Copenhagen in close collaboration with the National Museum of Denmark until July 2015. We also have good and exciting news from Textile Research Centre, Leiden (TRC), whose director Dr. Gillian Vogelsang-Eastwood reports the following:

"Over the last few years, the Textile Research Centre, Leiden (TRC) has been growing rapidly. As a result it was decided that we needed to move to larger premises. After an intensive search in the Leiden area, the TRC Board concluded that the ground floor premises of Hogewoerd 164 provided the necessary potential for growth. It is c. 300 sq m in size and has space for a gallery and shop, a lecture room, library and research area, offices, a depot and a large workroom. All of this means that the TRC can continue to develop in these difficult times. The TRC moved in August and will soon be opening its doors again. It will continue to offer a wide range of lectures, workshops, courses, as well as exhibitions, on various themes relating to textiles and dress."

The official opening will take place in March 2010 during the one-week International Textile Festival to be held in Leiden. We congratulate Gillian and look forward to hearing more from TRC and Leiden in future editions of ATN. In the meantime, the most current information can be found on the TRC website: <http://www.trc-leiden.nl/>

The society Friends of ATN will hold the next annual meeting in May 2010 in Copenhagen. The date will be announced in the society homepage [www.atnfriends.com](http://www.atnfriends.com) and we will also send out a call via e-mail. Suggestions for the agenda should be sent to one of the editors no later than the 1st of April 2010.

The subscription rate for 2010 will remain unchanged.

The editors

Sunniva Wilberg Halvorsen

# Dates and Dyes - New test results for the finds from Tegle and Helgeland, Norway

The two Norwegian peat bog textile finds from Tegle and Helgeland have recently received new attention, as they have been the focus of my MA thesis (Halvorsen 2008, forthcoming) and have been included in research by The Danish National Research Foundation's Centre for Textile Research on the Danish bog textiles. The finds have been re-investigated including tests for fiber quality, strontium isotopic tracing, dye analyses and <sup>14</sup>C dating. This article will present the results of the <sup>14</sup>C dating and of the dye analyses.

Textiles from peat bogs are very rare finds in a Norwegian archaeological context. Not only are these two finds exceptional being in such a good state of preservation, but they are also the only Early Iron Age peat bog textiles found in Norway.

Tegle and Helgeland are located in the south-western region of Norway and the textiles were found in 1921 and the 1930s respectively. The Tegle find consists of a textile bag (Fig. 1), which contained a prepared warp (Fig. 2), several different bundles of yarn, raw wool, a sprang tube, a twill textile fragment and a



Fig. 1. The bag from the Tegle find and some of its contents. © Arkeologisk Museum in Stavanger, Norway.

tablet-woven fringe. It is a combination of new and unfinished items with worn and fragmentary items. The find is frequently referred to when the use of the warp-weighted loom is discussed, because of the unique warp and the presence of several tablet woven starting and finishing boarders (e.g. Hoffmann 1964). The Helgeland find consists of several textile fragments, raw wool and some human hair. The items presently listed as belonging to this find were found during the period of 1929-1932 from varying parts of the bog. Already in the beginning of the 1900s textiles were reported but they were all discarded. The most spectacular item in this find is a well preserved, long and wide tablet-woven band (Fig. 3). Several of the textile fragments have seams that indicate they were originally parts of garments. The preserved textiles from both Tegle and Helgeland are all made of wool.

## **<sup>14</sup>C Dating**

The <sup>14</sup>C dating was carried out by the laboratory for radiological dating at NTNU in Trondheim, Norway (Table 1). Pål Svanem at the NTNU lab has developed a method for cleaning archaeological textiles that have been treated with conservation substances. It is known that the Tegle textiles were conserved with modocol; there are no records of what was done to the Helgeland textiles. The dating of the Tegle and Helgeland finds was carried out partly in order to test the new cleaning method, and it gives great hope for the dating of other museum collection textiles that have endured early experimental textile conservation methods.

The Tegle find is a closed find. It consists of several items, all of them found inside a textile bag (Fig. 1), and hence deposited together at the same time, though there is no doubt that some of the fragments were old and used when deposited. Only one sample, taken from some of the loose threads in the find, was used to date it. The Tegle find had the <sup>14</sup>C date of 1560 +/- 25 years BP. Calibrated, this gives a date AD

445-545 (68.2% probability (1 sigma)).

The first person to investigate the Tegle find was Hans Dedekam (1924), a pioneer in the research of prehistoric textiles in Norway. In addition to his technical and interpretive analysis of the find, he also proposed a dating of the textiles to “the 3rd or 4th century AD” (Dedekam 1924, 25). The dating was based on comparative finds from the Danish and North German bogs. Later, Bjørn Hougen dated the Tegle find to the Migration period, AD 400-600 (Hougen 1933, 73). This dating was based on the comparison with the Helgeland textiles and his

wide knowledge of prehistoric textiles from graves in Norway (Hougen 1935). The 14C dating of the Tegle textiles has now proved Hougen’s interpretation to be reliable and placed the find securely in the Migration Period, which in Norway belongs to the last part of Early Iron Age (Solberg 2003, 128).

The preserved textile fragments from Helgeland were collected within a 20 x 1 m area. This poses some important problems for the dating of the find, as we do not know whether all textiles were deposited at the same time, the duration of time span during which they were deposited, or how the fragments relate to



**Fig. 2. The warp from the Tegle find. © Arkeologisk Museum in Stavanger, Norway.**

each other. This means that the date of one fragment cannot be applied to the whole find. On the other hand, as the vast number of fragments could not be dated, two samples were selected as representative of the find. One was taken from the B-group of the broad tablet-woven band (Fig. 3), and another from the D-group of 2/2 twill fragments. The B-sample was 14C dated to 1595 ± 25 years BP. Calibrated, this gives the date AD 425-535 (68.2% probability (1 sigma)). The D-sample was 14C dated to 1590 ± 25 years BP, and calibrated to AD 430-535 (68.2% probability (1 sigma)). The difference of only five years between



**Fig. 3. One of several fragments of the broad tablet-woven band from the Helgeland find. © Arkeologisk Museum in Stavanger, Norway.**

Find	<sup>14</sup> C date	Calibrated date
Tegle	1560±25BP	AD 445-545
Helgeland B	1595±25BP	AD 425-535
Helgeland D	1590±25BP	AD 430-535

**Table 1. <sup>14</sup>C dates of the Tegle and Helgeland finds.**

the two samples indicates that they were probably deposited within a rather short time span.

Already in 1933, Bjørn Hougen dated the Helgeland find to the Migration Period (Hougen 1933). The <sup>14</sup>C dating supports his interpretation. An interesting aspect of this <sup>14</sup>C dating is the placing of the technique of the broad tablet-woven band within the Early Iron Age tablet weaving tradition. It combines the broad, simple band-weaving known from Roman Iron Age, with the more advanced patterning techniques common during the following Migration Period.

### Dyes

Samples from the Tegle and Helgeland finds have been tested for traces of natural organic dyes by Ina Vanden Berghe at the Royal Institute for Cultural Heritage in Belgium, and the information presented here is based on her analytical report (Vanden Berghe 2008; also cf. Vanden Berghe et al. 2009). The amount of dyes left in prehistoric fibres is generally very low, so the results presented here are based on trace amounts of dyes. Some dyes are better preserved than others. This means that we cannot exclude that textiles with no dyes detected have not been dyed originally.

As can be seen from Table 2, no dyes were detected in the sample taken from a warp thread belonging to the Tegle warp. Neither were dyes detected in samples from the sprang tube, the warp threads of the woven bag, or in the bundles of thick yarn. On the other hand, traces of dyes were found in a fragment of a fine twill, and in the long tablet-woven fringe. A sample from the warp in the twill fragment contained alizarin and indigotin. The weft in the twill fabric was not tested. The sample from the warp thread in the tablet-woven fringe tested positive for alizarin and indigotin. The weft thread which creates the fringes, contained alizarin and traces of purpurin. The combination of indigotin and alizarin indicates that the warp threads in the table-woven band were probably purple.

Three samples were selected from the Helgeland textiles. One was taken from group C, containing twill fragments with hemmed edges that possibly come from a garment. This sample tested positive for indigotin. Two other samples were taken from

the broad tablet-woven band. The sample belonging to the ground weave of the band contained luteolin, quercetin and a trace of apigenin. The sample from the pattern weave contained luteolin and a luteolin-like component. The dye sources of these components are all related to yellow dyes.

The possible yellow dye sources include weld, saw-wort, dyers broom or chamomile. Woad is the most likely source for blue indigotin in Scandinavia during the Early Iron Age. Both alizarin and purpurin indicate a red dye. Local dye plants that could give a red dye would have had purpurin as its main indicator. A dominance of alizarin on the other hand, indicates a madder-type dye. Madder and woad were probably import products during the Migration Period in Norway, either as dyes or in dyed textiles.

### Conclusion

The three new <sup>14</sup>C dates place the Tegle and Helgeland finds within the Norwegian Migration period, AD 400-575.

The Tegle items assembled in a coarsely woven and sewn bag show a wide variety of textile objects in different stages of completion and qualities. The unfinished products, such as bundles of yarn, are made of a rather thick and unevenly spun yarn, while the worn textile fragments are relatively fine. The latter include the tablet-woven fringe and the twill fragment, which the test results show were dyed with woad and a madder-like dye. The dye test results also show that the tablet-woven band was purple with red fringes, and that the twill textile was purple. The twill textile was definitely worn out before it was put in the bag, and the fringe still has some loose sewing threads which indicate that it had been attached to another object or garment. The dye combination of indigotin and alizarin in these two items, and their shared high quality, indicates that they might have belonged together. The dye combination is very special compared to any of the other fragments included in the test (Vanden Berghe 2008, 8). In an earlier study of Norwegian and Danish Iron Age textiles, including textiles from some of the wealthy chieftain graves from this period, Walton identified madder-like dye in the textiles from particularly rich burials at Veiem, Snartemo V and Evebø-Eide in Norway (Walton 1988,

Object ID	Sample ID	Warp / Weft	Sample Description	HPLC-DAD Detected Dye components	Applied extraction(s)
<b>Tegle, Norway (AD 445-545)</b>					
S4850(1)	189	warp	medium brown	no dyes detected	1
S4850(2)	190	warp	reddish brown	alizarin and indigotin	1
S4850(2)	191	weft	reddish brown	alizarin and trace of purpurin	1
S4850(3)	192	warp	dark brown	alizarin and indigotin	1
S4850(4)	193	sprang	medium brown	no dyes detected	1
S4850(5)	194	warp	dark brown	no dyes detected	1
S4850(6a)	195	yarn	dark brown	no dyes detected	1
<b>Helgeland, Norway (AD 425-535)</b>					
S5960a	196	tablet weave	medium brown	luteolin, quercetin and trace of apigenin	1
S5960a	197	tablet weave	very light brown	luteolin and luteolin-like	1
S5960c	198	system A	medium brown	Indigotin	1

**Table 2. Textiles of the Tegle and Helgeland finds selected for dye analyses and the results.**

148-149). The purple and red colour from the Tegle find places these among the other exceptional Migration Period textile finds.

Woad dye seems to be more common than madder red, and indigotin has been found in the rich Norwegian Migration Period graves of Hallem, Øvre Berge, Veiem, Sætrang, Snartemo V and Enebø-Eide (Walton 1988, 148). The indigotin dye in the Helgeland textiles comes from a fragment that might be a piece of garment. This fragment does not look very different from the rest of the rather homogenous collection of fabrics in the find. This might indicate that the other Helgeland fragments are from high quality textiles as well, but too little is known about the relationship of the fragments in order to draw further conclusions. The truly exceptional part of the Helgeland find consists of the many well preserved pieces of a broad tablet-woven band. The ground weave now has a dark, purple-reddish colour, and the pattern weft has a light golden brown colour. The results of the dye analyses thus were a bit surprising. Although the ground weave has a red-purplish hue, no traces of red were discovered. The combination of luteolin, quercetin, and trace of apigenin come from a yellow dye. The pattern weft had luteolin and luteolin-like components, corresponding to the yellowish hue in the pattern. These results indicate that the band was

made in two shades of yellow.

The interesting results of the dye analyses have cast new light upon these two finds. The presence of rare imported dyes is particularly intriguing. The dye tested textiles from Tegle and Helgeland are assumed to have been made locally. This indicates that it was the dye-stuffs that were imported, not the finished product. We do not know how rare such dyes were, as only a few contemporary textiles have been tested so far, and these come mainly from very rich graves. It is interesting to note however, that even a rather plain fabric, such as the Helgeland C-group sample, proved to have been dyed blue. It shows that there might still be new information to extract from the large amount of textile fragments hidden in museum collections.

As the two finds both come from a bog context, further questions arise about possible social and religious explanations for how and why the textiles ended up in the bog. The fact that some of these textiles were very fine, gives us reason to believe that they once belonged to persons from a higher social strata, indicating that the social and economic value of the textiles might be important reasons why they were deposited in the bog.

**Bibliography**

Bender Jørgensen, L. (1986) Forhistoriske tekstiler i Skandinavien. *Nordiske Fortidsminder*, serie B, Bind 9. København.

Bender Jørgensen, L. (1992) *North European Textiles: until AD 1000*. Århus.

Dedekam, H. (1924) Et tekstilfund i myr fra romersk jernalder. *Stavanger Museums Aarshefte* 1921-24, 3-29, 1-57.

Hald, M. (1950) Olddanske tekstiler: komparative tekstil- og dragthistoriske studier paa grundlag af mosefund og gravfund fra jernalderen. *Nordiske Fortidsminder*, bind Nr 5. København.

Halvorsen, S. (2008) *Myrfunn av tekstiler – en ny undersøkelse av funnene fra Tegle og Helgeland*. Unpublished MA thesis, University of Bergen.

Halvorsen, S. (forthcoming) Norwegian Peat Bog Textiles: Tegle and Helgeland Revisited. In: Eva Andersson Strand, Margarita Gleba, Ulla Mannering, Cherine Munkholt and Maj Ringgaard: *North European Symposium for Archaeological Textiles X*, Oxbow Books. 97-103.

Hoffmann, M. and Trætteberg, R. (1959) Teglefunnet. *Stavanger museums årbok* 1959, 41-60.

Hoffmann, M. (1964) The warp-weighted loom: *Studies in the history and technology of an ancient implement*. Oslo, Universitetsforlaget.

Hougen, B. (1933) Helgelandsfunnet. Et myrfunn av tekstiler fra eldre jernalder. *Stavanger Museums Årshefte* 1930-32, 55-75.

Hougen, B. (1935) Snartemofunnene: Studier i folkevandringstidens ornamentikk og tekstilhistorie. *Norske oldfunn*, bind 7. Oslo.

Solberg, B. (2003) Jernalderen i Norge, ca. 500 f.Kr.-1030 e.Kr. Oslo.

Walterstorff, E.v. (1928). En vevstol och en varpa. *Fataburen* 1928, 143-159.

Walton, P. (1988) Dyes and Wools in Iron age Textiles from Norway and Denmark. *Journal of Danish Archaeology* 7, 144-158.

Vanden Berghe, I. (2008) *Analysis Report. Archaeological textile fragments from Danish peat bogs*. Unpublished analysis report from the Royal Institute for Cultural Heritage, Laboratories, Material and Techniques.

Vanden Berghe, I. Gleba, M. and Mannering, U. (2009) Dyestuffs from Early Iron Age Scandinavian peat bog textiles. *Journal of Archaeological Science* 36, 1910-1921.

Sylvia Mitschke

# Die textilen Reste von der Varusschlacht

## Kurzer Überblick

Die Geschichte ist hinlänglich bekannt: Im Herbst des Jahres 9 n. Chr. erlitten die römischen Legionen unter Publius Quinctilius Varus eine vernichtende Niederlage gegen die von dem Cheruskerfürsten Arminius angeführten Germanen. Ebenso umstritten wie die strategische Bedeutung der Schlacht ist ihre Verortung. Vermutet werden verschiedene Plätze in Ostwestfalen, Norddeutschland und in den Niederlanden.

Neuere Forschungen machen jedoch wahrscheinlich, dass sich zumindest eine Gefechtssetappe auf offenem Feld in Kalkriese im Osnabrücker Land abgespielt hat (Rost 2009). So konnten etwa die Untersuchungen der dort archäologisch geborgenen Knochen und Knochendeponierungen plausibel machen, dass die aufgefundenen Tiere und Menschen erst nachdem Weichteile, Muskel- und Sehnenverbindungen völlig vergangen waren in Gruben zusammengetragen wurden. Dieser Befund deckt sich mit der schriftlichen Überlieferung (Tacitus, Ann. I 61-62), in der Germanicus sechs Jahre später in einer Aktion im Rahmen seines Germanienfeldzugs die verbliebenen menschlichen Überreste bestatten ließ. Auch die an den Knochen festgestellte Verwitterung lässt sich

nach Einschätzung des Archäozoologen Hans-Peter Uerpmann damit in Einklang bringen (Rost et al. 2007, 112).

Die genaue Betrachtung der Fundzusammensetzung und -verteilung lieferte außerdem den Nachweis von Leichenfledderei nach Beendigung des Kampfgeschehens (Rost und Wilbers-Rost 2007). Offenbar wurden die Toten direkt vor Ort von den germanischen Plünderern beraubt, was u.a. die überwiegend kleinteiligen Metallreste mit erkennbaren Spuren von Zerstörung belegen (Wilbers-Rost 2008, 347).

Was nach Plünderung und jahrelanger freier Bewitterung übrig blieb, bildet den Bestand an erhaltenen archäologischen Zeugnissen. Im Zuge des EU-Projekts „Clothing & Identities. New perspectives on textiles in the Roman Empire (DressID)“ konnten nun die wenigen verbliebenen textilen Reste von der Varusschlacht untersucht werden. Es handelt sich dabei um vier Fragmente, die mehr oder minder zufällig durch den Kontakt mit eisen- und kupferhaltigen Metallen bewahrt wurden (vgl. Tabel 1).

Objekt	Fundstelle	Fund Nr.	Abb. Nr.	Fadenkonstruktion	Flächenkonstruktion
Fadenbündel	13/8/50	17072/ 17073	1	z/s-zweifach, Ø 0,8 – 1 mm	-
Beschlagfragment	13/8/105, Schnitt 1	16	2	z-einfach, Ø 0,4 – 0,6 mm	Leinwand, 10 – 12 Fd./ cm
Beschlagfragment	13/8/105, Schnitt 1	21	3	z-einfach, Ø 0,4 – 0,6 mm	Leinwand, Dichte nicht feststellbar
Münze mit textiler Umhüllung	13/8/50	21430	4	z-einfach, Ø 0,6 – 0,8 mm	Leinwand, 18 – 21 Fd./ cm

Tabel 1: Übersicht zu den textilen Resten von der Varusschlacht

## Die Textilfunde

Infolge stattfindender Wechselwirkungen kam es zu einer chemischen Verbindung zwischen Metall und Textil, in deren Folge die mit Eisen kombinierten Elemente nahezu vollständig durch Korrosion ersetzt und auf diese Weise im Prinzip abgeformt wurden. Kupferionen haben zudem eine toxische Wirkung, die die Entstehung von mikrobiellem Befall verhindern und so maßgeblich zur Erhaltung der organischen Substanz beitragen konnte, so geschehen im Falle des untersuchten Fadenbündels (Tabel 1). Die Geschwindigkeit der Reaktion ist dabei zunächst von der Art der verbundenen Materialien abhängig; so korrodiert beispielsweise Eisen prompter als Kupfer. Beeinflussende Faktoren in diesem Zusammenhang sind außerdem pH-Wert, Temperatur, Bodenart sowie die Anwesenheit etwaiger Farb- oder Schadstoffe (Fischer 1997, 18). Eine Beurteilung, wie schnell die Prozesse im Bereich der beiden Fundstellen in Kalkriese abgelaufen sind, ist aufgrund der vielen Unbekannten allerdings schwierig.

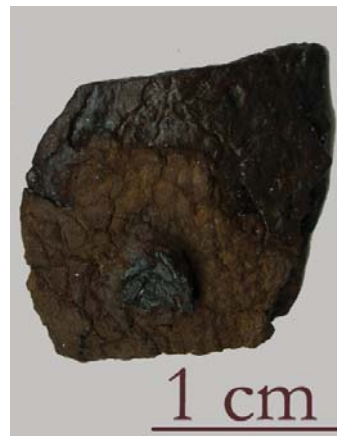
Als verwendete Rohstoffe konnten mittels der durchgeführten optischen Analysen an allen Funden Bastfasern, also die aus dem Stängel verschiedener Pflanzen, wie etwa Flachs, bestimmt werden. Der hohe Feinheitsgrad von 10 bis 15 µm und der – so weit erkennbar – vollständige Grad des Aufschlusses



**Abb. 1. Fadenbündel. Anhaftend finden sich Spuren von sowohl Eisen- als auch Kupferkorrosion.**

© REM, Mannheim.

der Einzelfasern sprechen tatsächlich für Leinen. Es kann somit ferner davon ausgegangen werden, dass das die Funde umgebende Erdreich hinsichtlich seines pH-Werts eher im alkalischen Bereich lag, der für die Erhaltung cellulosischer, nicht aber proteinischer Materialien, wie etwa Wolle, förderlicher ist. Die Bastfasern waren allesamt in z-Richtung zu Garnen versponnen (Tabel 1). In dem Fall des erhaltenen Bündels aus sechs kurzen Einzelfäden waren diese noch mal in s-Richtung miteinander verzwirrt. Daran festgestellte Spuren mechanischer Abnut-



**Abb. 2. Beschlagfragment mit anhaftenden textilen Resten unter und um einen vorhandenen Niet.**

© REM, Mannheim.



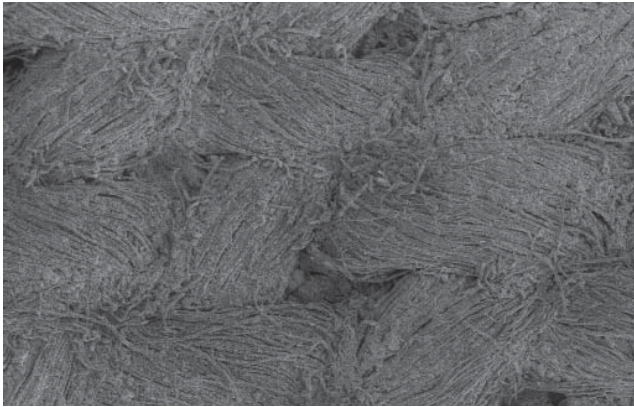
**Abb. 3. Beschlagfragment mit anhaftenden textilen Resten unter und um zwei vorhandene Niete.**

© REM, Mannheim.



**Abb. 4. Münze mit textiler Umhüllung. Oben links wird ein Stück der Metalloberfläche sichtbar.**

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**Abb. 5. Rasterelektronische Aufnahme der Gewebeerfläche der textilmüllten Münze. Erkennbar werden Spuren mechanischen Abriebs.**  
© CEZA, Mannheim.

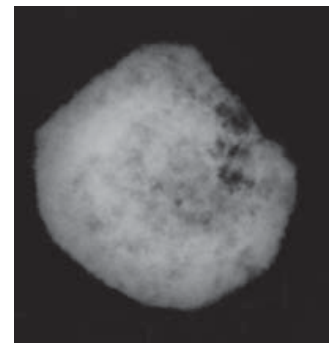
zung können als Indiz dafür gewertet werden, dass die offenbar zur Erhöhung der Festigkeit bewusst zu einem Verband zusammengeführten Zwirne ehemals etwas gehalten oder getragen haben. Anhaftende Korrosionsreste sowohl von Eisen als auch Kupfer zeugen von dem Kontakt des Fadenbündels mit einem Metallgegenstand (Abb. 1).

Die übrigen Reste waren webtechnisch zu textilen Flächen in ausgewogener Leinwandbindung weiterverarbeitet worden (Tabel 1). Zunächst fanden sich an zwei Beschlagfragmenten unter und in der Umgebung von Befestigungsnieten Reste von zum Teil mehrlagigen Textilgeweben mittlerer Qualität (Abb. 2, 3). Ihre Lage zeigt an, dass Metall und Textilien auch im Gebrauch mit dem unidentifizierten, beschlagenen Gegenstand fest verbunden waren, der Beschlag also ehemals mit Stoff kaschiert war. Möglicherweise handelt es sich daher um einen Schutzüberzug eines Rüstungsbestandteils o.ä. Von besonders guter Erhaltung erschien eine nahezu vollständig in ein Gewebe eingeschlagene Münze. Lediglich auf einer Seite wurden randlich einige Millimeter des eingeschlagenen Metallkörpers sichtbar (Abb. 4). Verzüge im Fadenverlauf deuteten darauf hin, dass der relativ feine Stoff stramm um den Gegenstand gezogen und in diesem Zustand ehemals, z.B. über eine nicht erhaltene Naht, fixiert gewesen sein muss. Als erkennbare Verdickung markierte sich an einer Seite des Gewebes eine über eine zweibindige Kette verstärkte Webekante.

Im Rasterelektronenmikroskop erkennbar wurden um die 10 µm feine, aber stark verkürzte Faserbruchstücke, was auch hier auf einen fortgeschrittenen Abbau des textilen Rohstoffs schließen ließ. Deutlich wurden auch die oberflächlich am Gewebe anhaf-

tende Verschmutzung und Spuren mechanischen Abriebs, die möglicherweise vom Tragen der umhüllten Münze in der Art eines Amuletts o.ä. herrühren oder aber von einem vorherigen Gebrauch des Gewebes (Abb. 5).

Der Münztyp ist bisher unbestimmt, bei schräger Beleuchtung hebt sich jedoch ein rundliches bis spiralförmiges, leicht aus der Mitte verschobenes Oberflächenprofil ab, das auch beim Röntgen als heller Bereich erkennbar wird (Abb. 6). Dort wird auch deutlich, dass der Rand des umhüllten Metallgegenstands nicht rund ist, sondern einen eher unregelmäßigen Verlauf zeigt. Bei dem verwendeten Metall ist anhand optischer Kriterien von Eisen als Rohstoff auszugehen, wengleich auch zwischen den Bindungspunkten immer wieder kupfergrüne Korrosionsprodukte sichtbar werden. Eventuell könnte eine EDX-Untersuchung (Energiedispersive Röntgenspektroskopie) des am Rand freiliegenden Metalls zur Klärung des Materials beitragen.



**Abb. 6. Röntgenaufnahme der textilmüllten Münze. Innerhalb der unregelmäßigen Kontur setzt sich hell ein rundliches bis spiralförmiges Oberflächenprofil ab.**  
© Peter Will, REM, Mannheim.

### Zusammenfassung

Gegenüber der enormen Größe des Schlachtfelds in Kalkriese von ca. 30 km<sup>2</sup> nehmen sich die von dort überlieferten Stoffe mit einer Fläche von etwa 15 cm<sup>2</sup> plus ein paar Fädchen außerordentlich bescheiden aus – zumal, wenn man sich allein die Zahl der im Kampf besiegten römischen Legionen samt Hilfstruppen und Tross zu vergegenwärtigen versucht. Möglicherweise lässt sich daher für die Textilien ein ähnliches Schicksal wie auch für die Metallfunde vermuten. Es kann davon ausgegangen werden, dass zum Beispiel auch die in großer Menge vorhandene textile (Schutz-)Kleidung, Feldzeichen, Transportbehältnisse, Sanitätsausrüstungen und vielleicht sogar Zelte – soweit noch irgend verwendbar – eine begehrte Kriegsbeute darstellten. Bereits im Zusammenhang mit den späteren Übergriffen der Germanen auf römisches Gebiet jenseits des Rheins konnte nachgewiesen werden, dass Textilien außerdem auch zur Verpackung geraubter Metallgegenstände verwendet



wurden (vgl. Beobachtungen am Hortfund von Neupotz/3. Jahrhundert n. Chr. bei: Mitschke 2006). Folgt man im Weiteren der schriftlichen Überlieferung, kann als wahrscheinlich gelten, dass die dann noch auf dem verwaisten Kampfplatz zurückgelassenen Textilien bei der Ankunft des Germanicus überwiegend bereits in den biologischen Kreislauf eingegliedert waren.

Insgesamt vermögen die untersuchten textilen Reste von der Varusschlacht damit nur ein kleines Schlaglicht auf die Gesamtmenge an Textilien zu werfen, die einmal vorhanden gewesen sein muss. Gerade deswegen sind sie aber auch sehr bedeutsam.

### Danksagung

Mein ausdrücklicher Dank geht an Susanne Wilbers-Rost für die Erlaubnis, die Stücke publizieren zu dürfen, außerdem danke ich an dieser Stelle Susan Möller-Wiering für den freundlichen Anstoß dazu.

### Literatur

Fischer, A. (1997) *Reste von organischen Materialien an Bodenfunden aus Metall. Identifizierung und Erhaltung für die archäologische Forschung*. Dipl. Arbeit Institut für Museumskunde an der Staatlichen Akademie der Bildenden Künste. Stuttgart.

Mitschke, S. (2006) Untersuchung der textilen Reste. In: Historisches Museum der Pfalz (Hrsg.), **Geraubt und im Rhein versunken**. *Der Barbarenschatz*. 182. Speyer.

Rost, A. (2009) Schlachtfelder in der archäologischen Überlieferung – die Fallstudie Kalkriese. *Archäologie in Deutschland* 25: 34-37.

Rost, A. und Wilbers-Rost, S. (2007) Überlieferungsprobleme von Schlachtfeldern – das Beispiel „Kalkriese“. *Local land & soil news* Nr. 20/ 21: 11-13.

Wilbers-Rost, S., Uerpmann, H.-P., Uerpmann, M., Großkopf, B. und Tolksdorf-Lienemann, E. (2007) Kalkriese 3. Interdisziplinäre Untersuchungen auf dem Oberesch in Kalkriese. Archäologische Befunde und naturwissenschaftliche Begleituntersuchungen. *Römisch-Germanische Forschungen* 65. Mainz.

Wilbers-Rost, S. (2008) Kalkriese – Überlieferungsbedingungen für Militärausrüstung auf einem römisch-germanischen Schlachtfeld. In: A. Abegg-Wigg, A. Rau (Hrsg.) Aktuelle Forschungen zu Kriegsbeuteopfern und Fürstengräbern im Barbaricum. *Schriftenreihe des Archäologischen Landesmuseums, Ergänzungssreihe Band 4*, 345-353. Neumünster.

Dagmar Drinkler

# Tight-Fitting Clothes in Antiquity – Experimental Reconstruction

Many works of ancient art show figures who stand out by wearing tight-fitting and strikingly patterned garments, especially hose. Greek vase painting of the fifth century BC in particular has a lot of such depictions (Figs: 1-2). Thanks to the important recent work on colour reconstruction by Vinzenz Brinkmann and his team (Brinkmann 2004; Brinkmann et al. 2008), Classical Greek sculpture now also offers important examples, as for example the image of Paris as archer from the western gable of the Temple of Athena Aphaia, today in the Glyptothek in Munich (Fig. 3), or the so-called Persian horseman in the Acropolis Museum in Athens (Fig. 6). The figures who are depicted wearing such hose are not Greeks but always foreigners such as Scythians and Persians, or the mythical Amazons.

How were these tight-fitting hose produced? Nothing is known about the production technique and there are no archaeological finds that could shed light on this matter. Literary sources also offer little help: the ancient historian Herodotos merely tells us that the Scythians and Persians wore trousers made of leather (Calmeyer 1975, 474) and actual examples of felt stockings have been found in the frozen Scythian tombs in Siberia (Rudenko 1970, 95). To secure a close fit seen in the iconography, even after having worn them for a long period of time, the material that such hose were made of must have been very elastic.

Usually, to make trousers or hose, two or more pieces of cloth are sewn together. If the cut of the hose is wide enough they allow for sufficient movement. The tight-fitting and patterned hose and upper garments depicted in ancient Greek images are unlikely to have been produced from woven or felted material because these materials do not stretch very much. Cut on the bias, they would be more elastic but the pattern would be diagonal, according to the cut. Knitting was not yet invented at that time, so the only

technique available to produce elastic textiles was sprang. Sprang is a Scandinavian term for an open-work textile, but recently it has been applied to a plaiting method on stretched threads (Collingwood 1999, 34). This technique is attested by archaeological finds, such as hairnets from prehistoric times (Hald 1980, 31, 59). Experiments with this technique show that it could also be used to create the tight-fitting and strikingly patterned garments depicted in ancient art.

Unlike the loom-woven textiles, which are produced through the interaction of two systems of threads (i.e. warp and weft), sprang is produced by manipulating only one system of threads, which are consequently positioned not at right angles to each other but diagonally. A crucial point in sprang is that the stretched threads are not several threads like warp threads used for weaving, rather sprang is produced with a continuous thread that is placed around a rod at the upper and lower ends respectively. The threads have to be available at all times in their complete length, which means they cannot be wound up. The extent of elasticity in sprang is related to the material used (e.g. wool, linen, silk or cotton), the strength and twist angle of the threads, and finally the method of working.

Simple, schematic sketches that show the interlinking of threads in sprang can be found in many publications. They suggest a loose and open-work structure because in this way the textile is always shown as if stretched, to explain how the thread is placed in the course of the production. In a relaxed position, however, the sprang textiles very often have tight and solid surfaces that have ridges similar to a woven twill. This solid, closed-work sprang technique only becomes apparent when a textile is finished, indicating that the technique offers various possibilities.

Furthermore, elasticity cannot be depicted in art very



Fig. 1. Amphora 2342, 430 BC, Munich, Staatliche Antikensammlung (From Starke Frauen 2008, cat. 7).



Fig. 2. Bowl 2644, c. 480 BC, Munich, Staatliche Antikensammlung (From Starke Frauen 2008, cat. 21).



Fig. 3. Colour reconstruction of Paris as archer from the western gable of the Aphaia-Temple, c. 490–480 BC, by V. Brinkmann, Munich Glyptothek. (From Brinkmann 2004).



Fig. 4. Simple vertical stripes are obtained by interlinking. By intertwining the colours alternately one can obtain a small zigzag pattern. (© Drinkler).

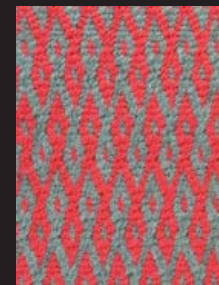


Fig. 5. Double zigzag pattern as found on the Paris sculpture. (© Drinkler).



Fig. 6. Colour reconstruction of so-called Persian horseman in the Acropolis Museum in Athens, c. 490 BC by O. Primavesi (From Brinkmann et al. 2008).



Fig. 7. Two-layered sprang with long lozenge pattern as found on the Persian horseman. (© Drinkler).



Fig. 8. Detail on amphora HA 120, c. 500 BC, Würzburg, Martin von Wagner Museum (From CVA Würzburg 1981)



Fig. 9. Horizontal stripes with uneven borders (© Drinkler).



Fig. 10. Detail on bowl Pell. 278, c. 450 BC, Bologna, Museo Civico (From CVA Bologna 1960)

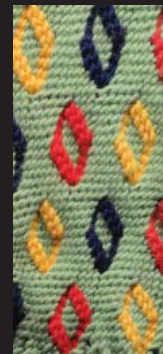


Fig. 11. Circle patterns (unstretched) on a plain ground (© Drinkler).



Fig. 12. Amphora 2342, 430 BC, Munich, Staatliche Antikensammlung (From Starke Frauen 2008, cat. 7).



Fig. 13. Bowl 2644, c. 480 BC, Munich, Staatliche Antikensammlung (From Starke Frauen 2008, cat. 21).



Fig. 14. Colour reconstruction of Paris as archer from the western gable of the Aphaia-Temple, c. 490–480 BC, by V. Brinkmann, Munich Glyptothek. (From Brinkmann 2004).



easily. Hence, textiles need to be touched in order to be understood.

### **The patterns of the hose and their application in sprang**

What is ingenious and stunning at the same time is the fact that all patterns found so far in painting and sculpture can be created easily in sprang. Some of the patterns can even be produced in different sprang techniques. Simply by interlinking the threads of one colour a plain braid can be achieved. By choosing several colours for the threads one can obtain vertical stripes. All conceivable variations in the width of the stripes and the combination of colours are possible. By winding up the stretched threads in two colours alternately using eight threads in colour A and eight threads in colour B, six pattern variations are possible. Simple vertical stripes are obtained by interlinking. By intertwining the colours alternately one can obtain a small zigzag pattern (Fig. 4); a rhomboid pattern in colour A with a border in colour B; a rhomboid pattern in colour B with a border in colour A; a rhomboid pattern with the two rhomb variations alternating; and, finally, the double zigzag pattern as found on the sculpture of Paris (Fig. 5). All these patterns are produced in one layer, so the front and back look the same.

In the technique of two-layered sprang, even more pattern variations can be created. The stretched threads consist of two threads in colour A alternating with two threads in colour B. By interlinking the threads, the threads of one colour are placed over the threads of the second colour each time, thus producing two layers that are not connected. When working a pattern, a change of layers causes a change of colours. Thus the front pattern is in opposite colours to the back pattern.

Because, as noted above, the threads move diagonally in sprang, patterns with diagonal lines like zigzag and rhomboid can easily be obtained while working. In each row one thread of one colour is replaced by one thread of the other colour. When the stretched threads consist of two threads in the same colour each time, but the following two threads always in a different colour, coloured stripes on a plain ground can be obtained. When the colours change only in every second row, long lozenges in oblique position to each other are created, as, for example, on the sculpture of the Persian horseman in the Akropolis Museum in Athens (Figs: 6-7).

In the same way as the two-layered braid, one can produce a three-layered braid. In this case, the stretched threads are in the following positions: two threads of colour A, two threads of colour B, two

threads of colour C. The front and back of the textile will show one colour, while the third colour will be hidden in between.

By exchanging layers in multi-layered sprang, other patterns depicted in iconography can also be produced: zigzag rows alternating with dots or stripes, only dots, only circles, stripes with uneven borders (Figs: 8-9), etc. All the pattern variations can also be obtained by alternating one- and two-layered sprang. However, it needs to be considered that a two-layered sprang has double the thickness and weight of a one-layered sprang produced with the same material. When using finer threads, the labour does not increase linearly but exponentially because more of the stretched threads have to be used. Furthermore, more threads are required than in a simple one-layered sprang because the elasticity is not as high. When the front of the textile shows only one colour, the other colour shows at the back. For making a pattern both colours are united in one layer.

The patterns of dots or circles appear to be on a plain ground. The colours of the dots and circles are determined when winding up the stretched threads, so they can be in one colour or in many (Figs: 10-11). When working with one- and two-layered sprang alternately, the border of the textile is uneven. So in hose the horizontal stripes are more solid. In small pattern repeats this would not have a negative effect when wearing the hose. However, in a vase painting that depicts hose with larger pattern repeats, it is clearly visible how these horizontal stripes cut into the thighs (Figs: 12-13). When producing this kind of pattern in two colours, the pattern of the back side is a negative of the front pattern.

### **Producing hose**

Both methods of winding up the stretched threads are theoretically possible for producing a pair of hose. As the depictions do not show any fringes around the ankles and the zigzag patterns are continuous I chose the flat sprang for making hose. Thus both leggings of the hose are produced on the same stretched threads. Taking into account the shrinkage of 30 %, I had to start with a length of about 320 to 360 cm.

Because of the length of the textile, a frame construction was used that is similar to the circular sprang method. After finishing the hose, the stretched threads were cut and knotted immediately, ensuring that the waistband stayed flexible. Then the vertical seams of the leggings were joined and the leggings were sewn together. By following the plaiting with the sewing thread one can avoid the seam being visible. So the hose worked in two colours, with the back showing a different colour scheme than the front, and

they can be worn inside out as well (Fig. 14). Upper garments (which have not been reconstructed yet) can be produced using the same method. Depictions of such clothes clearly show that the sleeves were mostly set in separately. In rare cases no seam is depicted at the shoulders, indicating that it is a continuous sprang piece from the hip to the wrist, with a low V-neckline.

Although the production of tight-fitting garments described here can not be proven by surviving examples from antiquity, there is no doubt that the sprang technique was known at this time and it was the only known technique which could be used to produce elastic textiles. The way in which the various patterns can be produced in sprang and how they can be developed from one another is truly remarkable.

### Acknowledgements

I am deeply indebted to my colleague Bettina Kammann, who taught me the basic sprang techniques, and to Prof. Erwin Emmerling, Chair of Restoration, Art Technology and Conservation Science at the Technische Universität München, who pointed out to me that nothing is presently known about the production of the tight-fitting clothes in antiquity and always supported my work.

The wonderful book *The Techniques of Sprang – Plaiting on Stretched Threads* by Peter Collingwood accompanied, taught and inspired me throughout my study. Unfortunately I was not able to show my work to Peter Collingwood before he passed away in October 2008. In deep respect for his life's work I would like to dedicate this article to Peter Collingwood.

### Bibliography

Brinkmann, V. (2004) Der Prinz und die Göttin. Die wiederentdeckte Farbigkeit der Giebelskulpturen des Aphaia-Tempels. *Bunte Götter, Glyptothek München*, 84–97. München.

Brinkmann, V., Koch-Brinkmann, U., Piening, H., und Trianti, I. (2008) Der schöne Feind. Neue Untersuchungen am „Perserreiter“ von der Athener Akropolis. In *Bunte Götter. Die Farbigkeit antiker Skulpturen, Liebieghaus Frankfurt am Main*, 95–101. Frankfurt.

Calmeyer, P. (1975) Hose. *Reallexikon der Assyriologie und vorderasiatischen Archäologie*, 472–476. Berlin/New York.

Collingwood, P. (1999) *The Techniques of Sprang – Plaiting on Stretched Threads*, 2nd ed. New York.

*Corpus Vasorum Antiquorum* (1981) Deutschland, Bd. 46, Würzburg, Martin von Wagner Museum, Bd. 2; Bearb.: F. Hölscher, 17–20, plate 11. München.

*Corpus Vasorum Antiquorum* (1960) Italia, Bologna, Museo Civico di Bologna; Bearb.: G. Bermond Montanari; (Fasc. XXXIII), 7–8, plate 107. Bologna.

Hald, M. (1980) *Ancient Danish Textiles from Bøges and Burials. A Comparative Study of Costume and Iron Age Textiles*. Copenhagen.

Rudenko, S. (1970) *Frozen Tombs of Siberia*, 88–95. Los Angeles.

*Starke Frauen* (2008) Staatliche Antikensammlung München, 377–378. München.

John Peter Wild and Felicity Wild

# Qasr Ibrim Study Season 2009

Qasr Ibrim in (Egyptian) Lower Nubia, once an acropolis but now an island in Lake Nasser, has more or less unbroken occupation from the 11th century BC to the 19th century AD. At first glance the site appears geographically isolated, but in fact it lies on an important north-south artery along the Nile. For much of its history, moreover, Qasr Ibrim found itself at the watershed between two major centres of power and cultural dynamism to North and South, a feature strongly reflected in its archaeological repertoire. Thanks to favourable climatic conditions many thousands of textile fragments survive at the site. Recording such a mass of archaeological textile without a precise research agenda could be a frustrating exercise. The philosopher-archaeologist R.G. Collingwood warned archaeologists not just to dig – but to set themselves questions and to dig for the answers. This advice applies equally to textile archaeology.

Two leading questions were set for the 2009 study season (5-27th February) on textiles from the excavations of 1990, 1992 and 1998 at Qasr Ibrim, now stored in the Supreme Council of Antiquities' depot at Shellal, Aswan.

The first concerned the character of the textile repertoire at Qasr Ibrim after c. AD 350. Our previous research (ATN 43, 16-19; 44, 16-18; 46, 3-6) had shed light on local textile manufacture in the Meroitic period (1st century AD to c. AD 350) and noted its dependence on cotton; but the decline of stable political authority in Lower Nubia in the 4th century AD and its replacement by more fluid conditions associated with nomadic peoples, the Blemmyes and Nobadae, in the Post-Meroitic or 'X-Group' phase might be expected to have affected the agricultural regime and thus the output of spinners and weavers reliant upon it. Was there continuity or discontinuity at the Meroitic/'X-Group' interface?

The second question was prompted by a last-minute visit to Bolton Museum, now the principal repository for the selected textiles brought to Britain by earlier excavators at Qasr Ibrim. Boxes there labelled 'X-Group' by Elisabeth Crowfoot and Nettie Adams contain a remarkable collection of bright wool tapestries, a striking contrast to the cotton monoculture of the Meroitic. When did such fine wool cloth appear at

Qasr Ibrim?

Closer scrutiny of the chronology of the archaeological contexts in which the textiles on which we worked in previous seasons were found suggests strongly that they were of Late Meroitic date (c. AD 200-350) (ATN 43, 16-19; 44, 16-18; 46, 3-6). That may explain why we encountered virtually no overtly 'Roman' textiles: the Roman military garrison had left the site two centuries earlier, and the political border of Roman Egypt was 250 km away.

Among the textiles from Early Meroitic deposits which we examined in 2009 were several distinctive union fabrics (1328-1334), weft-faced tabbies (two with 'purple' wool inserts (1300, 1331)) woven on strong s-spun (often over-spun) cotton warp with a paler weak s-spun wool weft. As Elisabeth Crowfoot once suggested, they may represent a stage in the process whereby local cotton weavers adopted some of the structural features, such as reinforced selvedges, typical of Mediterranean wool fabrics.

First impressions suggested that after c. AD 350 the resident population of Qasr Ibrim continued to practice the same textile technology as in the past, despite the changed political environment and possibly reduced population. Cotton remained almost the sole fibre in use, and medium to medium-fine half-basket weaves (warp singles, weft pairs) were exceptionally common. In the Late Meroitic flax was confined to the (spliced) fringe strands in tassels: after AD 350 cotton began to take over that role. Fewer fragments of elaborate Meroitic openwork fringes occurred; but in two examples (1500, 1519) the fringe was preceded by a tapestry-woven band in blue or 'purple', a feature not seen by us in the Meroitic. The familiar blue-piped Meroitic hems had disappeared, along with the blue embroidered 'sun-burst' flowers (ATN 43, 17 Fig.13). Fashion in 'X-Group' times under nomad influence may have been more drab than in the past.

Cotton weavers in Lower Nubia depended on the warp-weighted loom (ATN 43, 19; 44, 17). Finds of flat-woven starting borders (typically linked to the warp-weighted loom in Europe) were commoner in the 'X-Group' period than the Meroitic, though that may be an accident of survival. The borders were constructed on 5 or 6 stout plied warp-threads, and their sheds contained a pair of the main web's warp-



**Fig. 1. QI90 1534: scrap of selvedge on wool textile with 'bunch-of-flower' inserts from Qasr Ibrim (© P. J. Rose).**

to-be. They were associated with various types of reinforced selvedge. Finds of ovoid mud loom-weights with a single suspension hole were again commoner than in the Meroitic. However, a single early 'X-Group' example of a simple twined-cord starting border in cotton was recorded (1384): the Mediterranean two-beam loom may also have been known. There is no dilution of cotton's pre-eminence at Qasr Ibrim before c. AD 550, an horizon based on pottery evidence which we took as our cut-off point for the detailed recording of every textile in a particular layer. We await Nettie Adams' report on the material from later deposits (see Adams 1986). It is argued that in the century before AD 550 cultural influence from Upper Egypt was beginning to be felt, not least in the progressive penetration of Christianity into Nubia. That influence may be reflected in the appearance at Qasr Ibrim for the first time on a significant scale of fine wool fabrics, initially presumably imports. While wool textiles, particularly some with decorative features, have been published from graves upstream of Qasr Ibrim which are dated (it is said) to the Meroitic and/or 'X-Group' periods (Bergman 1975; Williams and Mayer Thurman 1979; Maik 2007), there may be a discrepancy between contemporary assemblages from funerary contexts and those from

settlement sites, as is the case in Roman Egypt. Hence the first occurrence of fine wool textiles in quantity at a settlement like Qasr Ibrim may be an event worthy of comment.

In reviewing the textiles from Kulubnarti (c. AD 600-850) Nettie Adams has already drawn attention to some narrow wool fabrics distinguished by a series of small tapestry-woven 'bunch-of-flowers' motifs set at intervals opposite one another along both selvedges (Adams 1999, 55, 68, figs 9-10). Ingrid Bergman discussed the same phenomenon on wool fabrics from graves in Lower Nubia which need not be much earlier in date (Bergman 1975, 48-49, fig. 52 B1A). At Qasr Ibrim we have recorded two examples (1534, 1724) dated to the Early Christian period (AD 550-750/800) (Fig. 1). These scarf-like items (15 cm to over 80 cm wide, selvedge to selvedge: Bergman 1975, 48) may be a new fashion trend. They are quite different in character and quality from a group of coarser wool tabbies woven from a variety of natural brown yarns (e.g. 1708), occasional scraps of which have been noted back into Early Meroitic times.

While the small scraps of textile recovered from well-stratified and dated layers during relatively small-scale excavations since 1990 have their own statistical value, they are a visual disappointment when compared to the larger, better preserved, more decorative pieces recovered in the earlier excavations. Nonetheless, one item studied in 2009 (QI98 1341) is of particular interest. It is a tiny complete garment (70% complete at any rate), a sort of 'tabard' for a small child and Early Meroitic in date (c. AD 100-200) (Fig. 2). It is of undyed cotton in tabby weave, measuring 71cm long overall (warpways) by 43 cm wide (weft-



**Fig. 2. QI98 1341: cotton 'tabard' from Qasr Ibrim (© P. J. Rose).**

ways). The warp at both ends is twisted into fringes and converted into small bobbles wrapped with blue yarn. In the centre of the 'tabard' the warp is cut to make a neck slit, the raw edges hemmed and decorated with blue piping. The garment would be about 33 cm long when worn, and the neck hole, which shows signs of wear and strain, has a circumference of 49 cm, the right size to slip over the head of a toddler of about 1-2 years.

2009 was the last of our four study seasons on Qasr Ibrim textiles in Aswan, but much material in the SCA depot remains unrecorded. Our original agenda was inter alia to explore the possible source of some of the cottons at Berenike (ATN 28, 22-23; 31, 18-20; 33, 17-19), and that we have hopefully achieved. At the same time light has been shed on the whole 'cotton culture' of Lower Nubia and its possible extension northwards into Egypt. Solving the broader contextual problems, however, which our research has thrown up is a different exercise!

#### Acknowledgements

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#### Bibliography

- Adams, N. K. (1986) Textiles at Qasr Ibrim: an introductory quantitative study. *Wissenschaftliche Zeitschrift der Humboldt-Universität zu Berlin. Geisteswissenschaftliche Reihe* 35, 1, 21-26.
- Adams, N. K. (1989) Meroitic high fashions: examples from art and archaeology. In S. Donadoni and S. Wenig (eds.), *Studia Meroitica 1984: Proceedings of the Fifth International Conference for Meroitic Studies*, Rome, 1984, *Meroitica X*, Berlin, 747-755.
- Adams, N. K. (1999) The grave goods. In W. Y. Adams, N. K. Adams, D. van Gerven and D. Greene, *Kulubnarti III: The Cemeteries* (British Archaeological Reports S814), Oxford, 51-71.
- Bergman, I. (1975) *Late Nubian Textiles*. Copenhagen, Oslo, Stockholm.
- Maik, J. (2007) Textiles from a late fifth-century Post-Meroitic cemetery in Kassinger Bahri (Sudan). In H. Paner and S. Jakobielski (eds), *Gdańsk Archaeological Museum Expedition: Kassinger Bahri Cemetery* (Gdańsk Archaeological Museum African Reports 5), Gdańsk, 97-102.
- Williams, B. and Mayer Thurman C. C. (1979) *Ancient Textiles from Nubia: Meroitic, X-Group, and Christian Fabrics from Ballana and Qustus*. Chicago.

Felicity Wild

# Qasr Ibrim: a correction

During recent correspondence with Nettie Adams, who has kindly sent us photographs of the Meroitic textiles from excavations at Qasr Ibrim in the 1980s studied by her and Elisabeth Crowfoot, it has emerged that the identification of textile QI00 1032 as a cod-piece (ATN 46, Fig. 2) is incorrect. As she has suggested, it appears to be connected with her category of mystery objects, published in her conference paper on Meroitic fashion (Adams 1989, 751. (See bibliography in previous article)).

Seven examples of similar construction were noted, of which the largest and most complete, her number QI 84T/177 (Adams 1989, Pl. IXF) is shown here (Fig. 1). As noted in her article, the piece measures 365mm x 440mm, folded, with the crease down the left-hand side. The bottom and right-hand edges are incomplete. (The bottom edge is slightly clipped in the photograph, but no extra information is lost.) The hems on the upper edges are turned outwards and finished with what is described in our article (ATN 46, 5) as blue piping. The piece was then folded in half and the hems stitched together, with decorative stitches at intervals across the hemmed edges, a device with which we are familiar from other pieces, such as the hooded baby-cape (QI00 1030).

Piece QI00 1032 (Fig. 2), shown folded on the left-hand side and the same way up as QI 84T/177, measures 230mm down the crease and 185 mm along the bottom. The object is very heavily worn along

the crease, presumably during use, and here, too, the bottom and right-hand sides are incomplete. There is no sign on this piece that the hems have been sewn together, apart from one secure fastening across the two upper corners at the top right of the photograph. Which way up these objects would have been used or worn is uncertain and no parallels for them are as yet forthcoming in the art. Whether they were symmetrical, with a short 'sleeve-like' projection also on the other side of the object, we do not know. Any suggestions as to what they may have been used for would be most welcome.



Fig. 1. QI 84T/177  
(© N.K. Adams and E. Crowfoot).



Fig. 2. QI00 1032, aligned in the same direction  
(© P. J. Rose).

### Acknowledgement

I am most grateful to Nettie Adams for allowing me to republish her photograph.

Nahum Ben-Yehuda

# Ars Textrina International Textiles Conference: “Natural Fibres - A World Heritage”

In celebration of the “International Year of  
Natural Fibres”.

2-3 September 2009, Leeds, UK

This year’s annual Ars Textrina conference was held on the 2nd and 3rd of September 2009, in association with the University of Leeds School of Design and the University of Leeds International Textiles Archive (ULITA), under the auspices of Professor Michael Hann and his invaluable assistant Jill Winder.

In accordance with Ars Textrina tradition, the conference presented a variegated staff of delegates, both veteran Ars Textrina participants and many new faces - academics with historical, industrial and theoretical perspectives, some of them textile craftspersons in their own right, museum curators, independent researchers and textile artisans. All in all, over 40 presenters from 13 countries.

The program consisted of a wide range of subjects, all focused however, on the central theme - natural fibres. Keynote plenary presentations were given by Barbara Setsu Pickett, University of Oregon USA - “Silk Ikat Weaving in Uzbekistan”; Nahum Ben-Yehuda, Bar Ilan University Israel - “A Fresh Look at the Linen in the Hebrew Bible”; Eugene Nicholson, curator of the Bradford Industrial Museum - “Simply Red”, and Patricia Williams, University of Wisconsin USA - “Spaniards, Indians, Traders and... Muslims? International Influence in American Southwest Style”. The parallel sessions dealt with places ranging from Japan and Madagascar to Novgorod, fibres from

hyacinth and jute to Khadi spun silk, time periods from Ancient Egypt and Ancient Greece to the Modern Era, textile processes from spinning and weaving to rag recycling, and products from priestly vestments and women’s woolen knitwear to lampshades. As a rule, the well-prepared speakers chose interesting and innovative topics, and presented them with enthusiasm.

A poster session was presented by students from Hanyang University of Korea.

Abstracts from the conference are currently available at:

[http://ulita.leeds.ac.uk/docs/Ars\\_Textrina/Abstracts2009.pdf](http://ulita.leeds.ac.uk/docs/Ars_Textrina/Abstracts2009.pdf)

Summaries are in process of being prepared for the above website.

Next year’s conference will take place in Seoul, Korea.

Cherine Munkholt

# Future Textiles

3 November 2009, Copenhagen, Denmark

The Danish National Research Foundation's Centre for Textile Research (CTR) was host to a 1-day seminar on future textiles on the 3rd November 2009 organized by CTR's Academic Coordinator Mette Bruun (see <http://ctr.hum.ku.dk/calendar/futuretextiles>). Among the speakers were scholars of Engineering, Architecture, and Design as well as representatives from the textile industry. What is of relevance to ancient textile scholars is that engineers and architects today are interested in combining new technology and materials with the properties of textiles, with us since ancient times, such as their ability

to fold or wrap. Thus they visualize intelligent building material that can wrap or fold around buildings of the future, i.e. behave like a textile. The conference provided an opportunity for a wide range of scholars and practitioners from various academic disciplines and commerce and industry to gain insight into each others' work, especially into how new digital technology has provided new areas of cooperation. It is hoped that CTR's conference has also provided a platform for future networking in this sphere.

Ulla Mannering

# FLAX

24-26 November 2009,  
Copenhagen, Denmark

In November this year a very interesting conference was organized by Dr. Sabine Karg from the National Museum of Denmark/University of Copenhagen. The conference was the first of two planned workshops within a research programme that is funded by the Danish Research Council: "FLAX – Interdisciplinary research on the evolution and cultural history of the useful plant flax (*Linum usitatissimum* L.) – a resource for food and textiles for 8000 years". The aim of the project is to give the possibility to communicate and exchange new knowledge on the flax plant. The conference started at the National Museum with a reception and a guided tour through the new exhibition "Danish Prehistory", followed by a dinner organised and sponsored by the Danish National

Research Foundation's Centre for Textile Research at University of Copenhagen.

The main conference was held in the Carlsberg Academy in Valby. During the first day interesting presentations on the archaeobotanical evidence of flax cultivation and textile production from Neolithic settlements at Lake Constance and in Upper Swabia, Germany was given by Christoph Herbig (University of Frankfurt) and Ursula Maier and Helmut Schlichterle (Cultural Heritage Baden-Württemberg, Germany). Urs Leuzinger (Archaeological Museum of the Canton of Thurgau, Switzerland) spoke about flax processing in Neolithic lake-dwelling sites of Eastern Switzerland, while Antoinette Rast-Eicher (Archeotex, Switzerland) presented a paper on flax

preparation and thread production at the Swiss lake-dwelling sites. In the afternoon of the same day the perspective changed to the North and Mogens Bo Henriksen (Odense Town Museum) spoke about archaeological evidence of flax production in 500 BC-AD 1000 on Funen, Denmark, while Peter Steen Henriksen (The National Museum of Denmark) presented an overview of the archaeobotanical evidence of flax in prehistoric Denmark. The day was rounded off with a quick review of the history of flax cultivation in Sweden by Karin Viklund (University of Umeå, Sweden) and a presentation on Neolithic flax from Okoliste in the Bosnian mountains by Helmut Kroll (University of Kiel, Germany).

The second day was devoted to the evolution of the flax plant and Sue Colledge (Institute of Archaeology, University of London, UK) gave a paper on the origin and spread of domestic flax while Robin Allaby (University of Warwick, UK) spoke about the archaeogenetics of flax. The day ended with exciting new information on the most recent molecular and nano-technological methods for identifying archaeological textile fibres, presented by Christian Bergfjord (University of Bergen, Norway) and on the use of

Micro-beam Synchrotron Radiation in the investigation of textile fibres from Dead Sea caves by Bridget Murphy (University of Kiel, Germany).

The conference provided an excellent overview of the most recent new discoveries concerning the cultivation and use of flax as a food and textile plant, which has had such an important impact on the development of human culture. Likewise the potential of cross-disciplinary collaborations between prehistoric and classical archaeologists, textile researchers and natural scientists such as botanists, molecular geneticists, geologists and physicists was well demonstrated.

A booklet with an presentation of the project and abstracts of all lectures is published in English: S. Karg (ed.) *Flax (Linum usitatissimum L.) – a natural resource for food and textiles for 8000 years*. Programme and abstracts of the first workshop 24-26 November 2009. *Communicating Culture. Workshop Info 1*. Copenhagen 2009. ISBN 978-87-993301-0-2. Peer-reviewed publications of the papers from both FLAX workshops are planned. More information on the FLAX project can be found at <http://cms.ku.dk/hum-sites/saxo-sites/projekter/flax>

Ulla Mannering

## Skin Clothing from the North

26-27 November 2009, the National Museum of Denmark, Denmark

'Northern Worlds' is the theme of a new research program at the National Museum of Denmark, including *Skin Clothing from the North*. Throughout the next four to five years about 35 scholars from all departments of the National Museum of Denmark will coordinate their research in order to explore relations between man, climate and environment from the late Paleolithic until present in the circumpolar and northern temperate zones.

*Skin Clothing from the North* focuses on the National Museum of Denmark's unique circumpolar collection of skin artefacts from the Inuit, Yupiit and Aleut in Greenland, Canada and Alaska, the Sami in

Scandinavia and Siberian people in Russia. The 26th to 27th of November an opening seminar was held at the National Museum of Denmark. Researchers from Scandinavia and Greenland were invited to give perspective to the research program.

This interdisciplinary research program studies skin materials, methods of sewing, cutting and design from both technological and anthropological viewpoints. The focus is on geographical use of materials, cultural values including visual communication, women's importance in circumpolar cultures and commerce's influence on the appearance and manufacture of the clothing. The major purpose is to in-

investigate whether there are connections between skin types, manufacture, sewing and design while also studying circumpolar peoples' lifestyles, geographical alliances, interaction and the influence of trade. The circumpolar collections comprise around 2000 pieces of skin clothing made from mammals, birds and fish, collected between 1800 and 1950. Skin Clothing from the North introduces new research. By means of newly applied techniques, animal species, sewing technique and pattern design will be revealed. High quality digital images will document the components of each artefact.

A network of international scientist and skin experts is being established. The network will contribute to a seminar, a discussion forum on the internet and a conference. A catalogue of the circumpolar skin clothing and an anthology will be published. Research programme manager is Conservator Anne Lisbeth Schmidt, The National Museum of Denmark (anne.lisbeth.schmidt@natmus.dk). More information on: [http://nordligeverdener.natmus.dk/forskning-sinitiativer/projektoversigt/dragter\\_fra\\_de\\_nordlige\\_verdener/](http://nordligeverdener.natmus.dk/forskning-sinitiativer/projektoversigt/dragter_fra_de_nordlige_verdener/)

Frances Pritchard

# Urban Textiles In Social Context

10-12 September 2009, Tartu, Estonia

The catalyst for this seminar, which was held at Tartu City Museum and organised in conjunction with the University of Tartu with sponsorship from the European Union Regional Development Fund, was the recovery during excavations undertaken in the last ten years of several thousand textiles from cesspits dating from the late 13th to 16th centuries in the Hanseatic town. The aim was to discuss the interpretation of such finds in comparison with those from other cities in northern Europe, particularly as so few documents are preserved relating to medieval Tartu. Participants from Germany, The Netherlands, Poland, Russia and the UK, considered a variety of textile evidence and site complexes from the towns of Elbing, Brunswick, Freiburg, Heidelberg, Lübeck, Lüneburg, London and Groningen. This included information on the cloth trade gleaned from lead cloth seals and an analysis of 236 fabric swatches (each identified by name) on a document dating to 1678 discovered in the state archives in Lüneburg, as well as a consideration of different qualities of textiles in rubbish deposits, for example the town moat at Groningen and a dock infill beside the River Thames in London. Gold embroidery and related manufacturing

evidence from sites in Russia, including Novgorod, dating from the late 10th to 13th centuries provided a tantalising glimpse of what earlier deposits in Eastern Europe might yield.

An exhibition in the City Museum featuring a selection of textiles and textile tools from the excavations in Tartu, including reconstructions of garments, complemented the seminar, and an excellent excursion to a range of sites, museums and churches in southern Estonia took place the following day. The organisers, especially Riina Rammo and Arvi Haak, deserve many thanks for making the seminar such a stimulating and memorable occasion.



## Recent publications

**North European Symposium for Archaeological Textiles X, edited by Eva Andersson Strand, Margarita Gleba, Ulla Mannering, Cherine Munkholt and Maj Ringgaard**

The NESAT symposium has grown from the first meeting in 1981, which was attended by 23 scholars, to over 100 at the tenth meeting that took place in Copenhagen in 2008, with virtually all areas of Europe represented. The 50 papers from the conference presented here show the vibrance of the study of archaeological textiles today. Examples studied come from the Bronze Age, Neolithic, the Iron Age, Roman, Viking, the Middle Ages and post-Medieval, and from a wide range of countries including Norway, Czech Republic, Poland, Greece, Germany, Lithuania, Estonia and the Netherlands. Modern techniques of analysis and examination are also discussed. 352p, 299 illus, 31 tables (Ancient Textiles Series 5, Oxbow Books 2009) ISBN-13: 978-1-84217-370-1

Price GB £48.00

<http://www.oxbowbooks.com/bookinfo.cfm/ID/86538//Location/Oxbow>

**Clothing the house. Furnishing textiles of the 1st millennium AD from Egypt and neighbouring countries, edited by Cécilia Fluck**

This richly illustrated volume *Clothing the house* is the result of the 5th conference of the international research group "Textiles from the Nile Valley" held in Katoen Natie, Antwerp, 6-7 October 2007. It includes 14 papers by textile and art historians, archaeologists and technologists

focusing the connection between textiles and architecture - be it secular, cultic or sepulchral in function - in particular in the Egyptian culture during the 1st millennium AD.

ISBN: 978-90-209-8590-0

Price 65,00 EUR

<http://www.terralannoo.nl/content/lannoo/fondsen/kunstcultuur/architectuur/1/index.jsp?titelcode=16851&fondsidsid=10>

### Recent articles

Mårtensson, L., Nosch, M.-L. & Andersson Strand, E. (2009) Understanding Shape of Things: Understanding a Loom Weight. *Oxford Journal of Archaeology* 28.4, 373-398.

Mannering, U. & Andersson Strand, E. (2009) Dress Images on Gold-foil Figures. In C. Adamsen, U. Lund Hansen, F.O. Nielsen & M. Watt (eds.) *Sorte Muld, Wealth, Power and Religion at an iron Age Central Settlement on Bornholm. Bornholms Museer*. 54-61.

Mannering, U., Possnert, G., Gleba, M. & Heinemeier, J. (2010): Dating Danish textiles and skins from bog finds by means of 14C AMS. *Journal of Archaeological Science* 37, 261-268.

## Useful websites

Homepage for Fabienne Medard: [www.anatex.fr](http://www.anatex.fr)

## Dissertations

Dr. Elena V. Kupriyanova, Cheliabinsk State University, Russia has been awarded a PhD for her thesis: *Female Burial Costume of Middle-Late Bronze Age Trans-Ural Area and Kazakhstan*.



Martin Cizuk

# New clothes for the Gunnister Man

In 1951 a body of a man was found during peat digging in a peat bog at Gunnister, Shetland Islands, Great Britain. Only hair, finger nails and almost dissolved bones was preserved from the body, but the clothing was very well preserved. The man had been wearing a shirt, breeches, coat and a jacket made from wool fabrics. His stockings, gloves, 2 caps and a small purse were knitted from woolen yarn. In the purse there was a silk ribbon and coins from the end of the 17th century AD, two Dutch and one Swedish of 1683, which date the find. The objects were transferred to Edinburgh, where parts of the costume have been on display in the National Museum of Scotland. Following a partnership agreement between Shetland Amenity Trust and National Museums Scotland in 2008, detailed studies were undertaken on all of the artifacts with a view to making a full set of replicas to coincide with the loan of the original Gunnister finds to the Shetland Museum and Archives this year.

Carol Christiansen at the Museum in Lerwick was responsible for the reconstruction of the costume. She did the selection of the right kind of wool from sheep on Shetlands. She conducts the production of the knitted garments and has done spinning and knitting. Lena Hammarlund, craftsman and textile researcher in Gothenburg, Sweden, was given the task to spin the yarn, hand weave and full the wool fabrics. Martin Cizuk, PhD-student at The School of Textiles, University of Borås, Sweden, has done the cutting and hand sewing of the garments. The success of the project is a result of a close cooperation between participants having different competences, deep knowledge of craft, and experience from the reconstruction of historical and archaeological textiles.

Many months of work were spent on the reconstruction of the Gunnister Man's suit. The project started with thorough studies and documentation at the museum in Edinburgh. Next step was the practical work: The wool was sorted, washed, carded or combed and spun. Several weaving, knitting, fulling and sewing samples were produced before the reconstruction of the clothes could start. All operations were carried out as close to the originals as possible.

On September 12, 2009, an exhibition opened at the Shetland Museum and Archives in Lerwick, where both the original findings and the reproductions are displayed. The publication is forthcoming.

For more pictures and information please contact:

Martin Cizuk: martin.cizuk@hb.se

Lena Hammarlund: hammarlund@hem.utfors.se

Carol Christiansen: carol@shetland-museum.org.uk

<http://www.shetlandmuseumandarchives.org.uk/>





# Call for Paper

**Early Textiles Study Group (ETSG): Colours  
19 and 20 of November 2010**

**Franks Room, Wellcome Collection Conference  
Centre, Euston, London**

From status statements to mourning dress, colours have played a crucial part in textiles through time and across cultures. Colours can be dramatically combined or worn separately. Specific colours can identify the owner, his or her allegiances, state of mind and state of purse. Papers are solicited that draw on the wide variety of symbolic, cultural and technical aspects of colours in textiles, from all geographical areas and all time periods up to 1600. Topics may include: the symbolism of colours, the different social occasions on which certain colours

are used, the technical production of colours, and key figures or events associated with particular colour. We welcome proposals from academics, research students, museum curators, practitioners and independent scholars. Preference will be given to proposals which include images.

Please send one page abstract and brief CV by Tuesday 31st of January 2010 to:

Helen Persson

Asian Department, Victoria and Albert Museum,  
London SW7 2RL

Fax: +44 (0)207 942 2335,

or e-mail: [h.persson@vam.ac.uk](mailto:h.persson@vam.ac.uk)

# Textile Calendar 2010

**21-22 January:** Gåttfulla vävar – ett tvärvetenskapligt forskarseminarium om Överhogdalsbonaderna Jämtli – Jämtlands läns museum, Östersund, Sweden. NB the lectures will only be in Swedish. Deadline for registration for participants is the 22nd of December. e-mail: [torgard.notelid@jamtli.com](mailto:torgard.notelid@jamtli.com)

**23-25 March:** ICOM-CC Joint Interim Meeting, Complesso San Michele a Ripa Grande (headquarters of the Ministry of Cultural Property), Rome, Italy. e-mail: [elsje.janssen@stad.Antwerpen.be](mailto:elsje.janssen@stad.Antwerpen.be)

**25-28 March:** 20th Theoretical Roman Archaeology Conference (TRAC), University of Oxford, UK. Session on cloth, clothing and gender in Roman art. <http://rac2010.classics.ox.ac.uk>.

**19-22 April:** 13th International Aegean Conference "KOSMOS: Jewellery, Adornment and Textiles in the Aegean Bronze Age", Copenhagen, Denmark. <http://ctr.hum.ku.dk/upload/application/pdf/f51d6748/Kosmos%201.pdf>

**20-21 May:** Conference "Wrapping and Unwrapping the Body: Archaeological and Anthropological Perspectives", London, UK.

<http://www.mhm.ucl.ac.uk/events/wrapping-unwrapping-body.php>

**8-9 September:** Conference "Distribution Networks for Textiles and Dress, c. 1700-1945", Wolverhampton, UK.

<http://home.wlv.ac.uk/~in6086/2010conf.html>

**6-9 October 2010:** Textile Society of America Symposium "Textiles and Settlement: From Plains Space to Cyber Space", Lincoln, NE, USA.

[http://www.textilesociety.org/symposia\\_2010.html](http://www.textilesociety.org/symposia_2010.html)

**19-20 November 2010:** Early Textiles Study Group Meeting "Colour", London, UK. e-mail: [h.persson@vam.ac.uk](mailto:h.persson@vam.ac.uk)

## Announcement

### NESAT XI

The eleventh NESAT XI Symposium will be held on the 10-13 May 2011 in Esslingen, Germany.

Further information will be available from February 2010 at the website [www.nesat.org](http://www.nesat.org)

# General Information

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## Guidelines to Authors

The ATN aims to provide a source of information relating to all aspects of archaeological textiles. Archaeological textiles from both prehistoric and historic periods and from all parts of the world are covered in the ATN's range of interests.

1. Contributions can be in English, German or French.
2. Contribution may include accounts of work in progress. This general category includes research/activities related to archaeological textiles from recent excavations or in museums/galleries. Projects may encompass technology and analysis, experimental archaeology, documentation, exhibition, conservation and storage. These contributions can be in the form of notes or longer feature articles.
3. Contributions may include announcements and reviews of exhibitions, seminars, conferences, special courses and lectures, information relating to current projects and any queries concerning the study of archaeological textiles. Bibliographical information on new books and articles is particularly welcome.
4. References should be in the Harvard System (e.g. Smith 2007, 56), with bibliography at the end (see previous issues). No footnotes or endnotes.
5. All submissions are to be made in electronic text file format (preferably Microsoft Word) and are to be sent electronically or by mail (a CD-ROM).
6. Illustrations should be electronic (digital images or scanned copies at 600dpi resolution or higher). Preferred format is TIFF. Illustrations should be sent as separate files and not imbedded in text. Colour images are welcome.
7. All contributions are peer-reviewed by the members of scientific committee.
8. The Editors reserve the right to suggest alterations in the wording of manuscripts sent for publication.

## Please submit contributions by post to:

Archaeological Textiles Newsletter  
Centre for Textile Research  
University of Copenhagen

Njalsgade 102  
DK-2300 Copenhagen S  
Denmark

Or by electronic mail to the corresponding editor:

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Or to editors:

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