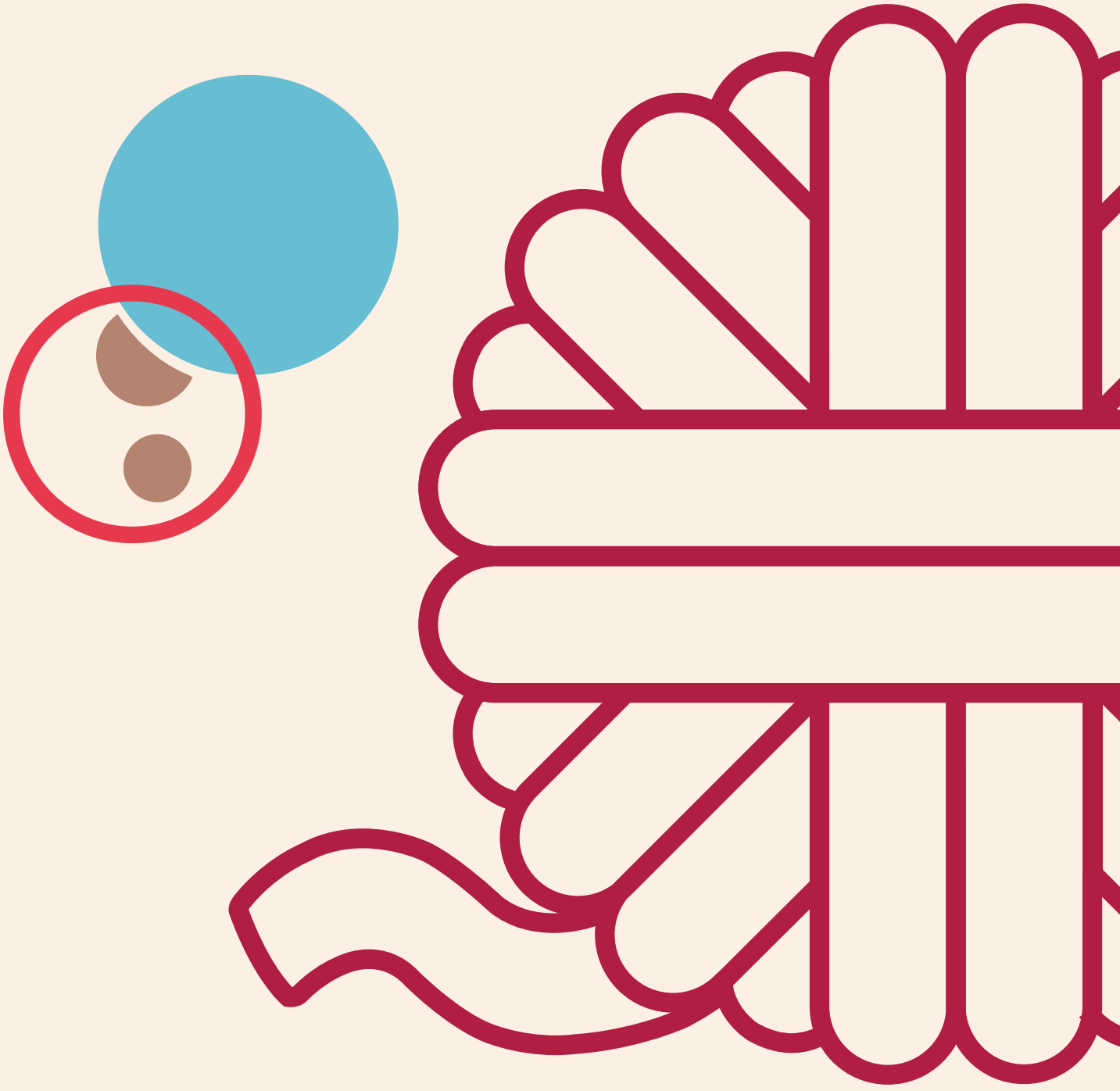
Nº 46

ARCHAEOLOGICAL TEXTILES NEWSLETTER



Spring 2008 issue

Archaeolgical Textiles Newsletter

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Editorial

ATN has moved once again – this time, from Manchester to Copenhagen. We kindly thank John Peter and Felicity Wild for making the transfer easy. We hope to continue the great work of the previous editors, Gillian Vogelsang-Eastwood, Elizabeth Peacock and John Peter Wild. The format of the ATN will remain the same but the layout has been digitalised and updated.

Archaeological Textiles Newsletter is a twice-yearly publication for textiles, which have been found in archaeological contexts, dating from the prehistoric to the modern age. Geographically, ATN concerns itself mainly with the Old World textiles (from Western Europe to Japan) but New World textiles may be included if deemed relevant.

The study of archaeological textiles involves many disciplines, which seldom overlap in traditional scientific journals. The publication of the ATN started in 1985 to provide a medium for discussion, interaction and exchange of information between archaeologists, conservators, historians, art historians, biologists, chemists, geologists and craftspeople, who have archaeological textiles at the core of their interests. It still remains unsurpassed.

Originally, the ATN was intended to be an information service and not a journal. Over the years, however, it has become an important venue for publication of important scientific articles. Currently it publishes a unique combination of featured scientific articles and reports, notes, queries, reviews, resources as well as conference and event announcements, thus truly serving as an active tool of communication. This is largely due to the fact that subscribers to the ATN have been both readers and contributors.

In order to secure the scientific and legal continuation of the ATN in the future, on 17 August 2007 the society "Friends of Archaeological Textiles Newsletter" was established. All old and new individual subscribers to the ATN will automatically become members of the society and thereby receive the newsletter. Institutions may subscribe to the ATN without membership in the society at a special price. The most current information about the society, the subscription fees and submissions can be found on **www.atnfriends.com**. This is also where the renewal of all subscription should be made via a secure web-shop. We hope that by the end of the year we will fix all the glitches and this new platform will ease the dissemination of ATN. The society will hold annual meetings, where all issues regarding the running of ATN will be decided. The 2008 meeting was held on the 14th of May and the minutes follow this editorial.

We encourage the readers to send articles, notices about new books or forthcoming conferences, as well as reviews of events and sources – the continuation of ATN can only be ensured if it is 'for the readers and by the readers'. We also would like to emphasise that the ATN website can be used as a further venue for communication, particularly for announcements of events, short queries etc. For the moment, ATN will be continued in a printed format and distributed by mail but it is planned that, in the near future, ATN will also be accessible in an electronic format.

We look forward to your comments, suggestions and all kind of input following the release of No. 46, which covers Nubian textiles, Avar costumes and Bronze Age spindle whorls. The number of yearly events on archaeological textiles has increased so much that we have decided to begin a Textile calendar, which will provide links for the forthcoming events.

We would like to begin this issue by introducing ourselves.

Eva Andersson Strand is an archaeologist specialised in North European archaeology. She received her Ph.D. in Prehistoric Archaeology from the Lund University (Sweden). She has worked in museums and as a lecturer at the Lund University. Her research focuses on textile production in the Iron and Viking Age Scandinavia and in the Bronze Age Mediterranean as well as experimental archaeology.

Margarita Gleba is an archaeologist specialised in pre-Roman Italian archaeology. She received her Ph.D. in Classical and Near Eastern Archaeology from Bryn Mawr College (USA). She has worked on excavations in Italy, Turkey and Ukraine. Her special area of study is the archaeology of textile production, including investigation of textiles, textile tools, as well as written and iconographic sources.

Ulla Mannering is an archaeologist specialised in North European textiles and costumes. She received her Ph.D. in Prehistoric Archaeology from the University of Copenhagen (Denmark). She has been analysing textiles for numerous museums in Denmark and abroad. Her areas of research include Scandinavian and Roman costume traditions, the use and production of prehistoric plant fibre materials, especially nettle and flax, and study of costume from iconographic sources.

All three editors are research programme managers at the Danish National Research Foundation's Centre for Textile Research at the University of Copenhagen, Denmark

The 2008 annual general meeting of the society Friends of ATN was held on 14 May, 17.30-18.30, at the Centre for Textile Research, in Copenhagen. In order to maximise the number of members present, the meeting was held in conjunction with the NESAT.

Present:
Margarita Gleba, Eva B. Andersson, Ulla Mannering, Marianne Bloch Nansen, Sascha Mauel, Susan Möller-Wiering, Ida Demant, Frances Pritchard, Carol Christiansen, Sandra Comis, Jerzy Maik, Eva Jordan-Fahrbach, Dietlind Hachmeister, Johanna Banck-Burgess, Nicole Reifarth, Britt Nowack-Böck, Kordula Gostencnik, Elisabeth Völling, Annelies Goldmann, Eva-Maria Pfarr, Saskia Thijsse, Ruth Gilbert, Sue Harrington, André Verchecken, Chris Lammens, Felicity Wild, John Peter Wild, Elizabeth Wincott Heckett, Hanna Zimmermann, Ellinor Sydberg, Marie-Louise Nosch, Lauritz H. Gregersen

As no additional proposals have been sent in by the members, the agenda was as follows:

1. Election of a chairperson, if somebody so wishes: Eva B. Andersson elected as chairperson of the board.
2. The report of the board for the period since the previous annual general meeting: Eva B. Andersson, Margarita Gleba and Ulla Mannering reported on the establishment of the society 'Friends of ATN', statutes, new editors, scientific board, establishment of website, new layout, advertisement of ATN in TSA, CIETA, DISTAFF and fliers to be sent to various institutions around the world; issue 46 in progress.
3. Presentation and approval of the revised account of 31 of December: no account for 2007; transfer of 29.578,50 DKK from Manchester by John Peter Wild on 18 January 2008; 14 individual and 7 institutional memberships paid via website as of 17 April 2008.
4. Decisions concerning individual and institutional subscription fee for the current financial year: yearly membership fee for 2008 established at 20€ individual, 30€ institutional; for 2009: 30€ individual, 40€ institutional.
5. Election of 3 members of the board and 1 deputy member for the current financial year: Eva B. Andersson, Margarita Gleba, Ulla Mannering remain as board members, Carol Christiansen elected as deputy.
6. Election of an auditor and a deputy auditor the current financial year: Marie-Louise Nosch and Lauritz H. Gregersen stay as auditor and deputy.
7. Miscellaneous: presentation of website and new layout; discussion of challenges and possibilities: digital version of ATN to be sent as PDF file for a lesser fee; issues 46- available on-line a year later (copyright clearance required from all authors); reprinting of issues 1-45; website as a platform for announcements and distribution of other items.

ATN Friends 2008 annual general meeting in Copenhagen, 14 May 2008

John Peter Wild and Felicity Wild

Cotton: the New Wool

Qasr Ibrim Study Season 2008

The site of Qasr Ibrim, now an island on the eastern flank of Lake Nasser in Lower Nubia, Egypt, was occupied from at least the 8th century BC to the early 18th century AD. Its stratigraphy is correspondingly deep and complex. Many thousands of textiles of all periods from the earlier excavations have been recorded by Nettie Adams and Elisabeth Crowfoot (*ATN* 41, 25-29), but study seasons since 2005 (*ATN* 43, 16-19) have offered the first opportunity to examine material from well-dated, sealed contexts in the lower levels on the site excavated since 1999.

The objective for the 2008 season was to extend and complete the analyses and recording of two large and significant groups of textiles, one Napatan in date (broadly 8th to 3rd century BC), the other a Meroitic midden deposit (1st century BC to mid 4thcentury AD). The study, it was hoped, would lead to fuller characterisation of the very distinctive Napatan and Meroitic textile cultures and to clearer definition of their relationships with the contemporary textile industries of late Dynastic Lower Egypt and Roman-occupied Egypt respectively. Some 350 fragments were recorded in 2008.

Napatan textiles

Napatan textiles were uniformly woven of flax which often still retained a glossy off-white sheen. Yarns were all S-spliced from two slightly Z-twisted strands – there was no trace of continuous spindle-spinning. Some fabrics of sacking quality had a harsh handle, and on close examination it became clear that their yarns had been spliced from ribbons of bast (up to 0.5 mm wide), arguably peeled direct from the flax stem. The traditional fibre processing steps – retting, breaking, scutching, hackling – had apparently been short-circuited or curtailed.

Tabby was the commonest weave, supplemented by some basket weaves and half-basket weaves. Cloth was almost invariably warp-faced, in a proportion of about 2:1. One fragment recorded in 2008 showed a register of blue warp stripes next to the (plain) selvedge [1205]; a second carried blue weft stripes close to a terminal fringe [1204]. An instance of a basket-weave fabric decorated with rows of knots was noted [1217], and one with simple pile [1173].

The typical Napatan web began with a transverse border in which warp-to-be passed around a bundle of weft threads followed by a succession of shots of paired weft [1254, 1235]. Selvedges were plain. Once weaving was complete, the warp ends were formed into a short fringe which was usually (but not invariably) secured at the point of exit from the fell of the cloth with one of a range of knotting, wrapping and plaiting techniques. One simple expedient was to knot a pair of warp threads round an adjacent pair and twist the two units into a single fringe strand [0956]. In other cases the warp groups which were to become the fringe were formed into a simple three-strand plait before being released and neatly knotted off at their ends [1240, 0744, 0748]. In the most complex examples the fringe strands which ultimately emerged were seen to incorporate two distinct elements. The weaver (or weaver's assistant) had first taken a series of groups of four adjacent warp yarns and plaited them in one direction along the cloth edge. Then he/she worked back again in the other direction, picking up groups projecting loose from the first pass which then joined those from the second pass to create the fringe strands [1272, 0705, 0978, 1232]. The exact path followed by the yarn groups was almost impossible to draft satisfactorily.

The only complete or nearly complete textile item was a small neat tassel, *c*. 28 mm long, possibly detached from a parent garment [0972]. The strands were of red-dyed flax yarn and the neck bound with blue and undyed yarn.

Meroitic textiles

The Meroitic textile assemblages are dominated by a new fibre, cotton, represented by finds of complete balls, seeds, unworked fibres (lint), spun yarn and woven fabrics. Flax has disappeared, except for a few examples which might be explained as recycled material. Wool is found occasionally as weft on cotton warp; although it is not hard beaten up or apparently dyed, it might have had a decorative function.

Cotton yarn for warp was strong S-spun, even over-spun, while that for weft was marginally less hard twisted. In contrast with the earlier warp-faced linen fabrics, cotton tabbies, basket weaves and half-basket weaves show a balanced thread-count, with only slightly denser warp than weft cover.

A typical Meroitic cotton web begins with a flat-woven starting border similar to those of northern Europe. Its selvedges are reinforced as in wool textiles: weft yarns pass over/under three outer bundles of warp threads and sometimes pass round them again before returning into the web. Occasionally there is an extra pair of wrapping yarns following the passage of the weft over/under the warp bundles. There is one find to date of a cordeline finish in which groups of warp ends were twisted into a three-strand cord against the fell of the cloth. The commonest Meroitic finish, however, is a fringe of greater or lesser complexity (see below).

As to decoration: a number of fragments show pairs of narrow blue weft bands repeated at regular intervals down the length of the cloth, and there is one example with warp stripes close to a selvedge [1151]. A more elaborate version of the weft-banded scheme was recorded on two fragments [1015, 1111]: single, wider, tapestry-woven blue bands, repeated down the cloth, incorporated narrow blue and white undulating bands and widened at intervals into opposed 'step-pyramids' in blue weft. The blue yarn was often faded; but it is evident that the core of the yarn had not been penetrated by the blue dyestuff, a feature which suggests hank-dyeing of the spun cotton yarn.

The most striking mode of decoration at Qasr Ibrim was embroidery – a technique comparatively rare in the Roman world to the north. Rows of blue flower heads on stalks were worked across a textile (*ATN* 43, 17 fig.13). They are understandably more degraded on the face of the cloth than on the back. At the centre of each flower is a raised boss, built as a tight spiral worked in chain stitch. Radiating from the boss are single stitches representing petals, framed in one case by an outer circle in running stitch [1016]. In some of the examples examined in 2008 the bosses were worked in stem stitch rather than chain stitch, but the visual effect was the same. Where the role of the textiles carrying the embroidery could be ascertained, they seem to have been loin cloths and the aprons worn over them [1000, 1073] – male attire. Decoration based on rows of close-set short loops was recorded on one frustratingly incomplete fragment of cotton tabby [1110, with 0689 from the 2007 season]. A single geometric motif picked out in rows of loops ended on a line oblique to the weave, but was otherwise truncated. Amid the mainly blue loops were small patches of red loops, virtually completely worn away and impossible to interpret.

Fig. 1. Worn blue tassels on a Meroitic cotton textile [0999] (Photo: P.J. Rose).

The technique of weaving, plaiting and wrapping a terminal fringe was brought to a fine art in the Meroitic cotton industry. The striking Meroitic openwork fringes have long been known: Elisabeth Crowfoot published a type series (Crowfoot 1984, 16 fig.1), to which we have added a number of variants. The same basic principles, however, underlie them all. Pairs of warp ends are formed into a three-strand plait along the fell of the cloth. The warp pairs emerging sideways from the plait hang loose and parallel for a short distance before being plaited again. To the (short) ends which emerge from this second plait are attached a close-packed row of heavy tassels. In a separate operation the parallel warp pairs left free between the two lines of plaiting are bound with an extra yarn (sometimes blue) into rows of open diamonds, a scheme with many variants.

Rather less flamboyant fringes finish other cotton fabrics. After the warp pairs have been plaited, first in one direction, then the other, the pairs emerge to be converted into a row of 'bobbles'. Some are (or were) diminutive blue tassels [0999] (fig. 1) or undyed tassels [1017]; other tassels were denser and bushy [1033].

Where cloth was cut either straight or on the bias, in the making of tailored garments, the hems were emphasised by the addition of two lines of blue piping. Each piping cord consisted of 4 pairs of yarns twisted together. One cord was sewn to the outer edge of the hem (and was soon the worse for wear), the other into the step between the hem and the main fabric. The hem-bearing face of the cloth thus became the 'show side', the opposite of normal practice.

Among the multitude of fragments were three readily recognisable cotton garments. The first was a one-piece shoulder cape with hood of a size that would fit a baby [1030]. It had tucks to mark the shoulders, blue piping along the hems and a tiny blue bobble at the front of the seam on the hood. The second garment was a cod-piece [1032] (fig. 2), constructed from a T-shaped piece of cloth by sewing two adjacent corners together and providing ties from the corners of the T-arms to fasten round the waist. Again there is blue piping, along the hems. A third item was an enigmatic hemmed object resembling an eye-patch, with ties [0990].

Fig. 2. Meroitic cotton cod-piece with blue-piped hems [1032], viewed from the front (Photo: P.J. Rose).

Conclusion

The season's work has brought into sharper focus the revolution in textile culture that marks the end of the Napatan and the beginning of the Meroitic period. Archaeological evidence sheds at present frustratingly little light on the duration and character of the interface between the two – if indeed there *was* an interface at Qasr Ibrim and not a gap in occupation. An industry based on spliced flax woven on a two-beam loom gave way – apparently rapidly – to one based on spun cotton and the warp-weighted loom. The only obvious thread of continuity is the penchant in both cultures for elaborate fringes. Indeed, among the Meroites the character of a fringe was a significant marker of the status and identity of its wearer, as contemporary iconography reveals.

Cotton was introduced from the south into Nubia by the Meroites as the first of a suite of new African crop plants such as sorghum which contrasted with the old-established repertoire of Lower Egypt (Wild, Wild, Clapham 2007; 2008). Yet some key features of the Meroitic cotton textiles – especially the reinforced selvedges and transverse borders – reflect the contemporary wool weaving techniques of the Hellenistic and Roman world to the North: cotton was manifestly the 'new wool'. The brief presence of a Roman garrison at Qasr Ibrim in 25/24 and 22 BC is unlikely to have had much influence at a textile-cultural level. How this apparent contradiction between influences from south and north is to be explained requires further thought and discussion.

Acknowledgements

We are indebted to Dr. Pamela Rose, Director of the Qasr Ibrim excavations for the Egypt Exploration Society, to Dr. Alan Clapham, the expedition's palaeobotanist, and to the Pasold Research Fund which has twice generously provided travel grants.

Literature

Crowfoot, E. (1984) Openwork fringes from Qasr Ibrim. *Meroitic Newsletter* 23: 10-17.

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Wild, J.P., Wild, F.C., and Clapham, A.J. (2008) Roman cotton revisited. In C. Alfaro and L. Karali (eds.), Purpureae vestes*: II Symposium Internacional sobre Textiles y Tintes del Mediterráneo en el Mundo Antiguo*, 145-149. Valencia.

Hero Granger-Taylor

A fragmentary Roman cloak

probably of the 1st c. CE and off-cuts from other semicircular cloaks

Introduction

Large fragments of a wool textile found at Ballana in Lower Nubia have for some years been a puzzle for researchers working on textiles of the Roman period (Fig. 1). In a very fine weft-faced twill weave, with Z-spinning in warp and weft, a contrasting band of true purple and the remains of a curved edge, the fragments have always seemed out of place in the context where they were found, a cemetery at the time to the south of Egypt and beyond the border of the Roman Empire. The burial belongs to the time when Lower Nubia was ruled from Meroe to the south, that is from the 1st century BCE to the 4th century CE. A second textile found in the same grave is much more local in character, being of S-spun cotton with a typically Meroitic openwork fringe (Thurman and Williams 1979, 60-61, grave B 188, nos.14 & 15; Crowfoot 1984).The cemetery at Ballana was excavated by the Oriental Institute of the University of Chicago in 1962-1964 (Seele 1974; see also Bergman 1975). The work

was undertaken as part of an international programme of rescue archaeology following the building of the high dam across the Nile at Aswan and the gradual formation of Lake Nasser. The textiles found at Ballana, together with those from nearby Qustul, were conserved and studied by Christa Mayer Thurman of the Art Institute of Chicago and exhibited by her there in 1979. The catalogue, *Ancient Textiles from Nubia* by Christa Mayer Thurman and Bruce Williams, is an invaluable record of the fascinating textiles found at these two sites, many preserved in excellent condition and as very large pieces. But at this time the original form of the fine twill textile from Ballana remained elusive (Thurman and Williams 1979, 60-61).

I referred to the Ballana fragments in relation to the Roman toga in my 1982 article on the Arringatore (Granger-Taylor 1982, 16). Having examined them briefly in person in 1989, I mentioned them again in the Preliminary Report on the textiles from Masada (Sheffer and Granger-Taylor 1994, 207). I was mistaken here to think the fragments had once formed a toga but correct to compare them to surviving fragments of cloaks.

In 2002 I was very fortunate to be able to return to Chicago in the company of Nobuko Kajitani, who had also long been intrigued by this very important discovery. The reconstruction work which follows, of the Ballana cloak and of the Qasr Ibrim cloak fragments, was done jointly with Nobuko Kajitani and is wholly dependent on her many insights.

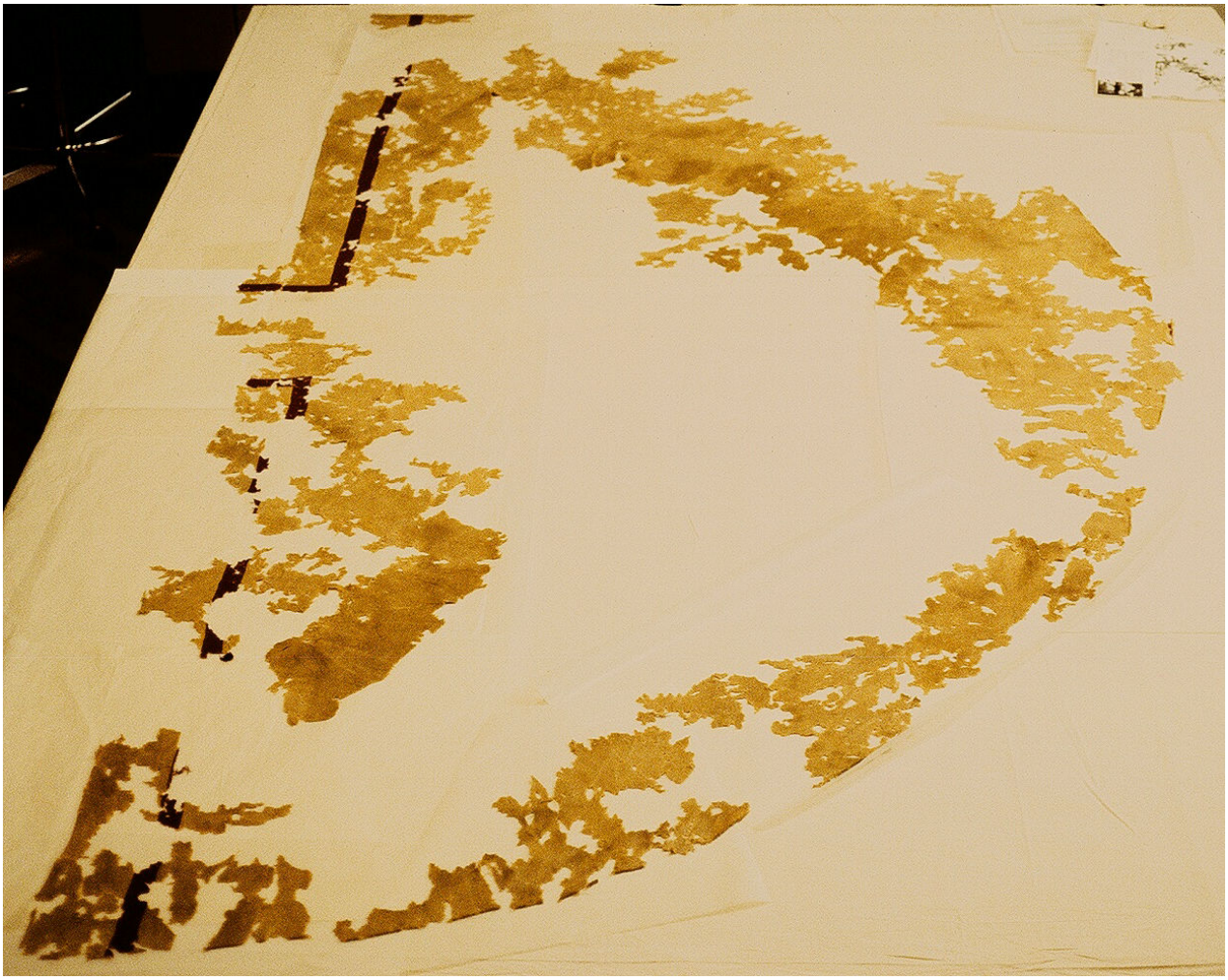

Fig. 1. The Ballana cloak fragments as arranged by HG-T and NK, The Art Institute of Chicago, July 2002 (Author's photo).

The textile itself

In an unpublished report of 2002, Nobuko Kajitani wrote: "In my 1978 examination, I was awed by the exquisite weaving and the following features: the brilliant shellfish purple; the evenness (woven with the finest yarn) of the (originally) off-white surface interest of the field; the immaculately woven reversible weft-faced 2-2 twill; and the design in discontinuous dovetailed wefts (tapestry weave)… These major features distinguished the enigmatic textile as a something rare and extraordinary … and I have referred to

it frequently as one of the most beautiful weavings ever woven that we can see today."
Further technical details are as follow. The warp is of undyed and unpigmented wool, the colour still light cream/off-white where the fibres have been protected, the yarn Z-spun and 2 S-plied with c. 19 ends per cm. The ground weft is of undyed wool the same colour as the warp, with a slight Z-spin, and c. 80 picks per cm. The contrasting weft, a very even dark mid-tone purple, is also loosely Z-spun, with c. 90 picks per cm. The purple band is 2.4-2.5 cm deep. Where it runs horizontally it was woven without any interruption to the ground weave but was created simply by changing the colour of the weft yarn. In two places the band turns 90º and here the technique of the band becomes, strictly speaking, tapestry weave (Fig. 2). The vertical joins between dark and light weft are made without cutting short the twill floats of either colour, creating as a result a tiny dovetailed effect. Another detail in tapestry weave is a small purple notched bar which occurs at the bottom of the curve of the largest fragment. This measures c.5.5 by 0.45 cm (Fig. 3).
Most other woven details, in particular the textile's original edges, have been lost, but a significant feature is preserved near each of the two right angles formed by the purple band. This is a double row of twining, 10 cm long on the side where complete, and situated 5.1-5.3 cm above the band where it is horizontal and a minimum of 4.2 cm from the band where it is vertical, respectively to the left or right (Fig.2). The twining is worked over two warp ends and is made with pairs of plied thread, the yarn undoubtedly the same as the textile's warp.

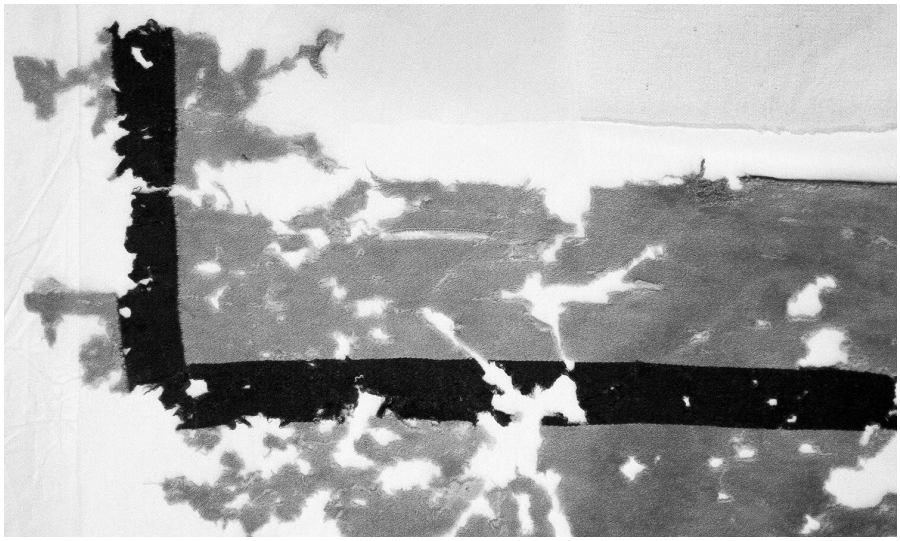

Fig. 2. The Balana cloak detail showing the band turning upwards toward the hood (Author's photo).

No brushed nap survives on the surface of the textile but the very loose spin of the weft yarns shows that it was made with the intention that it should be napped (see a partly-preserved nap on a fine wool textile from Palmyra, Schmidt-Colinet, Stauffer and Al-Asᶜad 2000, Kat. 513, Tafel 44). There is no sign of felting but the textile has clearly been washed (Nobuko Kajitani estimates that the fabric must have shrunk by around 10%).

Wear and refurbishment

The textile was well worn during its lifetime and the surface became dirty through use. Holes also developed which were subsequently darned. There are at least seven separate darns, the largest being at the base of the hood, where a long vertical gap has been "rewoven" in tabby darning. All the darning is carried out in Z-spun, 2 S-plied yarn similar to the textile's warp.
The great loss of fabric which has taken place since the darning was carried out can be put down largely to insect activity. Most of this must have taken place in the grave, in the period immediately following burial.
The finished edges which survive are not woven but are cut edges which have been secured by elaborate hems or "sewn edgings" of two kinds (Fig. 4). The yarn used for all these sewn edgings is of undyed wool, Z-spun and S-plied, but thicker, more firmly plied and rather darker in colour than the textile's warp yarn.

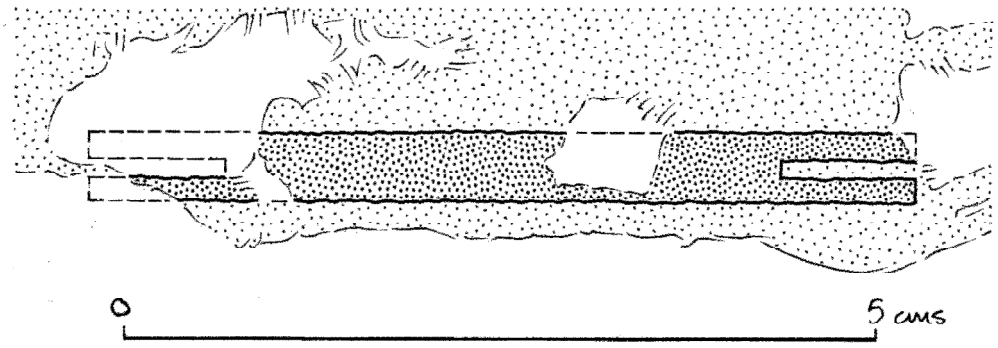

Fig. 3. The small notched bar at the bottom of the cloak (Drawing by J.M. Farrant).

At the curved edges, the hem consists of a sewn tabby-weave "tape" created in principle as in Figure 5. The "warp" of the tape consists of 7 threads in total, and the "weft", a kind of whipping stitch, of c. 6.5–8 stitches per cm. The sewn finish created in this way is 0.2-0.25 cm wide.
Under the "tape", but not shown in the diagram, is a bundle of "laid" threads which it has not been possible to count. These were attached to the back of the cut edge of the textile before the tabby weave edging was created. The laid threads are held down by relatively well-spaced couching-cum-whipping stitches which slope in the opposite direction to the "weft" stitches above (Fig. 4); these laid threads are omitted from the diagram in Figure 5.

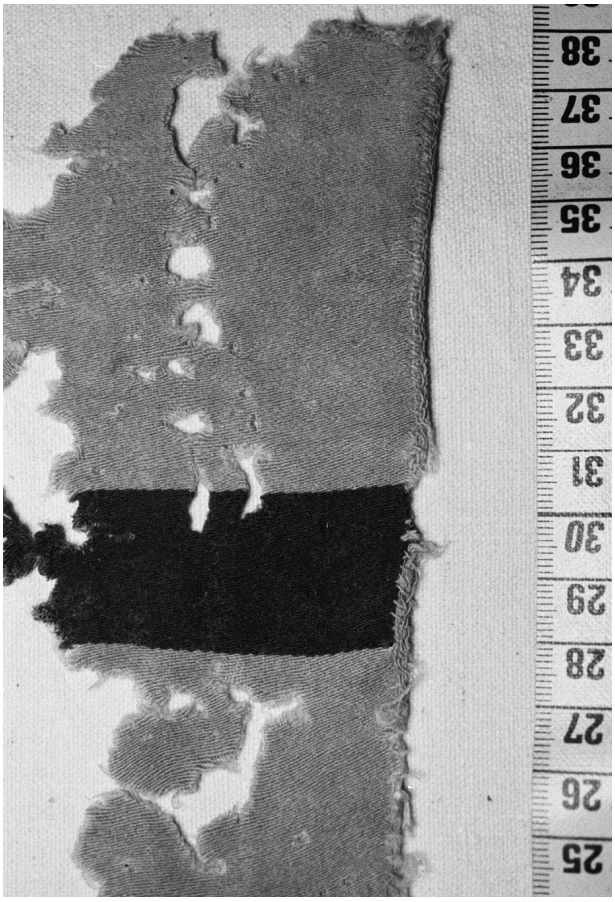

Fig. 4. Detail of one end of the band, sewn edging (reverse) (Author's photo).

The second type of sewn edging occurs along the straight edges parallel to the weft. Here the same bundle of laid threads appears again, but the outer finish is in the form of three adjacent cords rather than a tabby-weave tape. The cords are very fine and each is apparently made from just two threads of the basic plied yarn: the two threads are Z-twisted together in the two outer cords and S-twisted in the cord at the centre. The cords are attached by whipping stitches which pass between the twisted threads. There are c.5 stitches per cm (with this technique it is not necessary for each twist of the cords to be sewn down by a stitch). Tablets may have been used to make the cords but we cannot be certain.

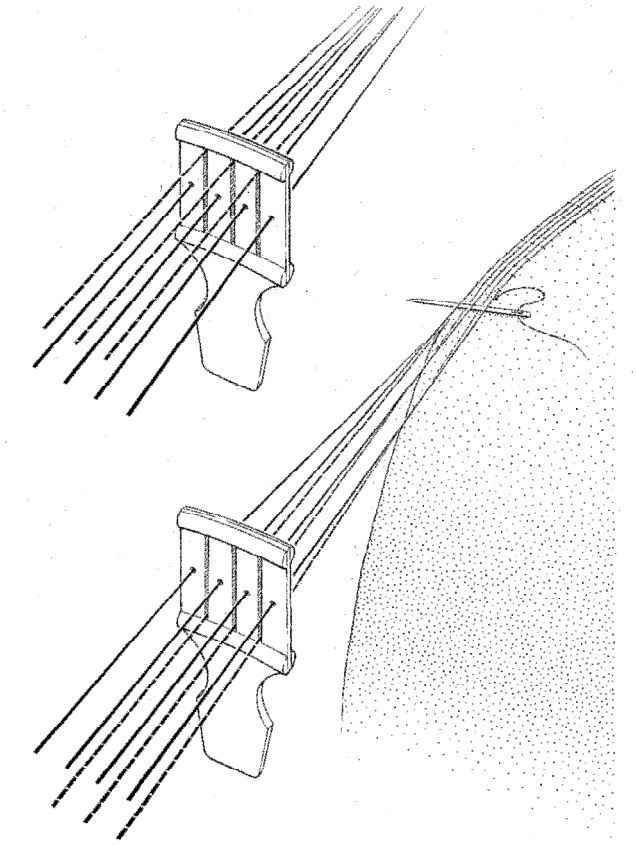

Fig. 5. The "tabby" sewn edging, tool conjectured (Drawing by J.M. Farrant).

As seen in Figure 4 , the "tape" created along the curved edges does not cover each side of the cut edge equally, but sits over to one side, the side of the textile where the line of the twill is S. This same inequality is present on the corded edge. The darning also has a front and back, being neater and less visible again on the side of the textile with the S line of twill.
One possibility is that the sewn edging in tabby weave was made using a rigid heddle, as indicated in Figure 5. The "warp" threads for this edging would have had to have been at least 4 m long and we do not know how they were tensioned. It is possible that they were held outstretched by the maker's big toe, as in Irish *crios* weaving (Mitchell, 1978, 44-5). A woven edging made in principle as on the cloak, and also foot-tensioned, is referred to in Denmark as "foot weaving", and in Icelandic as *slinging* (Østergård 2004, 105). We came to the conclusion that these elaborate finishes were not carried out at the beginning of the cloak's life but after it had been used for some months

or years; it is probably contemporary with most if not all of the darning. We believe the cut edges covered by the sewing must record where the original edges, presumably by then well-worn and perhaps even ragged, had been cut away: the signs are that a knife was used for this rather than a pair of scissors (At the horizontal edges, it is noticeable that the cut edge does not strictly follow the "fell" of the weft). Threads to be used for the darning could have been extracted from the off-cuts, particularly those coming from the top of the curved edge, where the available warp threads would have been longest. Ideally, the work of cutting and sewing would have been carried out as part of a complete programme of refurbishment. Before being repaired, the textile would have been washed, re-napped and perhaps also bleached with sulphur fumes. It would probably also, at some point, have been pressed. Washing (technically "walking"), napping and bleaching were skilled tasks and part of the trade of fulling, *ars fullonica* in Latin, *gnapseutike* in Greek (Blümner 1875, 157-178).

After this refurbishment, the textile must have looked almost as good as new. The darning was so neat as to be hard to detect. The sewn edges, while functional, were obviously also partly cosmetic: the edge with the cords was surely made in this way to imitate a twisted starting border and the edge with the "tape" intended to look like a woven selvedge, the laid threads functioning to give both types of edge a more three-dimensional and therefore more lifelike appearance. Refurbishment would have been gained at the price of some loss of fibre (through napping) and of overall size (due to the cutting away of the edges). The textile had also ceased to be strictly two-sided since, as explained, the sewn edges and the darns both have a "right" and a "wrong" side. But for a beautifully-made cloak which was obviously still far from "worn out", these minor negatives would have been outweighed by the improved overall appearance, and the cost of the work was no doubt viewed as a worthwhile investment.

The fragments remaining and our reconstruction

The photograph in Figure 1 shows the cloak as we reconstructed it in the Art Institute in July 2002. As can be seen, probably less than a third of the original fabric survives. Nevertheless, three circumstances were in our favour: the considerable size of the largest fragment, the fact that so many of fragments retain part of a sewn edge, and the possibility of distinguishing the two sides of the textile (i.e. because on one side the line of twill is S and on the other it is Z). The largest fragment stretches from the corded edge above the purple band to the lowest part of the semicircular curved edge, a depth of c. 142 cm. The small notched band is at the very bottom of this largest fragment and we took its mid-point to mark the central axis of the semicircle. Smaller fragments include two corner pieces; on both of these the horizontal corded edge meets the top of the curved edge with the tabby sewing.

The breakthrough in our reconstruction was the realisation that the right-angles in the purple band did not turn inwards, as photographed for the catalogue, but outwards and then away from the curve. The bigger fragment with a right-angle fits exactly onto to the inner broken end of the purple band on the largest fragment. Aligning the two right angles on either side of the vertical axis indicated by the notched band we realised that we had the lowest part of a hood.

Sliding the fragments together as close as was practicable, and placing them according to the curve established by the largest fragment, we estimated the distance from one outer corner to the other as c. 277 cm. We were also able to calculate the approximate width of the hood. This is because, on the larger fragment with a right-angle of band, the inner end of the corded horizontal edge is preserved, together with the beginning of the vertical edge leading up from it. From this we found the hood's width to be c. 45 cm (Fig. 6).

Having been woven to shape, the cloak would have required little or no constructional sewing and none can be detected on the fragments which remain. We conclude however that there would have been a seam in the missing upper part of the hood: for the hood to have been functional, its straight top edge must have been folded on itself and sewn together. The long vertical darn which survives at the base of the hood is perhaps a record of the strain which would have been created as consequence of this horizontal seam.

Because there is no evidence of constructional sewing along the main horizontal edges we assume that this was not a type of cloak which was joined together at the front by a long seam as with the Lahun cloak and other *casulae* discussed in *ATN* 45 (Granger-Taylor 2007).

The cloak as first woven and the tradition in Italy of semi-circular mantles and cloaks

We also attempted to estimate the cloak's original dimensions. The only clue was the two short lengths of twining mentioned above: we realised that the

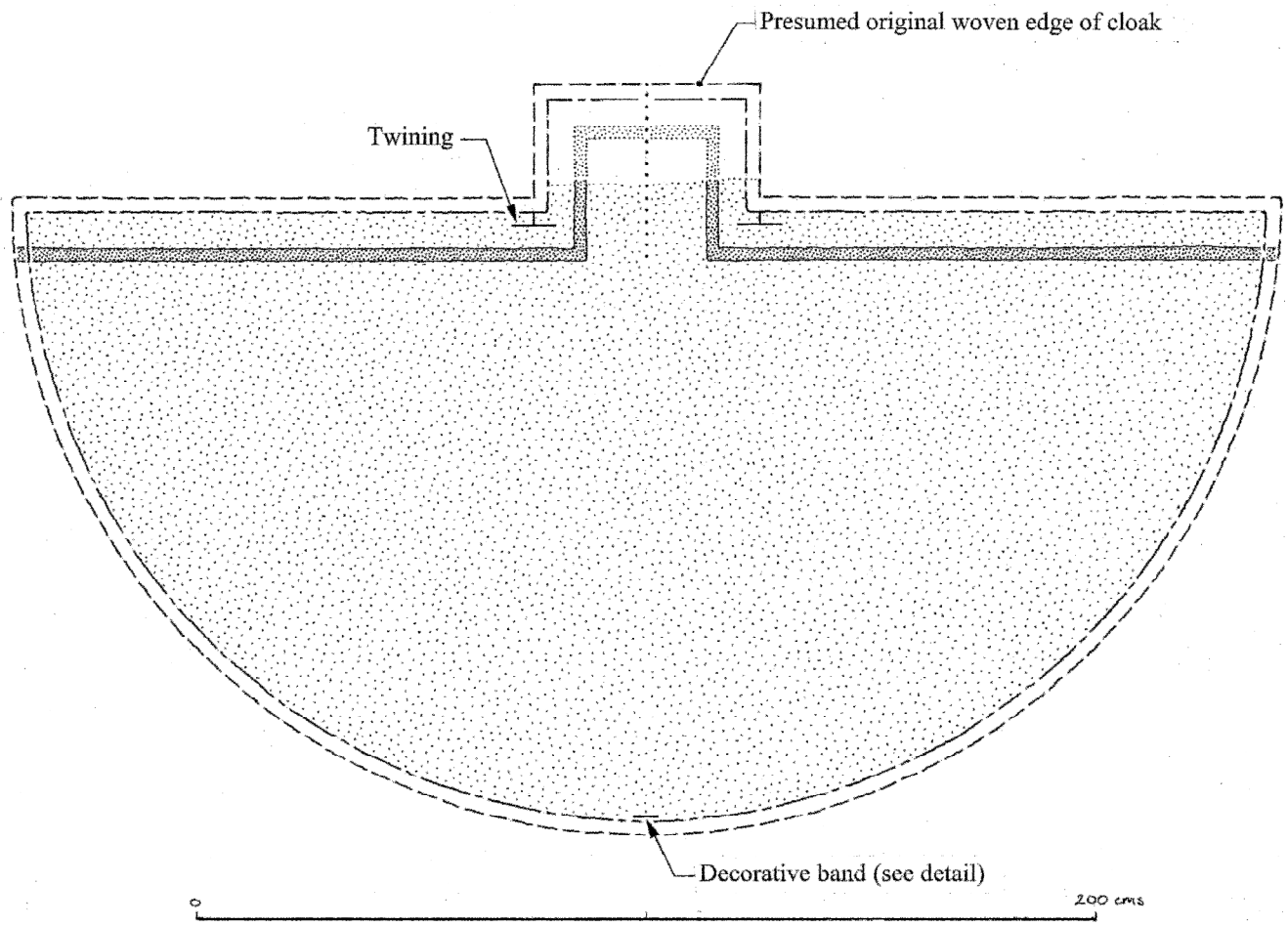

Fig. 6. Plan of the Ballana cloak (Drawing by J.M. Farrant and author).

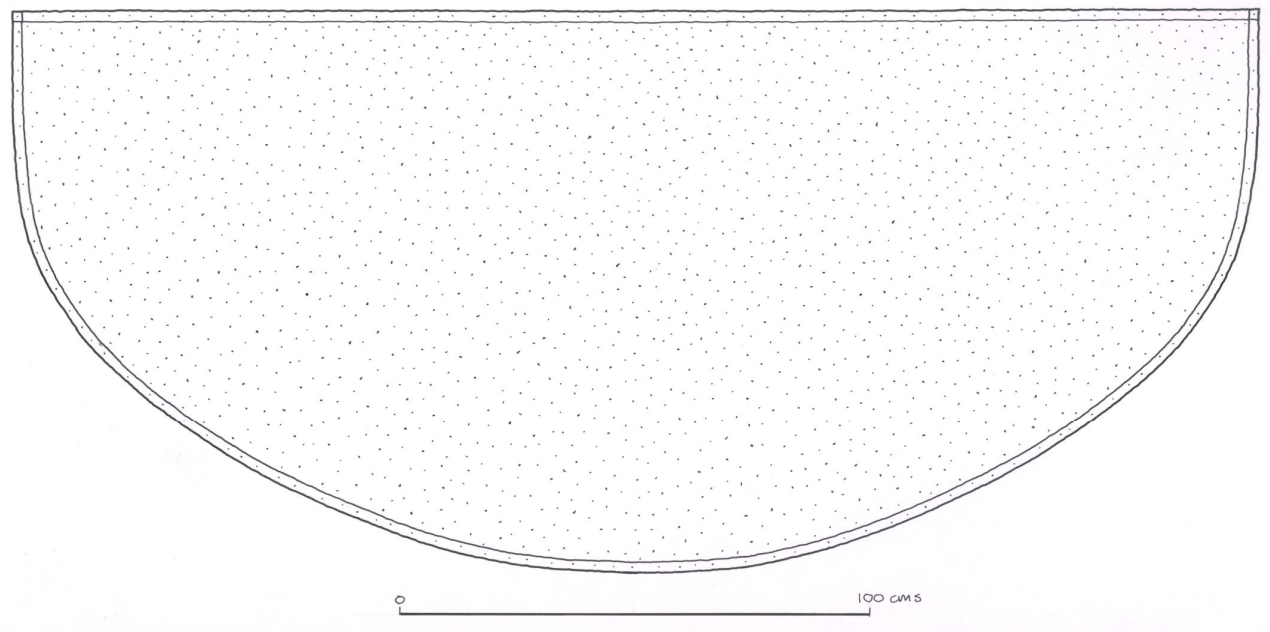

Fig. 7. Plan of the mantles from Verucchio, c. 120 x 265 cm,
(Drawing by J.M. Farrant based on Stauffer 2002, figs. 65 and 73).

twining was composed of the additional warp threads forming the original woven selvedges of the hood. Where comparable twining occurs, below the hoods of the later cloaks found at Lahun, and in the underarm angle of Late Roman sleeved wool tunics, the twining is worked backwards and forwards for approximately the same distance to either side of line marking the course of the selvedge threads into the web (the procedure is explained in Verhecken-Lammens 1994, 87; for a very clear photograph of this phenomenon see Pritchard 2006, 90, fig. 4.36.c). In this way we were able to calculate that c. 3 cm had been cut away from each side of the hood.

The diagram in Figure 6 shows the cloak fragments as reconstructed and, outside this, a dotted line representing an additional 3 cm around the whole of the perimeter. Adding this theoretical 3 cm, the original measurements would have been c. 283 from outside corner to outside corner and c. 146 from the principal horizontal edge to the bottom of the curve (in reality, more than 3 cm may have been cut from the bottom of the curve, the part of the cloak which generally became most worn – the purple notched bar survives here right up against the secondary sewn edge). We do not know the height of the hood area for certain; we have shown the original outline of the hood half as high as it is wide, that is c. 25 by 51 cm. As already mentioned, because the fabric would have shrunk when first washed, the size as woven would have been larger than all these measurements, perhaps 10% greater.

We know from other cloaks and from sleeved tunics that weaving would have begun at the hood and continued with the addition of broad sections of warp to either side; these side sections, like the hood, would have been fixed to the loom by means of starting borders. From a point some way on from the outer corners, the width of the web would have then been gradually reduced, so creating the curved outline. We cannot be sure what form exactly the curved selvedges took, but the curve was surely created during weaving (Granger-Taylor 2007).

The diagram in Figure 6 is orientated with the hood at the top, as would have been the case if the cloak had been made on the warp-weighted loom. At this relatively early period, the warp weighted loom may well have been employed, and we know for certain that semicircular Roman togas had traditionally been made on this loom. If the cloak had been made on the two-beam loom, weaving would have begun at the loom's lower beam. But the sequence would still have been as just described, with work commencing with the hood and continuing from there.

The toga, a large semicircular garment and the principle draped garment of the Romans, is a reminder of the long tradition that existed in Italy of making outer garments with curved edges. The toga in its Roman and Etruscan forms can be traced back in art until at least the 5th century BCE (Granger-Taylor 1982, 5). With the discovery of elliptical cloaks or mantles from the cemetery at Verucchio in northern Italy, of the 8th century BCE, this tradition can now be seen as very firmly established (Fig. 7) (Stauffer 2002). Lillian Wilson, in her study of Roman clothing, identifies three different cloaks with a semicircular outline: the *paenula*, hooded and fastened in the front, and the two-layered *laena* and the hoodless *lacerna,* both fastened with brooches on the right shoulder (Wilson 1938, 87-125).

Representations of semicircular cloaks: how the cloak was worn

The Ballana cloak may have been intended to be worn symmetrically, with the two straight edges fastened together over the wearer's chest. This arrangement is seen in some monuments to Roman soldiers and is particularly clear on a statue from Camomile Street, London, where the calf-length cloak is joined on the chest by a short row of four small fasteners (Wild 1970; Bishop 1983; Sumner 2002, 12-13 & 44). A little-known wall-painting from Pompeii, reproduced by Graham Sumner, does not show the form of the fastening but illustrates very well the appearance of the dark band when the cloak was worn in this way (Sumner 2002, 21). A better-known painting from Pompeii shows the back of such a cloak: two men dressed as soldiers stand in front of a stall where a civilian man sells or distributes bread (see Croom 2000, Pl. 3 for a good reproduction). The nearer soldier wears a light brown knee-length semicircular cloak and we see very clearly the hood lying folded symmetrically on his back, its point downwards. A purple band, appearing in the painting as two disconnected right-angles, must in fact have been continuous, travelling up each side of hood's opening and then turning 90º to run parallel to the top of the hood (see our reconstructed hood in Figure 6). The second soldier has a similar but darker brown cloak and both soldiers wear dark brown tunics and neck scarves.

Pliny the Elder, writing about the bindweed plant, says that its leaf is similar in shape to the hood (*capitium)* of the *paenula* (*Natural History* XXIV, 88). Lillian Wilson, who interpreted this passage as referring to the hood when folded back as in the

wall-painting, uses this text among others to show that semi-circular cloaks of this kind were known in Latin as *paenula* (Wilson 1938, 87-92).
It is also possible that the Ballana cloak was worn asymmetrically, pinned with a brooch on the right shoulder. Cloaks were commonly worn in this way in the eastern Mediterranean and are shown in some of the Egyptian "mummy portraits" of the 1st-3rd centuries CE (for example, Borg 1996, Pls. 40.1, 43.2 & 50.1, this type of portrait discussed by Parlasca 1966, 84-85, n.170). Most of the portraits are busts, where we see only the central shoulder area of each cloak, and none of these is obviously hooded. However, a more complete representation on a linen shroud now in Luxor Museum has ample folds of fabric on the wearer's left shoulder and these could be understood to represent a hood (American Research Center in Egypt 1979, no. 290; the form of the *clavi* on the tunic shows that this portrait dates to the first half of the 3rd century CE).
Full-length representations of asymmetrically-arranged cloaks are easier to find in art of the Late Roman period when semicircular cloaks had become the typical outer garment of civil officials. A free-standing portrait sculpture of a magistrate from Aphrodisias, of c. 400 CE, conveys well the cloak's semicircular shape: the lower edge is curved and the long folds become deeper the closer they are to this edge (Bianchi Bandinelli,1971, fig. 342; by this date, both cloak and tunic were worn longer).
In the Greek-speaking eastern Roman Empire the very broad Greek term *chlamys,* used originally for rectangular Greek cloaks, was by the Roman period also applied to semicircular cloaks. This is shown by a passage in Plutarch about the city of Alexandria, where, writing in the early 2ndcentury CE, Plutarch describes the semicircular plan of the city as like a *chlamys* with its two wings (*ptera*) (Plutarch, *Alexander,* 26).
Greek versions of the Latin word *paenula* also appear, for instance in St. Paul's second letter to Timothy: "When you come, bring the cloak (*phailonɛs*) I left at Troas with Carpus, and the books" (2 *Timothy* 4.13). A cloak of this sort would have been very useful to Paul on his travels and this reference is a useful reminder that these hooded cloaks were just as much civilian as military garments, worn against cold and rain by all classes and ages of men.
At the present stage of research, we cannot tell whether or not contemporaries would have considered the cloaks fastened symmetrically and those arranged asymmetrically as one and the same garment. Practical considerations, particularly temperature, must have had an effect. Perhaps the hood was tucked out of sight in areas with little rainfall, such as Egypt.

Fragments of cloaks from Qasr Ibrim and other off-cuts from cloaks

The textiles with perhaps the greatest similarity to the Ballana cloak are fragments found amongst rubbish of the Roman period at Qasr Ibrim (ancient Primis). Qasr Ibrim, also in Nubia and about 70 km north of Ballana, is a citadel on the Nile which was besieged by the Roman army under Petronius in 25-24 BCE and then occupied by the Romans, perhaps for 100 years (Our thanks to Pamela Rose for making it possible for us to study these textiles, since transferred to Bolton Museum; for an introduction to the Roman textiles at Qasr Ibrim, see Adams and Crowfoot 2001).

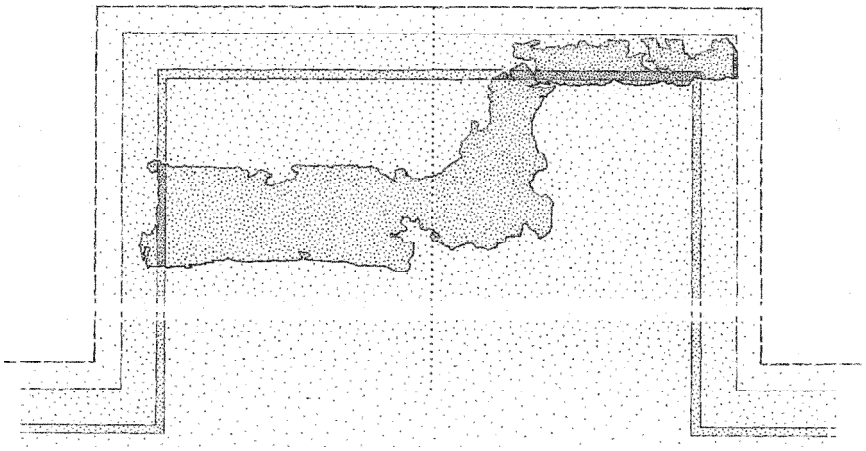

Fig. 8. Fragments from a cloak hood, Qasr Ibrim 80.T/170 (Drawing by J.M. Farrant and author).

Most notably, textile 80.T/170 from Qasr Ibrim consists of fragments from a dark brown cloak in very fine 1:2 weft-faced twill with a narrow band in shellfish purple of a violet shade. Two connecting fragments preserve parts of the band where it runs parallel to the warp and to the weft (Fig. 8). Although the band itself is narrower, the course of the band is exactly as on the soldier's hood in the Pompeii painting. None of the original woven edges survive but a short length of vertical cut edge has whipped laid threads like those found under the sewn edgings on the Ballana cloak. The reconstruction based on these fragments is a relatively large hood, c. 66 cm wide after the original edges had been cut off, perhaps 72-75 cm wide as first made.

Another Qasr Ibrim textile, 78.T/401, also of weft-faced 1:2 twill, but less dark and not so fine, can be identified as two fragments from the seam at the top of a hood. Here two lengths of cord (probably the same cord folded back on itself) are seamed together, the sewing thread reddish purple in colour and relatively thick, with the overlapping stitches forming a decorative chevron detail on what was the inside of the hood (In 2003, I noted the cord as a closing cord. This should be checked as a comparison with other finds, in particular cloak fragments from Masada, suggests that it is more likely to be a starting border of the single cord type) .

80.T/172 is a group of fragments from a brown cloak of medium quality, again in 1:2 twill. Six of these can be fitted together to form an approximate semicircle as in Figure 9. Whereas the Ballana find and the Qasr Ibrim hood fragments 80.T/170 are the remains of cloaks from which fabric has been cut away, these six fragments 80.T./172 are off-cuts which have been removed from a cloak. The fragments are very worn, even ragged in places, and are extensively darned. It is of particular interest that they have, running along the outside of the curve, the remains of a sewn tabby tape like that along the curved edge of the Ballana cloak. (In this case there are no laid threads below the tabby finish but instead the cut edge of the cloth has been turned back and roughly hemmed down. The "weft" thread of the edging is linen.) From this sewn edging we know that the cloak had been refurbished on a previous occasion. The later refurbishment must have taken place at Qasr Ibrim itself since this is where the off-cuts were deposited.

Roman sites where textiles are preserved among rubbish rather than in burials are rich hunting grounds for cloak off-cuts. It is proposed here that where the off-cuts are curved they can *per se* be identified as coming from semi-circular cloaks (or, much less likely, from Roman togas, the only other type of garment made with a curved outline). As already mentioned in *ATN* 45, the off-cuts in practice only rarely preserve their original woven edge (Granger-Taylor 2007, 33-34). Much more often they occur with a hem dating from a previous repair or refurbishment. Where the hem is in the specific form of a sewn edging like those found on the Ballana cloak or on the Qasr Ibrim fragments, the identification becomes even more certain. Also significant is the actual cutting, seen most clearly on the side of the strip that had not been previously hemmed. This was apparently done with a knife rather than scissors, and in a world where textiles were seldom cut (when reusing or subdividing worn textiles, it was usual to tear them in the direction of the warp or weft), a cut edge can also be considered a characteristic of cloak repairs.

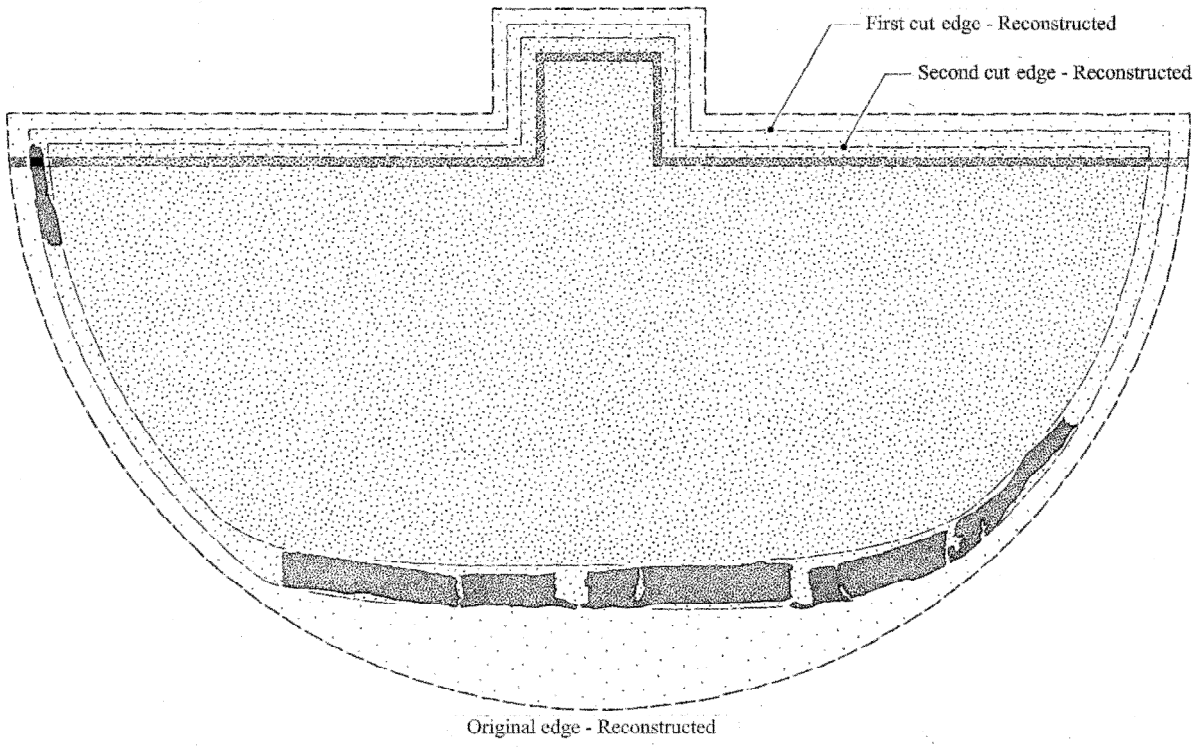

Fig. 9. Off-cuts from the curved edge of a cloak, Qasr Ibrim 80.T/172 (Drawing by J.M. Farrant and author).

Conclusion: where was the Ballana cloak made and how did it come to Nubia?

Our best guide to the origin of the Ballana cloak is the basic Z-direction of the spinning found in the warp and weft yarns as well as in the sewing threads. It cannot have been made or refurbished in Nubia or in Egypt as in both these areas S-spinning was universal. And even in Egypt there is no direct evidence of the production of wool textiles of the very highest quality, as here. The spinning and the quality both point to a north Mediterranean origin.

The similarity with finds from nearby Qasr Ibrim in fact strengthen the impression that the Ballana cloak is essentially a Roman product. This is because the related fragments from Qasr Ibrim come from Roman levels and can be associated with the Roman army's occupation of the city. Going further, it appears that the fine brown 1:2 twills from Qasr Ibrim could have belonged to legionary soldiers who came south to Nubia with Petronius.

At the same time, the differences between the Ballana cloak and the Qasr Ibrim fragments are worth considering: these are essentially colour – the Ballana cloak is of undyed cream wool, and weave – rather than very fine weft-faced 1:2 twill, it is of exceptionally fine weft-faced 2:2 twill. These differences may indicate that it was a cloak of Roman origin, but intended for civilian rather than for military use.

The grave in which the fragments were found belonged to a settlement outside the area of the Roman occupation. Did the cloak's final owner realise what a wonderful piece of weaving he had acquired? In fact, the rescue archaeology that took place in the area in the 1960s and 1970s brought to light many imported objects, of Roman as well as Egyptian origin, in William Adams' words, an abundance of "trade goods" (Adams 1977, 348). So the cloak may have been brought to Ballana as part of a pattern of trade; already extensively repaired, it must nonetheless have remained valuable enough to have been worth transporting over long distances.

The wealth of Lower Nubia reached its highest level in the 2nd and 3rd centuries CE and the majority of the Mediterranean imports date to this time (Säve-Söderbergh 1975, 3). Thinking carefully about the date of the cloak, however, it still seems more likely to belong to the earliest period of Roman influence, the end of the 1st century BCE and the 1st century CE. The indicators of this early dating are internal: the cloak's decoration, its weave and its very high quality.

We know that with time the long continuous purple band seen on these Ballana fragments, on the Qasr Ibrim finds and in the Pompeii wall paintings, evolved into the large square purple panels familiar from later Roman and early Byzantine art. This process of evolution is not well documented in art or, so far, in the surviving textiles. But we can note than none of the cloaks in mummy portraits are shown with purple at the right shoulder, somewhere a continuous band of decoration should have been visible. The painting in Luxor, which includes the largest extent of cloak, has purple limited to a small panel by the wearer's left wrist, that is, at about the same point where the large purple squares would eventually appear (as mentioned above, this painting can be dated on the basis of the form of *clavi* on the tunic to the first half of the 3rd century CE).

Perhaps more significantly, the very fine weft-faced 2:2 twill weave of the cloak would also have evolved by the 3rd century CE. Plain weft-faced 2:2 twills are known from Mons Claudianus, with finds mainly of the first half of the second century CE, from Masada, with finds between c. 30 BCE and 106 CE, and from Pompeii, not later than 79 CE (Bender Jørgensen 2004, 95-96; Sheffer and Granger-Taylor 1994, 206; the Pompeii example as yet unpublished, with thanks to Fabienne Médard for this information). In contrast, at Dura-Europos, with finds of the mid-3rd centuryCE, and at Palmyra, with finds up to 273 CE, plain weft-faced 2:2 twill does not occur; at these later sites, the plain 2:2 twills appear to have been pushed out by the much discussed weft-faced 2:2 diamond twills (Pfister and Bellinger 1945; Schmidt-Colinet, Stauffer and Al-Asʿad 2000, 21). The picture should become clearer with the full publication of the discoveries at Didymoi, where the textiles are very well dated through their association to *ostraca.* For the meantime we can note that at least one weft-faced 2:2 diamond twill at Didymoi goes back to period 98-117 CE (D.98.1412.20).

Perhaps the strongest indicator of an early date is the exceptional fineness of the Ballana fragments. While the heights of ostentatious luxury were to be reached in the 4th century CE, by then, within the area of textiles, interest had shifted to fine silks and linens. Plain wool textiles were replaced, as in the case of the 2:2 twills, by various woven patterns, and wool fibre was more appreciated as a vehicle for shellfish purple dyeing than for its inherent qualities. It can be said that the simple wool textiles found in the earliest Roman sites, and illustrated by the Ballana fragments, have never since been surpassed in the fineness of their simple spinning and weaving.

Acknowledgments
Nobuko Kajitani and I are both very grateful to Mrs. Thurman, Curator of Textiles at the Art Institute, for allowing us to study this material once more and to republish the fragments here; we must thank her in particular for making available to us a very large worktable without which we could not have reconstructed the cloak. We thank also Mrs. Laura Fillipini, then Associate Conservator in the Textile Department at the Art Institute, and Dr. Emily Teeter, responsible for the Nubian material at the Oriental Institute of the University of Chicago. We understand all the Ballana and Qustul textiles will return eventually to the Oriental Institute, their owner, some perhaps to be exhibited there.

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Karina Grömer and Silvia Müller

Textiles from the Avar graveyard Zwölfaxing II, Austria

The Avars were a nomadic people who invaded Europe in the 6th century AD and disappeared at the beginning of the 9th century AD, after their territory had been annexed to the empire of Charlemagne. The western border of the Avar region was situated in a territory that forms part of Austria nowadays (Lower Austria and Burgenland). There are many Avar graveyards with inhumation burials in this region, most of them containing textiles preserved in connection with metal objects. The first Austrian Avar textiles excavated in Sommerein and Leobersdorf were analysed and published by Hans-Jürgen Hundt (Hundt 1984 and 1987). More than 50 textiles from a graveyard near Frohsdorf were inspected by Natascha Müllauer in 2004. The results have not yet been published yet and hundreds of textile findings are still lying quietly in the archives, awaiting scientific analysis. This overview of the Avarian textiles from Zwölfaxing (site Zwölfaxing II, Burstynkaserne) hopefully will stimulate the interest and research about this group of early Medieval textiles.

In 1938-39 and 1998-99, the finds from 69 single graves, one double grave and a disturbed grave were excavated within the area of the Burstyn barracks in Zwölfaxing, Lower Austria, near Vienna (Grömer in print). The necropolis is dated to a period between the transition from the Early Avar to the First Middle Avar period and the transition between the Second Middle Avar and the First Late Avar period, i.e. from AD 625 to AD 710 according to absolute chronology. The finds of the disturbed grave further testify to the use of this necropolis up to AD 800.

The textiles from Zwölfaxing

In 22 inhumation graves of the Zwölfaxing II graveyard (71 in total), 43 different fabrics could be identified as mineralised fragments on metal objects. Most of them are preserved on belt buckles, a few on strap-ends (*Riemenzungen*). In six graves, textiles were also recognised on other grave goods, like a hook, iron knives (both in male and female graves) and triple-winged arrow-heads, which are regarded as a typically male Avar attribute.

The textile remains on these artefacts are in most cases very small; sometimes just a few millimetres of the fabric survive. Furthermore, conservation treatment used to stabilise the objects has complicated the analysis of the textiles, and in only in 22 of the fabrics could the raw material be determined. The identified fibres are usually of vegetal origin, presumably flax. A few items showed the characteristics of animal hair (sheep wool). It should be noted that the woollen fabrics are usually coarser than the linen ones.

The Avar fabrics from Zwölfaxing are generally characterised as fine linen tabbies, woven in single yarn, 0.2-0.3 mm thick and z-spun (Fig. 1). A few tabbies are woven with combined spin-directions, i.e. z-spun yarn in one and s-spun yarn in the other system. Plied yarn (S-plied) was found only in one case in the warp of a rep band, which was wrapped around an unidentified iron object found next to a reflex arch in the male grave 51. Basket weave and half basket weave were also identified. No twill fabric was found at Zwölfaxing.

It is also worth noting that there are only very few coarse or ribbed tabbies. The coarsest textile is a woollen tabby in 0.7-1 mm thick z-spun yarn with 6-7 threads per cm. Interestingly, it was located on the front side of a belt buckle in male grave 70; on the same object a fine basket weave was found as well.

The Avar fabrics usually have a flat, smooth surface. Very seldom any kind of patterning of fabrics could be registered. Thus, two textiles/pieces from grave 15 and 71 have been woven with alternating single and

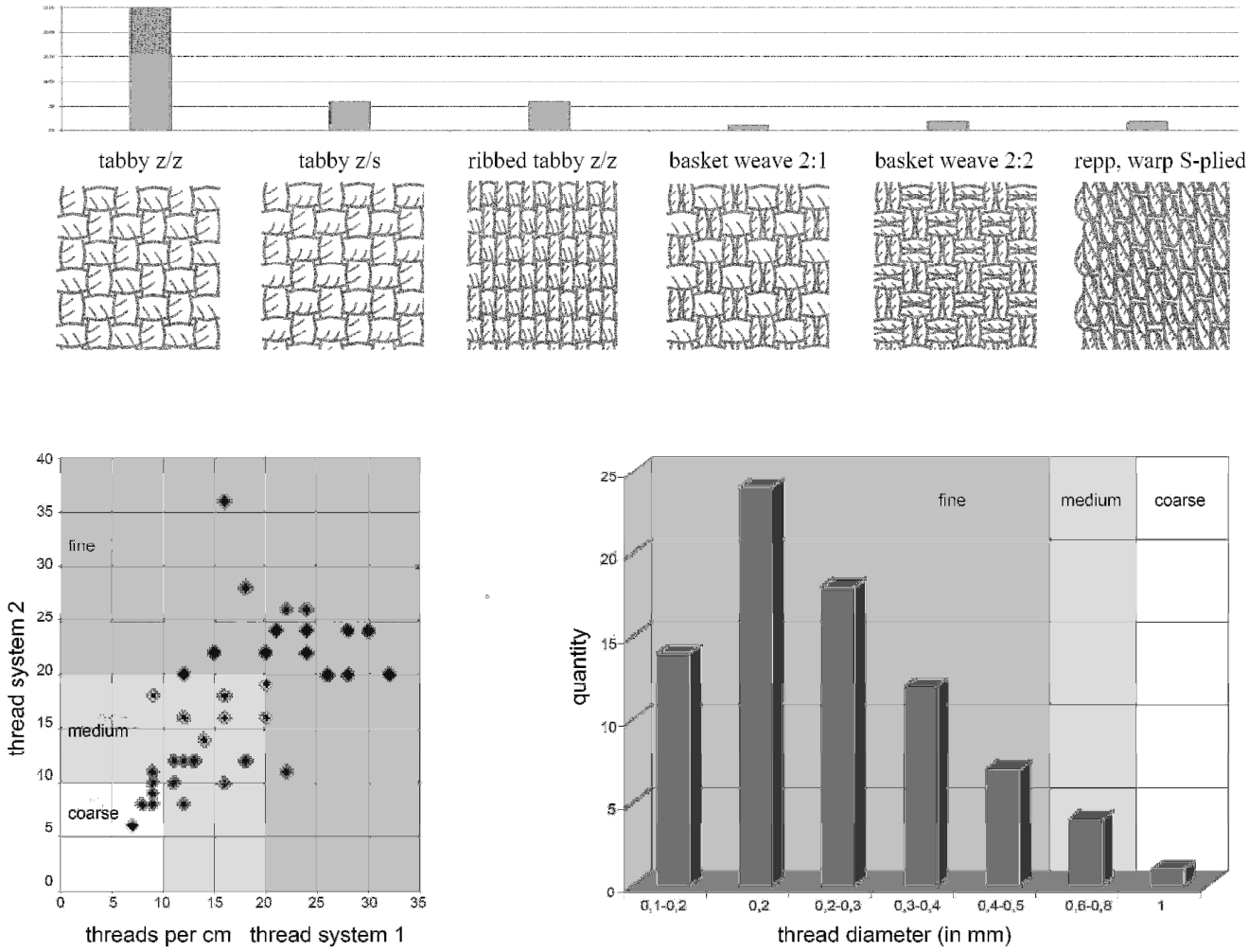

Fig. 1. Zwölfaxing II: weave types, thread count and yarn diameter (© K. Grömer).

plied or paired yarns in one-thread system. The fragments however, are too small to detect a regular pattern.

The most interesting find is a small, fine, multi-layered, linen tabby (in 0.3 mm thick z-spun yarn, thread count 12/16 per cm) preserved on a ring-shaped iron belt-buckle from male grave 46. The upper layer has floating threads forming a rhomboid pattern (Fig. 2). Due to heavy mineralisation, it is difficult to determine the patterning technique: the rhomb-pattern may have been created by floating threads in the weave or, alternatively, by embroidery. In grave 14, a layer of fur could be detected over a fine linen tabby. Unfortunately the grave was looted, and as the artefact was not found *in situ* no further conclusions can be made.

Interpretation

The Avar fabrics from Zwölfaxing were found in graves of males, females and juvenile males. At first glimpse the fabrics - usually uniform, fine tabbies – were assumed to be shrouds, but the micro-stratigraphical analysis has demonstrated that most of them were actually parts of clothes (Fig. 3). For both sexes a fine undertunic made of fine tabby seems to be common. In most cases the weaves were found corroded on belt-buckles (front and back side) and sometimes strap-ends, *in situ* on the waistline of the deceased; sometimes folded and multi-layered parts could be identified (Fig. 4). This implies that the garments were wide, and gathered and held in place by a girdle. Furthermore, it is likely that the small buckles were part of a belt for the undertunic.

Avar iconographic representations of human figures are not very common and usually it is warriors that are depicted. Examples include the golden vessels of the Sînnicolaul Mare (=Nagyszentmiklós) treasure (*Ausstellungskatalog* 1996, 441; 2002, 25) and the agrafes from Mödling-Goldene Stiege (*Ausstellungskatalog* 1996, 300), as well as various strap-ends from Hungarian sites (Fettich 1937; Erdélyi 1966, Tab. 9). The male figures in these representations usually wear trousers,

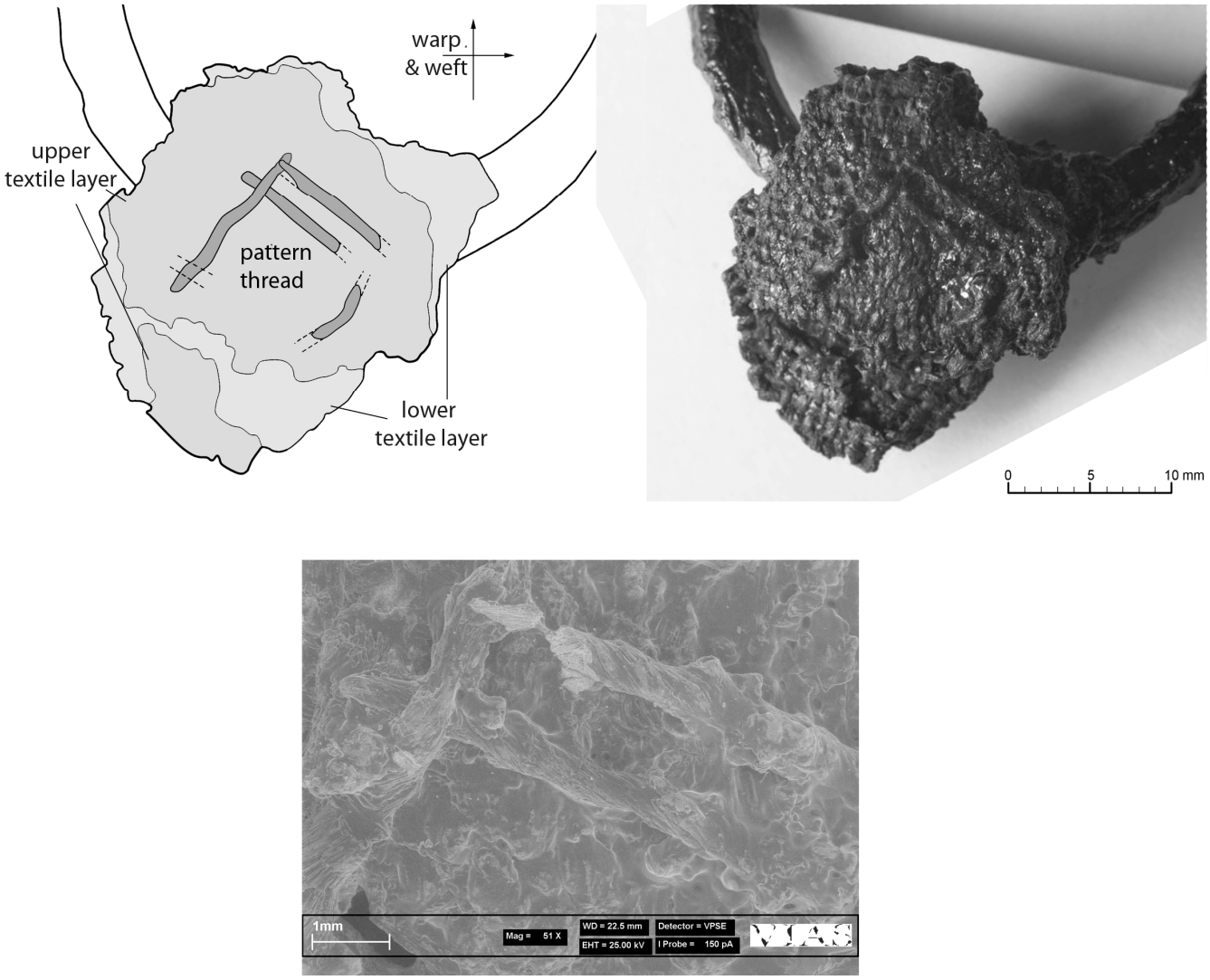

Fig. 2. Zwölfaxing II: patterned textile from grave 46 (© K. Grömer and M. Kucera, VIAS).

	costume component				grave goods		
types	belt buckles			strap			
textile	over	under	both sides	ends	knife	arrow head	others
fine tabby > 20 threads		1	8	1	1	1	1
medium tabby 10-20 threads	3	3	1	1	3		1
coarse tabby 1-10 threads	3				1	2	1
ribbed tabby, repp	1		1			2	1
basket weave fine	1		2				

Fig. 3. Zwölfaxing II: costume components and grave goods with different textile types (© K. Grömer).

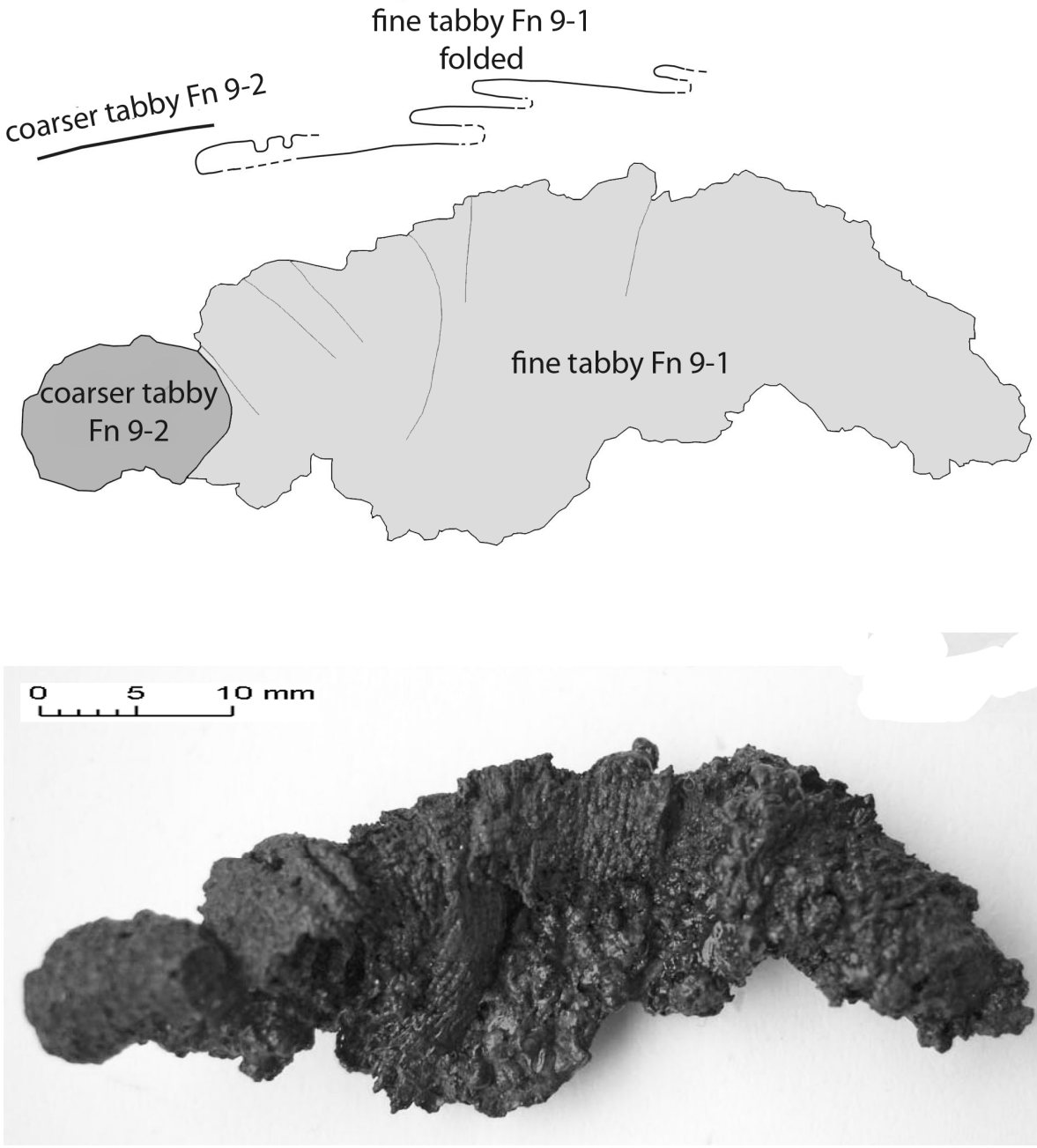

Fig. 4. Zwölfaxing II: belt fragment from grave 12 with different folded textiles (© K. Grömer).

sometimes leg-wrappers and waist- to knee-long caftan-like overclothes (Sînnicolaul Mare, vessel no. 7; Hungarian strap-ends e.g. Egyházaskér). In some cases (Sînnicolaul Mare, vessel no. 2 and agrafes from Mödling), the depictions of the garment covering the upper part of the body are patterned in a specific way, suggesting that this pattern represents amour.

In general, the iconography indicates that Avar male clothing was multi-layered, with an undertunic and a caftan-like overcoat. It is likely that this combination is also present in the graves from Zwölfaxing, as indicated by the micro-stratigraphical analysis of three different graves (15, 46 and 70). When several layers are preserved, a fine linen cloth is usually found closest to the body, while a second, different, and sometimes,coarser cloth is placed over this, like in the above-mentioned male grave 70. The fine basket-woven textile is interpreted as an undertunic, while the coarse fabric is interpreted as part of an over-tunic or a caftan. A similar interpretation seems to be applicable in the case on male grave 15.

As the fabrics are also found on other objects besides costume accessories, they are sometimes identified as wrappings. However, in graves 46 and 70, the textiles found on the arrow heads, placed close to the arms of the bodies, were similar to those found on the belt-buckles and it is most likely that all the textiles were parts of the costume.

Fig. 5. Image of Avar male costume by Helga Mautendorfer.

Avar textiles in context

The fabrics found in Avar graves in Austria and Hungary show a very simple repertoire: plain tabby dominates (pers. com. Lise Bender Jørgensen), while basket weave and rep are rarely found. Only two of the more than 120 analysed Avar textiles from Austria (Sommerein, Leobersdorf, Frohsdorf and Zwölfaxing) are made in twill. As demonstrated by the analyses of the materials from Zwölfaxing, the textiles are quite fine. A similar picture is known from textiles found in graves of the Austrian Roman Period. However, these Avar textiles differ markedly from the contemporary Alamannic and Bayuvarian textiles, among which twill fabrics of different variants, such as *Rippenköper* or *Kreuzköper*, are more common (Bender Jørgensen 1992, 68ff, 110ff).

Two different interpretations can be offered to explain the differences between the textiles of the Avars and those from other contemporary tribes in Upper Austria and South Germany. The first lies in the fact that, not only do the tabby textiles differ from those of the contemporary (7th century AD) tribes in the west and north, but also we find almost no loom weights in these Avar settlements. It is possible that the Avars – who were equestrian people, originating in the Central Asian steppe - had different production techniques, possibly based on a two-beam loom. This loom, which can easily be used for weaving simple weaves with one heddle rod, is more transportable and therefore would have been convenient for the nomadic lifestyle of the Avars. Another possible explanation for the Avar preference of tabbies could be the local influence. Eastern Austria forms the western border of the huge Avar Empire, where Avars mixed with local populations. The predominance of tabby and its variants may reflect the surviving traditions of the inhabitants of the Roman Province Noricum, which were inherited by the Avar people.

Acknowledgments

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Sascha Mauel

Zur Mehrdeutigkeit der gelochten Femur- und Humeruscapiti des bronzezeitlichen Monkodonja – einige technische Überlegungen bezüglich der Erwägung ihrer Funktion als Spinnwirtel

Seit Anfang der 1950'er Jahre werden in dem bergigen Terrain der kroatischen Halbinsel Istrien eine Vielzahl befestigter protourbaner Siedlungen der *Kastelliere-kultur* entdeckt und untersucht. Eines dieser bisher über 350 entdeckten Kastelliere liegt in etwa 2 km Entfernung zur Adria bei Monkodonja nahe der Stadt Rovinj (Abb. 1). Das Kastelliere Monkodonja wurde 1953 entdeckt und in den Jahren 1997 bis 2002 archäologisch untersucht (Hänsel *et al.* 1997; 1999; Teržan *et al.* 2001). Die Siedlung wurde zwischen dem 18. und dem 12. vorchristlichen Jahrhundert etwa ein halbes Jahrtausend lang genutzt – eine Zeitspanne, welche die frühe und mittlere Bronzezeit Mitteleuropas umfasst. Während der Kulminationsphase der Siedlung, zu Beginn der mittleren Bronzezeit, gewährte das Kastelliere schätzungsweise 1000 Personen Schutz (Becker 2005, 157).

Genauere Untersuchungen des bei den Ausgrabungen der Akropolis zutage gekommen Materials ergaben, dass die Einwohner des Kastellieres es scheinbar vorzogen, Waren zu konsumieren, statt zu produzieren (*Becker 2005,* 158) – ein Faktum, das sich auch hinsichtlich der Frage nach der Textilproduktion der Siedlung geltend mache (Becker, persönliche Auskunft). Mykenische Scherben mit einer Provenienz aus weiten Teilen der östlichen Mittelmeerregion, darunter insbesondere aus Kreta und Zypern, belegen einen ausgeprägten Kontakt zu seefahrenden Händlern des zu dieser Zeit unter mykenischen Einfluss stehenden Kulturraumes. Weitere Keramikfunde zeigen, dass Monkodonja auch in den kontinentalen Tausch- und Wirtschaftsverkehr mit Kulturgruppen der östlichen Alpenregion eingebunden war (Hänsel *et al.* 1998).

Fig. 1. Die Lage des bronzezeitlichen Kastellieres bei Monkodonja auf der kroatischen Halbinsel Istrien an der Adria (Zeichnung: S. Mauel).

Spinnwirtel, Perlen oder Knöpfe?

Weniger als ein Prozent einer ungewöhnlich großen Menge von insgesamt etwa 75.000 Knochenfunden konnten als Artefakte identifiziert werden. Darunter befinden sich auch 12 halbsphärische Gelenkköpfe von Oberschenkel- und Oberarmknochen (lat. *femur-*, bzw. *humeruscapiti*), die ausschließlich von Rindern stammen (Abb. 2 und 3) und die hier diskutiert werden sollen. Form und Größe sowie die zentrale Durchbohrung von 11 dieser Objekte vermitteln unmittelbar den Eindruck, dass es sich um Spinnwirtel handelt. Die Archäozoologin Cornelia Becker ist dieser Vermutung nachgegangen und kommt zu dem Schluss, dass es sich eher um Teile eines Schmucksets oder um Knöpfe handelt, ohne jedoch eine Funktion dieser Gelenkköpfe als Spinnwirtel ausschließen zu können. Ihre Interpretation basiert auf einer multilateral angelegten Indizienkette, die sich aus verschiedenen Befunden aus Monkodonja selbst, kombiniert mit Daten aus chronologisch vergleichbaren Grab- und Siedlungsbefunden Süd- und Mitteleuropas, zusammensetzt (Becker 2005). Die vielen Beispiele und Vergleiche, die Becker aufführt, sind weitgehend plausibel und logisch. Dennoch klingen in ihrer Argumentation mehrfach technische Aspekte durch, die meiner Meinung nach zu stark gewichtet wurden, wenn es darum ging, die durchbohrten Femur- und Humeruscapiti für eine technisch denkbare Funktion als Spinnwirtel zu disqualifizieren. Mit Bezug auf Beckers Untersuchung sowie anhand einiger neuer Gedanken und Erkenntnisse aus der Spinnwirtelforschung setzte ich daher zur Wiederaufnahme der Ansprache dieser mehrdeutigen Knochenartefakte an.

Die Durchbohrung

Ein Argument, das Becker hervorbringt, betrifft die Durchbohrung eines der 11 Gegenstände. Der betreffende femorale Gelenkkopf (Abb. 2, Nr. 2) wurde mit einem verhältnismäßig schiefen Winkel durchbohrt, was eine nicht rotationssymmetrisch verteilte Masse zur Folge hat. Das Trägheitsmoment bei der Rotation des Objektes würde daher während des Spinnens eine starke Unwucht bewirken (Becker 2005, 166). Becker geht Recht in der Annahme, dass ein so unharmonisch schlingernder Spinnwirtel einen zu ungleichmäßigen und somit unbrauchbaren Faden produzieren würde. Die Durchbohrung der übrigen zehn Artefakte ist dahingegen jedoch ersichtlich gerade durch den Gelenkkopf getrieben worden, und die Objekte könnten daher ohne große Mühe als Spinnwirtel zur Herstellung eines feinen, dünnen Fadens verwendet worden sein. Die eine schiefe Durchbohrung kann folglich kein haltbares Argumentationsglied jener Indizienkette darstellen, anhand derer Becker die Tauglichkeit sämtlicher Gelenkköpfe als Spinnwirtel in Frage stellt (vgl. Becker 2005). Ich vermute vielmehr, dass es sich bei der schiefen Durchbohrung des einen Objektes um einen misslungenen und daher ausrangierten Versuch handelt. Unter dem Fundmaterial befand sich auch ein zwölfter, nicht gelochter Gelenkkopf (vgl. Abb. 3), der womöglich als unvollendetes Objekt zu verstehen ist (Becker 2005, 158, 165-166).

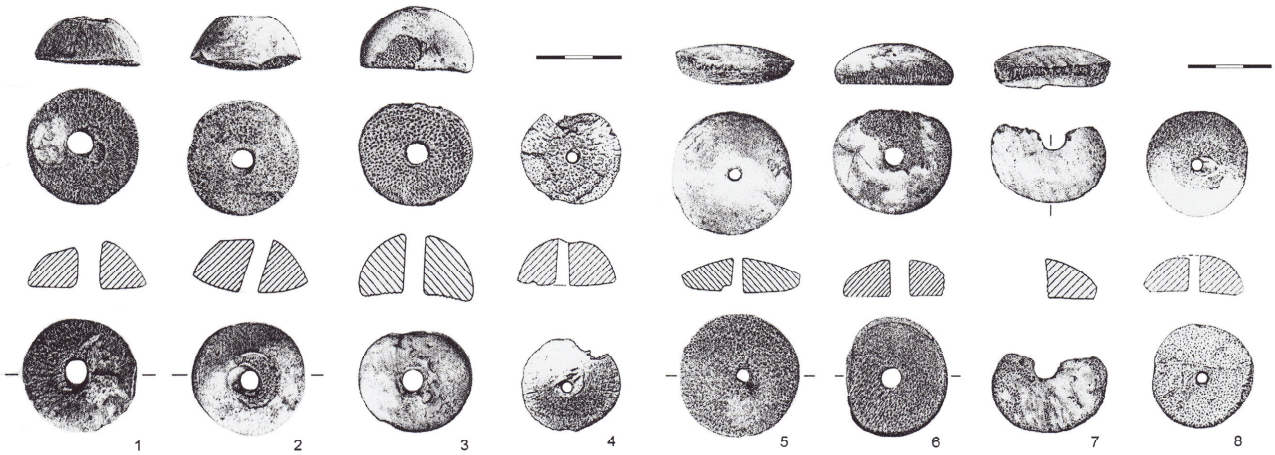

Fig. 2. Acht der 11 durchbohrten knöchernen Gelenkköpfe des Kastellieres Monkodonja (Zeichnung: H. Hähnl nach Becker 2005, 159).

Die spezifischen Maße

Ein weiterer Aspekt, dem sich Becker in ihrem Artikel (Becker 2005) bezüglich der Untauglichkeit der Knochenobjekte als Spinnwirtel anschließt, der aber meiner Meinung nach fragwürdig ist, bezieht sich auf die Maße der betreffenden Objekte: Loch- und äußerer Durchmesser sowie Gewicht und Höhe. Es geht dabei um den Vergleich dieser Werte mit denen einer Reihe anderer, meist tönerner Spinnwirtel aus anderen Befunden. In der Tat ist hier die Rede von Werten, welche die Objekte als sehr kleine und ausgesprochen leichte Spinnwirtel auszeichnen würden. Dieses Faktum schließt aber, wie im Folgenden klargelegt wird, eine Funktion als Spinnwirtel nicht aus. Es ist die Haltbarkeit dieser technischen Vergleichsgrundlage Beckers, die ich hier vornehmlich diskutieren möchte.

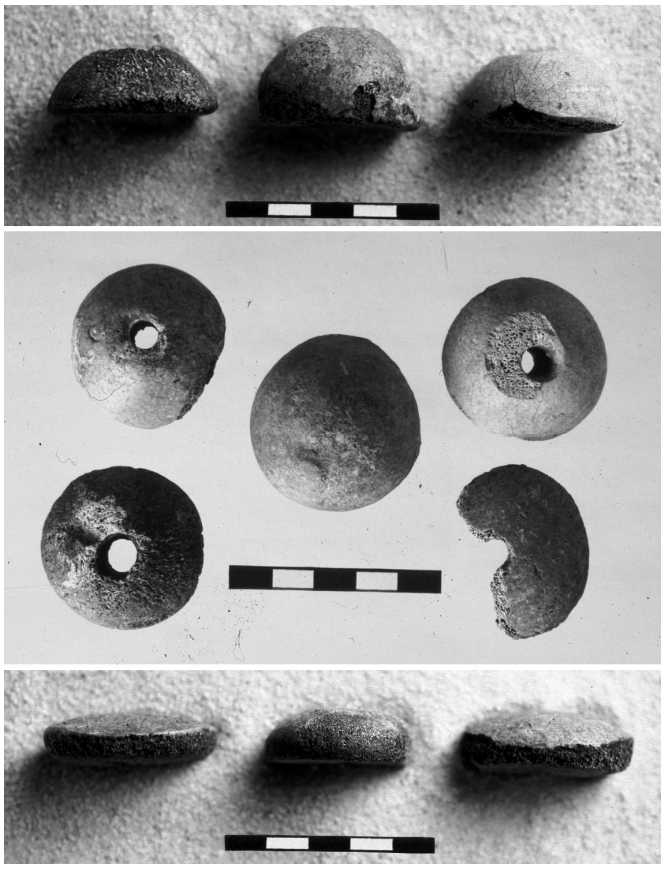

Fig. 3. Einige der insgesamt 12 Gelenkköpfe des Kastellieres Monkodonja. Oben und Mitte: halbsphärische *femurcapiti* (Oberschenkel-Gelenkköpfe), darunter das ungelochte, womöglich unvollendete Exemplar. Unten: abgeflachte *humeruscapiti* (Oberarm-Gelenkköpfe). Vergleiche mit Abb. 2. (Foto: Arheološki Muzej Istre, Pula).

Der Lochdurchmesser

Der Lochdurchmesser der Funde aus Monkodonja beträgt zwischen 4,1 mm und 12,1 mm, mit einem Durchschnittswert von 7,6 mm. Becker schließt sich der Meinung von Blegen *et al.* (1950, l29) an, die da lautet, dass Spinnwirtel mit einem Lochdurchmesser von weniger als 5 mm als solche zweifelhaft seien (Becker 2005, 162). Die Ergebnisse einer globalen, sehr breit angelegten ethnoarchäologischen Untersuchung von Spinnwirteln zeigen unterdessen, dass Spinnwirtel mit einem Lochdurchmesser von 3 mm bis 10 mm durchaus gebräuchlich sind (Liu 1978, 97, nach Barber 1991, 52). Die Möglichkeit, dass es sich bei den Funden aus Monkodonja vielleicht doch um Spinnwirtel handeln könnte, wird überdies von einer großen Anzahl knöcherner Spinnwirtel gestützt, die von dem ostanatolischen Tell Arslantepe herstammen. Mit einer Datierung in das späte Chalkolithikum wurden hier etwa 30 sowie aus der nachfolgenden Bronzezeit 50 knöcherne Spinnwirtel gefunden. Deren Lochdurchmesser von etwa 7 mm bis 11 mm (*Centre for Textile Research*, Forschungsprojekt *'Tools and Textiles – Texts and Contexts'*) decken sich weitgehend mit denen der durchbohrten Gelenkköpfe aus Monkodonja.

Der äußere Durchmesser und die Höhe

Der äußere, maximale Durchmesser der Knochenobjekte aus Monkodonja beträgt 3,5 cm bis 4,4 cm. Eine weltweit durchgeführte ethnoarchäologische Untersuchung von Perlen (Liu 1978, 90-91; nach Barber 1991, 51-52) ergab, dass die meisten solcher runden Perlen, die häufig mit Spinnwirteln verwechselt werden, einen Durchmesser von unter 2 cm haben. Runde, zentral durchlochte Objekte, deren Funktion unklar ist und die einen Durchmesser aufweisen, der größer als 2 cm ist, sind folglich eher als Spinnwirtel, denn als Perlen anzusprechen. Die Schwierigkeit der Funktionsdeutung der hier diskutierten Objekte aus Monkodonja, deren Durchmesser mit 3,5 cm bis 4,4 cm etwa doppelt so groß sind, obliegt somit demjenigen, der sie als Perle und nicht als Spinnwirtel anzusprechen versucht (vgl. Barber 1991, 51). Vergleiche der Durchmesser der Spinnwirtel aus Troja (überwiegend 3 cm bis 5 cm) mit denen der Monkodonja-Funde (3,5 cm bis 4,4 cm) sowie entsprechende Vergleiche der Höhenmaßen der jeweiligen Artefakte (Troja

überwiegend 2 cm bis 3 cm; Monkodonja 1,2 cm bis 2,6 cm) erlauben ebenfalls den Schluss, dass Form und Größe der Gelenkköpfe aus Monkodonja nicht definitiv eine Funktion als Spinnwirtel ausschließen.

Das Gewicht

Das Gewicht der Gelenkköpfe beträgt 6,7 g bis 18,8 g. Es ist mehrmals dafür argumentiert worden, dass Spinnwirtel mit einem Gewicht von weniger als 10 g praktisch gesehen untauglich seien (Carington Smith 1992). Dies läge angeblich daran, dass es nahezu unmöglich sei, einen so leichten Spinnwirtel in die für das Spinnen notwendige Rotation zu versetzen, so dass es sich folglich eher um Perlen oder Knöpfe handeln muss (Obladen-Kauder 1996, 235; nach Becker 2005. 164). Vergleiche mit zweifellosen Spinnwirtelfunden mediterraner und anatolischer Lokalitäten, die innerhalb der Handelskontaktzone Monkodonjas gelegen und in etwa in denselben chronologischen Horizont datierbar sind, zeigen jedoch, dass die bronzezeitliche Textilproduktion auch Wirtel (ungeachtet des Materials, aus dem sie gefertigt sind) äußerst kleiner Größenordnung hervorgebracht hat – insbesondere zur Herstellung feinen Fadens.

Für einen Maßvergleich mit den Knochenartefakten des Kastellieres Monkodonja, eignet sich beispielsweise eine Vielzahl der in Troja gefundenen tönernen Spinnwirtel. Das Gewichtsspektrum dieser anatolischen Wirtel verteilt sich auf 4 g bis 136 g, wobei der überwiegende Teil zwischen 10 g und 40 g liegt (Barber 1991; vgl. hierzu auch Balfanz 1995b, nach Becker 2005, 162). Die 12 Knochenobjekte aus Monkodonja liegen im Vergleich hierzu mit durchschnittlich 12,8 g zwar deutlich im unteren Bereich dieser Gewichtskala, mit einer Differenz von 2,7 g ist der leichteste Gegenstand aus Monkodonja (6,7 g) aber dennoch 67,5 % schwerer als die leichtesten in Troja gefundenen Spinnwirtel. Zu den letztgenannten gehört unter anderem auch ein bloß 4,8 g leichter Spinnwirtel, der in einem bronzezeitlichen Siedlungshorizont des vermutlich homerischen Troja VIIa (um 1200 v. Chr.) eingelagert und *in situ* an einer Elfenbeinspindel befestigt war (Barber 1991; Balfanz 1995a). Aus dem prähistorischen Demirçihöyük in Anatolien sind sogar Spinnwirtel mit einem Minimalgewicht von 2,5 g bekannt (Becker 2005, 163).

Experimente mit Spinnwirteln der griechischen bronzezeitlichen Siedlung Nichoria, die im Rahmen des Forschungsprojektes *'Tools and Textiles – Texts and Contexts'* am *Centre for Textile Research* (CTR) der *Danish National Research Foundation* durchgeführt wurden, haben zudem erwiesen, dass Fasern auf einem 3,62 g leichten Spinnwirtel problemlos zu einem brauchbaren Faden gesponnen werden können, der anschließend erfolgreich an einem mit Nachbildungen der im archäologischen Kontext gefundenen Webgewichte bestückten Webrahmen verwebt werden kann (Mårtensson *et al.* 2006).

Exkurs

An dieser Stelle sei darauf hingewiesen, dass knöcherne Spinnwirtel in der Regel kleiner und leichter sind als solche Wirtel, die beispielsweise aus Ton, Stein oder Metall hergestellt sind. Der simple Grund hierfür liegt wohl in der Tatsache, dass die Femur- und Humeruscapiti vom Rind einer durch Naturgegebenheiten definierten Gewichts- und Größenordnung entsprechen, die 20 g im Gewicht, 5 cm im Diameter und etwa 3 cm in der Höhe in der Regel nicht übersteigt. Im Unterschied hierzu lassen sich alternative Spinnwirtelmaterialien, wie beispielsweise Ton oder Wachs, in Bezug auf Form und Gewicht nach Belieben gestalten.

Bezüglich des Gewichtes sei hier ebenfalls auf die Tatsache aufmerksam gemacht, dass organisches Material bei längerfristiger Lagerung im Erdboden einen für gewöhnlich nicht unerheblichen Gewichtsverlust erfährt. Die Knochenartefakte des Kastellieres könnten demnach ursprünglich ein durchaus schwereres Gewicht als das heute messbare gehabt haben. Da es hierfür jedoch keine konkrete Berechnungsgrundlage gibt, wird diese Annahme – so positiv sie sich auch auf eine Funktionsdeutung der Gelenkköpfe als Spinnwirtel auswirken würde – vergeblich Spekulation bleiben.

Parallelen

Becker präsentiert in ihrem Artikel (Becker 2005, 161-168) eine Vielzahl von Parallelen wirtelähnlicher Objekte, sowie meist tönerne Wirtel anderer Lokalitäten, die sie in Bezug auf die hier diskutierte Funktionsdeutung der Monkodonja-Funde zum Vergleich

heranzieht. Die von Becker vorgestellten durchlochten Femur- und Humeruscapiti anderer Lokalitäten machen insgesamt jedoch nur weniger als die Hälfte der von ihr genannten Vergleichsbeispiele aus. Darüber hinaus handelt es sich bei diesen in Hinblick auf Form und Größe nur teilweise um solche Objekte, die zu den Gelenkköpfen aus Monkodonja eine wirkliche Gleichheit aufweisen.

Zu diesen gehören unter anderem zwei Funde vertikal durchbohrter Femurcapiti des anatolischen Fundortes Gözlükule (Abb. 4, Nr. 1 und 2), die in die Frühbronzezeit (2. Jahrtausend v. Chr.) datiert werden, und die der Ausgräber als Spinnwirtel anspricht (Goldman 1956, 307; nach Becker 2005, 164). Goldmann erwähnt ferner auch „similar finds from Byblos, Megiddo, Tepe Gawra I and Alishar Hüyük" (Becker 2005, 310), wobei jedoch unklar ist, ob hiermit tatsächlich gleiche oder bloß ähnliche Funde gemeint sind. Vier von insgesamt neun Objekten des spätbronzezeitlichen Alişar Höyük (1400-1200 v. Chr.) ähneln den Gelenkköpfen aus Monkodonja hingegen sehr (Abb. 4, Nr. 3 bis 5). Die auffallend schmale Durchbohrung dieser, sowie der übrigen, vorangehend erwähnten Funde veranlasst Becker aber dazu, sie durchweg eher als Perlen zu deuten (Becker 2005, 164) – eine Deutung, die anhand des Lochdurchmessers von 3 mm bis 5 mm (wie auf der Zeichnung zu sehen, vgl. Abb. 4) an sich nicht stichhaltig ist (vgl. Liu 1978, 97; nach Barber 1991, 52).

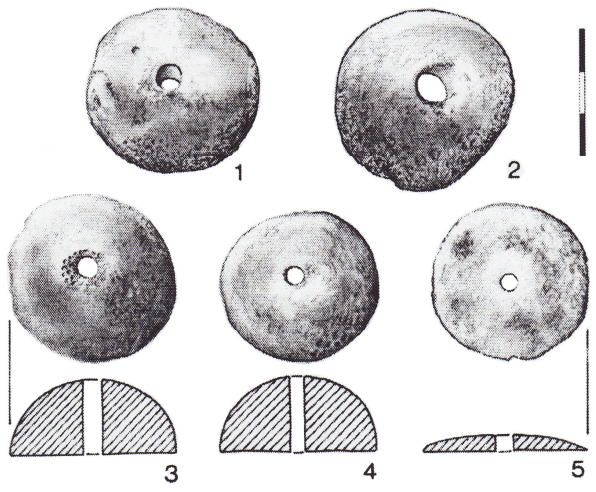

Fig. 4. Gelochte Gelenkköpfe anderer Lokalitäten, ähnlich denen des Kastellieres Monkodonja: Gözlükule (Nr. 1 und 2) und Alişar Höyük (Nr. 3 bis 5) (Zeichnung: H. Hähnl nach Becker 2005, 165).

Becker erwähnt ferner einige Grabfunde, die unter anderem in den alpinen Nekropolen des österreichischen Gemeinlebarn sowie der des bayerischen Straubing gefunden wurden. Diese durchbohrten Gelenkköpfe lagen jeweils im Schulterbereich des Bestatteten und scheinen, zumindest ihrem Fundkontext nach zu urteilen, tatsächlich nicht als Spinnwirtel, sonder eher als Knöpfe verwendet worden zu sein (Becker 2005, 167). Bei vielen dieser „Schulterknöpfe" ist allerdings eher von knöchernen Ringen die Rede, die im Vergleich zu den Objekten aus Monkodonja einen kleineren Durchmesser sowie ein deutlich größeres Loch aufweisen. Weitere Exemplare dieser etwas kleineren und breiter gelochten Knochenartefakte (darunter auch einige aus Geweih gefertigte „Ringe") stellt Becker aus diversen norditalienischen Siedlungen der *Terramarekultur* vor, welche in die mittlere Bronzezeit, etwa um 1400 v. Chr., datiert wird (Becker 2005, 167-169). Einige in Montale geborgene, mit abstrakten Ornamenten dekorierten Femurcapiti sehen einer Vielzahl tönerner Spinnwirtel aus Troja zum verwechseln ähnlich, und werden in Hinblick auf eine mögliche Funktion als Spinnwirtel nicht ausgeschlossen (Becker 2005, 168). Obwohl Begriffe wie „Knöpfe", „Perlen" und „Ringe" stets vorgezogen werden, liegen für die meisten dieser Objekte – so auch in Monkodonja der Fall – nur vereinzelt eindeutige Funktionsdeutungen vor.

Schlussfolgerung

Ich habe mich auf den technischen Aspekt der Gelenkköpfe konzentriert, um der Frage näher zu kommen, in wie weit es sich bei den Femur- und Humeruscapiti aus Monkodonja um das handelt, wonach es unmittelbar den Anschein hat: Spinnwirtel. Allein Form und Größe sprechen eindeutig für eine Anwendung als Spinnwirtel, und entgegen der üblichen Auffassung konnte gezeigt werden, dass auch das geringe Gewicht sowie der schmale Lochdurchmesser dieser Knochenartefakte eine Funktion als Spinnwirtel (vgl. Abb. 5) keineswegs ausschließen. Die einzige Ausnahme bildet ein wahrscheinlich ausrangiertes Stück, dessen Durchbohrung zu schief geraten ist. Gerade diese spezifischen Minimalwerte sind es, die bei Becker wiederholt als disqualifizierender Aspekt erwähnt werden – wenn auch nicht als alleinige Argumentationsgrundlage.

10 g deutlich auf unter 5 g zu senken ist. Solche kleinen, wirtelähnlichen Objekte werden bisher üblicherweise – und nicht selten ohne einen konkreten Beleg – als Perlen, Knöpfe oder dergleichen begriffen, weil davon ausgegangen wird, dass sie für eine Spinnwirtelfunktion viel zu leicht, bzw. zu klein seien. Wäre es nicht vorstellbar, dass es sich bei Funden knöcherner Gelenkköpfe, die entlang der Mittelachse durchbohrt sind womöglich ebenfalls um Spinnwirtel handeln könnte – ganz ähnlich der vertrauten „Perle-oder-Spinnwirtel"-Diskussion?

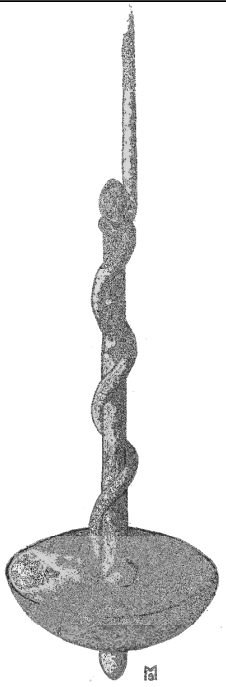

Fig. 5. Rekonstruktionsvorschlag für die mögliche Funktion der knöchernen Gelenkköpfe als Spinnwirtel (Zeichnung: S. Mauel).

Beckers Interpretationsvorschlag, demzufolge die gelochten Femur- und Humeruscapiti des bronzezeitlichen Kastellieres Monkodonja als Teile eines Schmucksets, Knöpfe oder gar Perlen aufzufassen sind, ist vor dem Hintergrund ihrer multilateral angelegten Indizienkette stellenweise plausibel und keineswegs undenkbar. Es ist daher nicht meine Absicht, und es liegen mir hierfür auch keine konkreten Indizien vor, dies zu widerlegen. Andererseits gibt es ebenso wenig konkrete Belege, die eindeutig dafür sprächen, dass Beckers Deutung die richtige ist – sie selbst behauptet dies auch nicht. Der entscheidende Punkt ihrer Aussage ist, dass einige der gelochten Gelenkköpfe aus Monkodonja durchaus Spinnwirtel sein könnten, sie in der Summe der verschiedenen Befunde jedoch eine andere Interpretation für wahrscheinlicher hält. Solange aber im archäologischen Befund keine konkreten Anhaltspunkte vorliegen, und solange nicht eindeutig geklärt ist, wie klein und leicht Spinnwirtel eigentlich sein können, müssen Funktionsdeutungen solcher bislang kaum beachteten Gegenstände meiner Meinung nach weiterhin mehrdeutig bleiben. Es ist daher meine Auffassung, dass es sich bei den knöchernen Gelenkköpfen von Monkodonja – zumindest technisch gesehen – sehr wohl um Gegenstände handeln könnte, deren Funktion in Zusammenhang mit der Textilproduktion zu sehen ist – eine Überlegung, die ich hiermit wieder zurück in die Diskussion führen möchte.

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Carol A. Christiansen

NESAT X
13-18 May 2008, Copenhagen, Denmark

The North European Symposium for Archaeological Textiles (NESAT) held its 10th meeting on 13-18 May 2008 in Copenhagen. The jubilee event was hosted by the Danish National Research Foundation's Centre for Textile Research (CTR). Held every three years, the symposium was larger than ever, with 120 registered participants from 23 countries. No less than 41 papers and 20 posters were presented during the 6-day event.
The symposium began on the evening of the 13th with a wine and hors d'œuvres reception at CTR. This was followed by a presentation by CTR director, Marie-Louise Nosch and research programme managers Margarita Gleba, Ulla Mannering, and Eva Anderson outlining the Centre's many projects and publications currently underway.
Lise Bender Jørgensen began the formal symposium the following day with an amusing trip down memory lane. She explained how the first NESAT was realised, after she and Klaus Tidow searched for like-minded researchers among archaeologists and textile historians. Lise reviewed how NESAT has slowly expanded over the years, welcoming more and younger scholars from a larger geographical base. Many delegates from the first NESAT meetings were in attendance or presented research at the jubilee meeting. The first sessions set the main theme which ran throughout the symposium: experimental archaeology and new methods of research. It was clear from many of the presentations that textile archaeologists are increasingly using reconstruction processes to better understand early tools, fibres and fabrics. For example, Viktoria Holmqvist analysed the Eric of Pomerania's Belt and the Dune Belt, both exhibiting a more complex structure than noted in previous research, but one which was better understood after reconstructions using octagonal-shaped tablets.
The first full day concluded with a large number of papers on conservation. Again, these focused on new methods, in some cases using new technology. Nicole Reifarth showed how poorly preserved burials in unmovable sarcophagi could be analysed in greater detail using close-up video-microscopy. Maria Cybulska presented remarkable research on how archaeological textiles could be virtually reconstructed, using the results of traditional structural analysis combined with the latest methods in computer animation.
Thursday began with a session on medieval textiles focussing on how texts, whether descriptive passages or single words, ancient or modern, require careful consideration when applied to specific types of cloth or clothing. The day continued with research on viking age and medieval textiles, followed by the poster session, organised by Maj Ringgaard of the National Museum of Denmark and CTR. In all, 20 posters were

presented over several hours in lively discussion. A number of the presenters thoughtfully provided printed versions of their posters.
Friday was devoted to prehistoric and early historic textiles. This was followed by lunch at the Town Hall. Delegates were invited to a special preview of the newly re-opened Danish Prehistory exhibit at the National Museum. The exhibition was formally opened by Queen Margrethe II, after which delegates viewed the displays, including many textiles recently analysed by the CTR project on Danish Bronze and Iron Age textiles.
The last day of presentations was held at the National Museum and finished the conference with a lively session on textile tools and technology. Following the final discussion, delegates were treated to a luncheon hosted by the National Museum.
On Sunday, delegates were taken on an excursion to Lejre Experimental Centre. The weaving studio presented some of its recent work with tools and reconstructed fabrics and clothing.
The 'new methods' theme was carried further at this NESAT by the broadcast of a web-cast of the first two day's proceedings. Twenty listeners across the globe tuned in to watch the symposium live.
For the full NESAT X programme and abstracts, podcast of the first two days of the conference and PDF files of some of the posters, go to http://ctr.hum.ku.dk. The proceedings will be published by Oxbow Books in the Ancient Textiles Series in 2009.
The 11th NESAT will be held in Esslingen, Germany

Anne Marie Carstens

Military and Textile Conference
20-22 May 2008, Copenhagen, Denmark

An international conference *Military and Textile* was held at the Danish National Research Foundation's Centre for Textile Research and the Royal Danish Defence College in Copenhagen May 20-22, 2008. The aim of the conference was to analyse the role of textile culture within the military organisation, with the broadest geographical and chronological scope. Thus the interaction between military and the civil society from Antiquity till the 21st century was covered by in all 28 papers, from *Purchase orders of military garments from papyri of Roman Egypt* (by Kerstin Dross, Marburg) to *The Political Fabric of NATO in Afghanistan. Uniforms, Symbols and a Multinational Mission* (by James Thomas Snyder, NATO Science, Brussels), and from *Ancient linen corselets* (three papers by Eero Jarva, Oulu, by Margarita Gleba, Copenhagen, and by Carmen Alfaro Giner, Valencia) to *The use of the Sewing machine in the American Civil War* (by Amy Isaacs, Baltimore). For the full programme and abstracts as well as podcast of the first day of the conference (Early Historical Contexts), go to http://ctr.hum.ku.dk. The papers will be published by the Danish National Research Foundation's Centre for Textile Research, University of Copenhagen.

Recent Publications

***Dressing the Past*, edited by Margarita Gleba, Cherine Munkholt and Marie-Louise Nosch, Oxford: Oxbow Books, 2008 (in English)** ISBN 978-1842172698
Minoan ladies, Scythian warriors, Roman and Sarmatian merchants, prehistoric weavers, gold sheet figures, Vikings, Medieval saints and sinners, Renaissance noblemen, Danish peasants, dressmakers and Hollywood stars appear in the pages of this anthology. This is not necessarily how they dressed in the past, but how the authors of this book think they dressed in the past, and why they think so. The seventeen contributors come from a variety of disciplines: archaeologists, historians, curators with ethnological and anthropological backgrounds, designers, a weaver, a conservator and a scholar of fashion in cinema, are all specialists interested in ancient or historical dress who wish to share their knowledge and expertise with students, hobby enthusiasts and the general reader. The anthology is also recommended for use in teaching students at design schools. Can be ordered from www.oxbowbooks.com Price GB £25.00

***Textiel in Context. Een analyse van archeologische textielvondsten uit de 16e eeuw*, by Hanna Zimmerman, Groningen: Stichting Monument en Materiaal, 2007 (in Dutch)** ISBN: 9789077957080
In the town of Groningen ca. 2800 fragments of textiles were excavated from a 16th century moat. Hanna Zimmerman discusses these finds in her dissertation "Textiel in Context". Never in the Netherlands have so many textile finds from this period come to light. Containing many photographs, drawings, patterns, reconstructions and contemporary pictures, the book gives a clear insight into the production, the producers, the use and re-use of textiles, the tailors and seamstresses, as well as the procedures of excavating, cleaning, conservation, analysis and documentation of archeological textiles. The main part of the book contains the descriptions of the finds, which are divided in weaves, tablet-woven bands, sewing techniques used, decorations, clothes and fashion as far as could be reconstructed from the remaining scraps, knitting and felt. The more complete children's clothes are particularly informative. The knitting also contained new information about the construction of stockings. In the later chapters, the finds are put into a broader historical and social-economic context. The book can be ordered from www.stichtingmenm.nl Price € 29.95

Reissue of Michael Ryder's *Sheep and Man*, London, Duckworth, 2007 (in English)
ISBN 13 978 071 563 6473
The seminal volume *Sheep and Man* by Michael Ryder has been reprinted after 25 years. When the 850-page book was published by Duckworth in 1983, it received 30 excellent reviews but has been out of print for some time. It covers the history of human association with sheep world wide over 12,000 years, exploring the development of different fleece types for varied textile use. All sources of evidence were used – archaeology, ethnography, history, geography, agriculture and textiles. Michael Ryder thinks that the book's reissue by popular demand is an appropriate way to mark his 80th birthday.

***Osebergfunnet. Bind IV Tekstilene*, edited by Arne Emil Christensen and Margareta Nockert Oslo: Kulturhistorisk Museum, 2006 (in Norwegian and Swedish)**
ISBN 978-8280840240
The volume contains the long-anticipated presentation of the fabulous textile remains found in the Oseberg boat burial, excavated in 1904. This Norwegian Viking Age grave, dated to AD 834, contained some of the most extraordinary organic material ever excavated. A series of five publications was planned, and volumes I, II, III, and V appeared from 1917 to 1928. Unfortunately, the fourth volume, in which the textiles were to be presented, was constantly delayed. Therefore the text is a patchwork of contributions from researchers who have worked with the Oseberg textiles over many decades. A large part of the book, written by Bjørn Hougen in the 1930s, is dedicated to the description of the famous tapestry weaves (Chapter 1). The same author also produced a very interesting chapter on the furnishing textiles (Chapter 3). The presentation of the utilitarian and costume textiles is by Anne Stine Ingstad (Chapter 5), with the technical analyses by Anna M. Rosenqvist (Chapter 4). Margareta Nockert contributed analyses of the tablet weaves and the various silk textiles (Chapters 2, 6, and 7). These chapters make a valuable contribution to Viking Age textile history. For non-Scandinavian readers, there is an English summary with catalog descriptions available at the end of the text.

Anne Marie Carstens, Judit Pásztókai-Szeöke and Marie-Louise Nosch

Clothing and Identities in the Roman World

A grant from the European Union's Culture Programme (EACEA) has provided a unique opportunity to gather textile experts from all over Europe in a joint research program focusing on Dress and Identity. The project *Clothing and Identities — New Perspectives on Textiles in the Roman World* (*DressID*) encompasses seven European universities and research institutions, and is coordinated by the Curt-Engelhorn-Stiftung of the Reiss-Engelhorn-Museen in Mannheim, Germany. The project has a budget of € 4.9 million. From 2007 through 2012, research, publications, conferences and a touring exhibition will be the outcome of the collective focus on the interrelations between dress and identity within and beyond the Roman Empire.
The main objectives of the DressID project are to provide a position in cultural history for clothing and textiles in antiquity, and to demonstrate how clothing is a key to identity studies. The interdisciplinary collaboration will strengthen the networks and exchange of knowledge and ideas of European scholars and combine various scientific traditions in Europe.

The Roman Empire
The Roman Empire forms the frame for the project. At the time of its maximum extent in the 2nd century AD, the Roman Empire incorporated the territory of most of the present-day members of the European Union, the Balkans, and the Mediterranean seaboard. It also had an outstretching web of diplomatic and economic relations with peoples living beyond its borders. With its richness in diverse sources — archaeological finds, images and texts — the Roman Empire provides a perfect opportunity for investigations of cultural uniformity and diversity. Its pervading political and administrative structures present an excellent platform for identity studies on all levels.

Clothing and Identity
Clothing serves as a major tool for communication on a non-verbal level. It expresses relational constructions within groups, and it demonstrates affiliations or debarment as well as ethnicity, social rank, profession, gender and age. Clothing may reveal the regional origin of the bearer, present variations in local costumes, and it reflects the correlation between tradition and innovation in a highly visible way. Dress is used — consciously or unconsciously — to express identity, and it carries information about the ethnic, social or religious affiliation as well as the profession, gender and age of the wearer.

Multidisciplinary research
Numerous textile experts and institutions all over Europe carry out specific investigations concerning Roman clothing on an individual basis. The DressID project provides a platform where researchers with various exploratory foci can interweave their specialist knowledge into a large network of information on textile questions in order to get a broader view and a better understanding of the social significance of clothing in the Roman world. The research is organised as a network of study groups, each headed by two spokespersons. The spokespersons are in charge of communication and organization of the research within specific fields. DressID meets annually at a General Meeting, hosted by the co-operators in the programme. The 2nd General Meeting has just been held in Copenhagen in May 2008 and the next will be held in Chania, Crete in December 2008.

Publications and exhibitions
The research results will be published via scientific publications, articles and monographs, and via public meetings and the media. A major outcome addressing a larger international public is an itinerant exhibition based on the ongoing research, starting in Mannheim in 2011 and hereafter touring around various European cities.
More information can be obtained at
www.DressID.eu

Dissertations

Sophie Bergerbrant has been awarded a doctorate at the Stockholm University, Sweden, for her work: *Bronze Age Identities: Costume, Conflict and Contact in Northern Europe 1600-1300 BC* (2007).

Karina Grömer has been awarded a doctorate at the Institute for Pre- and Protohistory, University of Vienna, Austria (Institut für Ur- und Frühgeschichte Universität Wien) for her work: *Bronzezeitliche Gewebefunde aus Hallstatt - Ihr Kontext in der Textilkunde Mitteleuropas und die Entwicklung der Textiltechnologie zur Eisenzeit* (2007).

Annika Larsson has been awarded a doctorate at the Uppsala University, Sweden, for her work: *Kläd Krigare* (2007).

Marianne Vedeler has been awarded a doctorate at the University in Oslo, Norway, for her work: *Klær og formspråk in norsk middelalder* (2007).

Marina Fischer has received a masters degree at the University of Calgary, Canada, with the work: *The Prostitute and Her Headdress: the* Mitra, Sakkos *and* Kekryphalos *in Attic Red-figure Vase-painting ca. 550-450 BCE* (2008).

Astrid Geimer has received a masters degree at the Johann Wolfgang Goethe-Universität, Frankfurt, Germany, with the work: *Gefärbte Textilien in vorgeschichtlichen Europa. Funde und Befunde vom Neolithikum bis zur Mitte des 1. Jahrtausends v. Chr.* (2007).

Sunniva Wilberg Halvorsen has received a masters degree at the University of Bergen, Norway, for her work: *Myrfunn av tekstiler. - En ny undersøkelse av funnene fra Tegle og Helgeland* (2008).

Agnete Wisti Lassen has received a masters degree at University of Copenhagen, Denmark, with the work: *Textiles and Traders. A Study of the technology, organisation and socioeconomics of textile production in Anatolia in the Middle Bronze Age c. 2000-1700 B.C.* (2008).

Synnove Thingnæs has received a masters degree at the University in Oslo, Norway, with the work: *I enden av en tråd. - Om spesialisert tekstilhåndverk i folkevandringstid* (2007).

Textile Calendar

June-December 2008

August 2-8: Experiments with archaeology: archaeologists rediscover how textiles and fibres were produced in the past, Lejre Experimental Centre, Denmark
http://www.english.lejre-center.dk/ACTIVITIES-2008.196.0.html

August 6-9: Summer workshop, Triste, Spain: dyes with natural plants, lichens and mushrooms
http://ctr.hum.ku.dk/upload/application/pdf/f51d6748/Tristes%20Workshop.pdf

August 21-22:
Ôtzi, Schnidi and the Reindeer Hunters: Ice Patch Archaeology and Holocene Climate Change, Bern, Switzerland
http://www.oeschger.unibe.ch/events/conferences/schnidejoch/

September 24-27: Textiles as Cultural Expressions, 11th Symposium of Textile Society of America, Honolulu, Hawaii
http://textilesociety.org/symposia_2008.htm

October 1-3: Experimental Archaeology Research—new Approaches, Östersund, Sweden
http://ctr.hum.ku.dk/conferences/oestersund/

October 8-11: Dyes in History and Archaeology 27, Istanbul, Turkey
http://www.dha27.com/

November 6-9: Costume Colloquium: A Tribute to Janet Arnold, Florence, Italy
http://www.costume-textiles.com/pages/page.asp

November 13-15: 3rd Ancient Mediterranean Textiles and Dyes Symposium, Naples, Italy

December 5-6: Textiles in Art: from the Bronze Age to the Renaissance, Early Textiles Study Group 12th biannual conference, London, UK
http://uk.groups.yahoo.com/group/Textilesinart/

General Information

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:
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