

Building textile archaeology in ancient Sudan. The example of the TexMeroe¹ project

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Since the very beginning of archaeological exploration in Nubia, the excavation of Meroitic and Post-Meroitic sites has produced thousands of textile artefacts, found mainly in cemeteries and in the settlement of Qasr Ibrim. This exceptional textile assemblage illuminated the omnipresence of woven fabrics in the Meroitic material landscape. Despite these early and well documented discoveries (see below), textiles have remained a rather discreet subject in the scholarly literature, be it concerned with funerary practice, crafts and material culture, or economic production. The TexMeroe project was initiated to fill this lacuna and hopefully bring textile research to the forefront of current archaeological research in Sudan.

TexMeroe lasted from March 2018 to March 2020 and was hosted at the Centre for Textile Research at the University of Copenhagen. Together with another project documenting medieval textiles ('Nubian Textiles'² led by Magdalena M. Wozniak), TexMeroe created a momentum for the renewal of textile research in Sudan and Nubia. It benefitted from the field's recent progress within the discipline of archaeology in general as well as from the increasing excavation programs in Meroitic settlements.

The project aimed at building a true 'textile archaeology' within Meroitic studies by drawing on data from textiles, manufacturing tools and iconographic documents, all with a close connection to their context of production, use, and discard. Following the entire life cycle of the textiles, this paper will present the different themes developed through the TexMeroe project and propose a template for textile archaeology in ancient Sudan and Nubia.

An integrative model for textile archaeology in Meroitic Sudan

Pioneers of textile research in Sudan include Grace and Elisabeth Crowfoot (e.g. G. Crowfoot 1931; E. Crowfoot 1984), Ingrid Bergman (1975), Christa Mayer-Thurman (Mayer-Thurman and Williams 1979), Nettie K. Adams (e.g. 1989a; 1989b; 2010), and John-Peter and Felicity Wild (e.g. F. Wild 2011; Wild and Wild 2014). Together, these scholars produced detailed catalogues and technical analyses of thousands of fabrics, as well as studies and articles addressing specific techniques or sites.³ However, an overview of Meroitic textiles had not yet emerged. The TexMeroe project therefore adopted an all-encompassing approach: I chose to integrate all relevant material (textiles, tools, iconographic data, and relevant archaeobotanical remains) and to follow the numerous steps of the textile *chaîne opératoire*, through production processes to use and re-use. Instead of focussing on a single site, the case-studies tried – as much as preservation allowed – to cover a large extent of the Meroitic kingdom. The broad outlook of each of the project's work phases led me to incorporate various research fields – such as experimental archaeology and archaeobotany – and various experts – such as weavers and biochemists – to weave data of different nature into an integrative 'textile archaeology'.

In the past 15 years, the Centre for Textile Research has developed a multi-disciplinary model for textile research merging all aspects of past societies and going far beyond the traditional museum-based approach (Andersson-Strand *et al.* 2010). If textiles are still at the very centre of this model, the artefacts themselves are framed within the larger context of their production, defined by the constant interactions between three components: 'resources', 'technology', and 'society' (Figure 1). In practice, this model opens textile research to many more questions and areas of inquiry. In Meroitic Sudan, 'Resources' can cover i) the procurement of fibres through agriculture or animal husbandry; ii) the gathering of wild fibres, plant dyes, and tannin agents; iii) the sourcing of clay, pigments, wood, bone or stone for the manufacturing of tools; and iv) imported or traded material. It also touches upon questions of 'human

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3 Thanks to its exceptional preservation and sheer quantity, the corpus of Qasr Ibrim has been the main focus of publication (see bibliography).

resources' (e.g. workers and their status, or work distribution by gender and age group). 'Technology' includes the collection of raw material, fibre processing, dyeing, tool making, spinning, weaving, tailoring and costume making, and all ornamentation techniques (e.g. embroidery or tapestry). Each of these techniques involves different levels of proficiency, specialisation, and apprenticeship. 'Society' has an even greater scope, covering the 'human resources' needed for textile production, everyday furnishings in dwellings and settlements, funerary rites, iconography and artistic production, as well as the important social role and impact of costume (e.g. for display of status, rank, gender, and religious/ethnic group) and, broadly speaking, the construction of cultural identity.

In Sudan, we lack the written and iconographic sources that could have documented the social aspects of textile manufacturing. Indeed, we have very little evidence regarding the gender, age or status of textile workers, as this information remains at best very speculative in the material record. We have however an exceptionally rich corpus of archaeological textiles, well-preserved in tombs and settlements when those were located away from water infiltration. It is particularly the case in Lower and Middle Nubia and in selected sites along the Dongola Reach and the Fourth Cataract, but occasional discoveries are also made as far south as the Island of Meroe. Textile remains often originate from garments, everyday items such as saddles or sacks, or items such as blankets. Once re-used in the house or in the grave, their original function is seldom recognisable, but the diversity of fabric types and forms clearly shows a vast array of uses. The excavation of settlements has also produced a vast number of textile tools – e.g. spindle whorls, loom weights, weaving picks, and rare needles – which, when properly recorded, give us plenty of information on the textiles' technical characteristics and on the craft in general. Finally, iconographic documents such as funerary stelae or painted ceramics can also bring valuable counterpoints to the actual textiles, illustrating garments of diverse people sometimes in vivid colours and details.

***Chaîne opératoire* and craft techniques: Meroitic singularities and community of practice**

Both in techniques and aesthetics, the Meroitic kingdom developed a unique textile tradition that represents a remarkable synthesis between the traits of both local sub-Saharan cultures and the resources of the Pharaonic and Hellenistic worlds. Textiles found in the elite cemeteries of Nubia and of Meroe often exhibit common traits that, taken together, form an easily recognisable 'style'. From the beginning of the 1st century AD, cotton was the main fibre used for the manufacturing of fabrics, especially for clothing. The threads were spun in an anti-clockwise direction

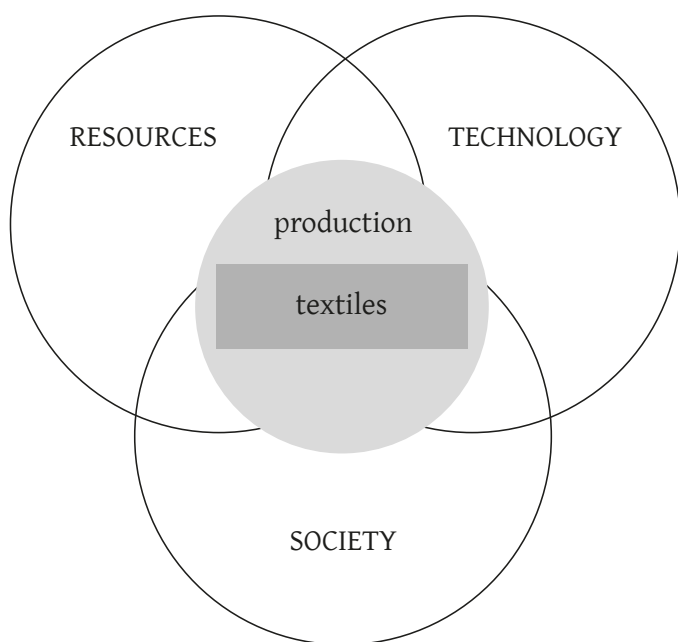


Figure 1. Model for the integrative study of ancient textiles (after E. Andersson Strand *et al.* 2010, fig. 1.).



Figure 2. Cotton textile from Qasr Ibrim showing an incomplete swastika pattern in blue tapestry filled with small *ankh* motives (Qasr Ibrim 72T185, Bolton Museum. Photo N. K. Adams, with permission).

(‘S-spun’) and are generally quite thick, c. 0.5/0.7mm in diameter. Threads were woven on the warp-weighted loom, from which clay piriform loom weights are often found during settlement excavations. The use of this type of loom is rather uncommon in the Nile Valley, where the horizontal ground loom and the vertical two-beam loom had been preferred since Pharaonic times (Vogelsang-Eastwood 2000). The warp-weighted loom however was used extensively throughout the Greek and Hellenistic worlds to create wool fabrics and, as a matter of fact, Meroitic cotton textiles share many technical similarities with the wool textiles from the Mediterranean basin. We can cite a predilection for plain tabby weave, the reinforcement of selvages and upper and lower borders with cords and cables, and the frequent use of tapestry as a decorative device.

Many Meroitic textiles exhibit Hellenistic patterns such as those found in Egypt or Arabia: e.g. bands, right-angled figures (*gamma* figures), or swastikas. These patterns however are made very differently in Sudan, woven with blue cotton threads on a noticeably larger scale, and mixed in an array of stylised offering tables, *ankh* crosses, and Isiac symbols (Figure 2, see also Adams 1989b). Technical and decorative elements traditionally attributed to the Hellenistic world are therefore reinterpreted in a truly Kushite style, and integrated into the Meroitic textile tradition together with local characteristics. As textile scholars have already studied a large number of Late Antique textiles from the greater Mediterranean basin, the TexMeroe project chose to concentrate on aspects seemingly unique to Meroitic production. The study focused on three different techniques in the hope of better defining the relationship that existed between crafts and cultural identity.

Openwork borders

The first technique studied was the ‘openwork’ technique, which consists of the creation of an open lattice border at the bottom of a textile, generally 10-50mm high and often preceding a bushy row of tasselled fringes (Figure 3). Those borders are not in the strict sense *woven* but *wrapped*: the vertical threads (warps) are left hanging on the loom and wrapped according to a predefined design by a supplementary thread (weft), turning alternately around specific groups of warps. The wrapping opens regular slits in the textile’s structure, forming a geometric pattern of vertical hatches or diamonds arranged in rows or grids. The technique is widely attested in Meroitic textiles, forming at present a corpus of 77 pieces from Meroe, Sai island, Aksha, Gebel Adda, Qustul-Ballana, Karanog and Qasr Ibrim (Yvanez and Mokdad, forthcoming). Both preserved examples and iconographic renditions show its use in garments, especially at the bottom of long skirts and sashes or ‘aprons’, where the open lattices and heavy fringes would have created a rather striking look as they moved together with the wearer’s movements. Such borders are also visible on gods’ standards and stands.

Previous authors have proposed a reconstitution of this technique, linking it to the knotted macramé-like pot-nets found at Kerma (Adams 1998; Crowfoot 1984). Elisabeth Crowfoot described a very complicated wrapping process, based on the observation of numerous examples from Qasr Ibrim and the dissection of one specimen. The TexMeroe



Figure 3. Detail of an openwork border and tasselled fringes on a cotton sash found at Karanog (E7511E, photo E. Yvanez, taken courtesy of Penn Museum).

project provided the opportunity to test those hypotheses using the principles of experimental textile archaeology. I enlisted the help of an expert weaver familiar with ancient Egyptian production and proficient in the use of the warp-weighted loom, Ulrikka Mokdad. Together, we devised two tests: one following the previous hypothesis and one following our own intuition on the possibility of a simpler method. Several attempts have shown that it was possible to create an open lattice without complicated manipulations of the warps and repeated removal of the loom weights, as previously proposed. The weaver would simply need to bring the two sheds of the textile into one single shed propped at the front of a low heddle bar. Following this solution, the

stunning appearance of the openwork borders results more from the careful repetition of detailed but simple actions, than from heavy manipulations of the fabric and loom set-up. Fond of elaborate tapestry weaving, the Meroitic weaver would have been accustomed to manipulating long lengths of extra threads. Therefore, this process seems well-adapted to both the weaving tool – the warp-weighted loom – and the weaving ‘brain’ of the craftspeople.

Pile weave technique

The second technique studied during the TexMeroe project was the pile weave technique frequently used for the manufacturing of furnishing textiles, especially the large blankets (re)used in graves as a funerary ‘bed’ or as a final cover for the body and material. These textiles were overwhelmingly made of cotton in the 1st and 2nd centuries AD, then increasingly in wool (sheep and maybe dromedary) in the late and Post-Meroitic periods. They exhibit a thick and soft appearance, created by the regular insertion of supplementary wefts, drawn outside of the primary structure in twisted loops (Figure 4). This technique and its many variants are well attested in Late Antique textiles from Egypt and elsewhere, on blankets, pillow covers, wall hangings and tunics, but always in linen or wool (Verheken-Lammens 2010). The aim was to study the Meroitic technique in detail and compare it with similar objects from Kerma and from Pharaonic and late Antique Egypt. This phase of the study is still ongoing, in partnership with the Museo Egizio in Turin and the Museum of Fine Arts, Boston. At present, it is already possible to say that Meroitic pile weave did not derive from earlier productions, be they from Kerma or New Kingdom Thebes, which didn’t use a continuous thread but short fibre bundles to make a sort of fringed pile. It seems however to have been used to the same effect: to create warmer and more comfortable layers on angareb beds or mastaba-like benches and, as a last resort, to install funerary ‘beds’ in graves. The technique is closer to that used in late Antique specimens from Egypt and the Mediterranean, but doesn’t seem to exhibit such a large array of variations. It exploits the characteristics of cotton fibres, creating short and thick loops that, when twisted one by one, form a very dense layer soft to the touch. In that regard, the Meroitic cotton looped pile offered a very efficient alternative to their Egyptian linen counterparts for the manufacturing of comfortable furnishing fabrics.

Colours and dyes

The project focussed on a third aspect of the textile *chaîne opératoire*: the production of colourful fibres and the use of natural dyes. A cursory survey revealed that c. 40% of the preserved textiles bear traces of dyes or tannins, which have so far been the object of very few scientific analyses (Mayer-Thurman and Williams 1979; Fisher 2007). The colour blue was particularly favoured during the Classic Meroitic period, when blue tapestry and embroidered décor adorned the vast majority of elite garments (see Figures 2 and 8). The following period saw a diversification of the colour repertoire, now integrating red, yellow, green, purple and brown shades (Figure 5). This evolution towards



Figure 4. Detail of a cotton pile weave found at Gebel Adda (973.24.3432, photo E. Yvanez, taken courtesy of the Royal Ontario Museum).



Figure 5. Close-up of wool threads, natural coloured (warp) and dyed red and bluish-purple (weft), from a mantle found at Serra, SJE 25/24. DinoLite picture, magnification x30 (SJE 25/24.7, photo E. Yvanez, taken courtesy of the Gustavianum Museum).

more polychromy accompanied the increased usage of wool as the main textile fibre and the adoption of the late Antique Mediterranean costume, composed of a tunic and sometimes a mantle.

The TexMeroe project provided an opportunity for a small series of dye analyses to be conducted. These were undertaken in 2019 at the Faculty of Chemistry, University of Warsaw, by Professor Habilitation Magdalena Biesaga. Sixteen samples were retrieved from textiles curated at the Penn Museum (from Karanog) and the University of Uppsala Gustavianum Museum (from Serra, SJE site 25, and Debeira, SJE site 350). They were tested through High Performance Liquid Chromatography combined with Mass Spectrometry (HPLC-MS). This paper is not the place for a full report on the method and its findings, but its preliminary results can be succinctly presented (see Figure 6; footnote for detail on radiocarbon dating for Karanog and Debeira).⁴ Analyses were partly hindered by the very desiccated condition of most samples, but the identification of several plant dyes was still possible:

Site & Date	Colour	Main chemical components	Possible plant source
Karanog 128-258 AD	greenish blue	indigotin + luteolin	<i>Isatis tinctoria</i> and low amount of <i>Reseda luteola</i> or <i>Genista tinctoria</i>
	blue	indigotin	<i>Isatis tinctoria</i>
Serra 200-600 AD	blue	indigotin + isatin	<i>Isatis tinctoria</i>
	red/pink	alizarin + purpurin	<i>Rubia</i> or <i>Galium</i>
	yellow	luteolin + apigenin (low concentration)	Low amount of <i>Reseda luteola</i>
	purple	indigotin + alizarin + purpurin	<i>Isatis tinctoria</i> and <i>Rubia</i> or <i>Galium</i>
	green	indigotin + luteolin + apigenin	<i>Isatis tinctoria</i> and low amount of <i>Reseda luteola</i>

Figure 6. TextMeroe Project dye analyses using High Performance Liquid Chromatography combined with Mass Spectrometry (HPLC-MS).

Isatis tinctoria (woad), *Reseda luteola* (Dyers' weed or weld), *Rubia* (madder) and *Galium* (lady's bedstraw) are all plants that can be gathered wild in the dry environments of northern Africa and many have been used from the early stages of textile production throughout the Mediterranean basin and along the Nile Valley (Cardon 2003). We have not found within these samples any trace of the very pricey animal dyes, such as murex (purple) and kermes (red), which adorned the garments of the rich in the late Roman Empire. Nevertheless, the use of these plants, alone or combined with each other, sheds light on a previously unknown aspect of the Meroitic exploitation of natural resources.

Far from the pure white traditionally associated with Pharaonic clothing, we need to reformulate our understanding of Meroitic clothing to include many more colours: shades of blue and white cotton during the classic and late Meroitic period, and polychrome wool fabrics during the late and Post-Meroitic period. Notwithstanding the diversification of the colour repertoire, blue kept its predominant position in the Meroitic wardrobe, as blue patterns on a white background, as entirely blue fabrics, or as blue jewellery made of lapis lazuli, faience and glass. The widespread use of

⁴ Radiocarbon dating, OxCal calibration, 95% probability. Poznan Radiocarbon Laboratory, Adam Mickiewicz University. Analysed in 2019.

this colour in body-related industries mirrors its use in architecture, suggesting the important role of the colour blue in personal appearance and cultural symbolism (Yvanez, forthcoming c).

From raw resources to consumers: defining an economic framework for textile production

Going beyond the textile artefacts themselves, the second phase of the TexMeroe project focused on integrating textile production in its economic context. Yet, many facets of the Meroitic economy remain unknown and our understanding is often limited to theoretical constructs. One of the main hypotheses sees the Meroitic economy as an early example of the ‘Sudanic model’ typical of the Sahelian regions of the Sahara (Edwards 1998). According to this paradigm, the Meroitic economy was based on the shifting patterns of production between sedentary populations and pastoral tribes, the seasonal exploitation of the desert hinterlands and the political centralisation and redistribution of goods. In the absence of direct textual sources, can this hypothesis be tested with data from material culture, particularly from textile production and use?

Textiles are the result of an extremely long and complex *chaîne opératoire* that, in pre-industrial societies, engaged a large portion of people’s time and resources (Andersson Strand 2012). Before starting any manufacturing process, the raw resources themselves need to be produced, harvested, and processed. Fibres cannot be mined and put straight into use: they require long stages of plant cultivation and animal husbandry, each requiring land and water resources, as well as time and a substantial work force diverted from food production. Depending on their type, fibres once harvested need to be processed through cleaning, retting, and combing before any attempt at spinning can be made. Hand-spinning itself may very well be the most time-consuming step of the whole textile *chaîne opératoire*, considering the hundreds of metres of thread necessary to weave even the simplest of fabrics. Once enough thread has been spun and sometimes dyed, weaving can finally start. Compared to the previous steps, manufacturing the actual fabric is a quick process. Still, at least several hours are necessary for even a small and simple weave. Then come optional steps, such as dyeing the fabric, decorating it with embroidery or tailoring to form specific garments, bags, etc. Therefore, textile production cannot be considered through a simple supply and demand equation but within a multi-factorial system involving many different actors with various expertise, and following the agricultural calendar over a long period. For these many reasons, textiles are prime candidates to provide new and diverse information about the Meroitic economy.

Production and use of cotton fibres

The first focus of the project was cotton, a textile fibre that was extensively used from the 1st to the 4th century AD. The appearance of cotton in ancient Sudan and Nubia – both in archaeobotanical and textile remains – is dated to the very end of the 1st century BC and thereafter defines Meroitic textile production, representing up to 100% of the preserved corpus (at Karanog for example, Figure 7). This fact alone makes Meroitic textiles stand apart from contemporary production, be it in Egypt, the Middle East, or the greater Mediterranean basin, where linen and wool were the primary resources. We have known of cotton’s presence in the Middle Nile Valley since Pliny the Elder, and textile discoveries from Karanog and Meroe were successfully identified as cotton as early as the 1930s (Griffith and Crowfoot 1934). Nevertheless, this has led to much scholarly discussion, notably on the origin of Sudanese cotton and possible links to the Indian sub-continent. The debate was recently closed by archaeobotanical and aDNA analyses, which identified Qasr Ibrim’s cotton as belonging to the African strand of the plant *Gossypium herbaceum* L. (Palmer *et al.* 2012), and proposed to see its domestication in the southern regions of the Meroitic kingdom, such as the Kordofan or the Gash delta (Fuller 2014). Cotton is a very demanding plant: it is rather thirsty, follows a different cultivation calendar than food crops such as wheat and barley, and requires at times a very large workforce. To divert land and people from food crops to cotton cultivation must have had far-reaching consequences in ancient Sudan, especially in arid Nubia. What was cotton used for? Why did it form such a large proportion of textile production during this period?

To fully comprehend the historical implications of the domestication and rapid spread of cotton production in Meroitic textile making, the TexMeroe project engaged in a full survey of all available evidence pertaining to cotton textiles: archaeobotanical remains, textiles, tools and historical texts, from the Meroitic to the Medieval times (Yvanez and Wozniak 2019). The results point to the production of high-quality cotton textiles, seemingly homogenous in

forms and style and probably intended for a restricted part of the population. Cotton is particularly used for the manufacture of garments intended to clothe officials and their families (see below). Despite this limited scope, its cultivation and processing represented a significant investment from the Meroitic authorities, both in terms of land-use and human resources, as populations in the Qasr Ibrim and Meroe regions seem to have devoted an important part of their daily-activities to its cultivation, spinning and weaving. This network of evidence suggests an at least partial control of cotton production and, possibly, the existence of redistributing channels connecting the main centres of power to the local elites.

Textile tools and textile activities in context

From raw resources, the project then focused on fibre processing and weaving, and on the way these activities can be traced in the archaeological record. Our main sources were the numerous textile implements discovered in both rural and urban settlements, from the southern site of Abu Geili on the Blue Nile all the way north to the Nubian town of Qasr Ibrim, as well as in selected Nubian cemeteries. This part of the research is constantly evolving, as new tools are continually discovered during ongoing excavations. Building upon preliminary studies relating to the Abu Geili and Karanog material (Yvanez 2016), the picture is now being expanded from several sites in the Island of Meroe (el-Hassa, Hamadab, Meroe, and Muweis) and Nubia (Tila island and Ash Shokan) (Figure 8).

The first concern was to develop a typology and protocol for the study of spinning and weaving tools; humble objects whose information potential has not always been fully recognised, and to utilise those recording methods throughout the whole corpus. The mass (in grams) of spindle whorls and loom weights is especially crucial, as we can infer from the weight of the tool, the type of fibres used, the qualities of the thread, and specific craft techniques. Thanks to precise recording and experiments, it becomes possible to get a glimpse of the fabric manufactured from the tools. Detailed inventories and statistical analyses were produced for the afore-mentioned sites during one field season and several museum visits, and full reports are being prepared for future publication in the site monographs. The sum of this material paints a rich picture of textile manufacturing in Meroitic Sudan, from domestic production within living quarters to the creation of multi-tasking industrial areas. The aim is to restore the textile implements to their archaeological locations in order to understand how textile production was integrated amidst the Meroitic urban landscape, within a single settlement as well as on a broader regional scale (Yvanez forthcoming a, b).

Textiles and dress practices: demands, consumption and trade

The last theme developed through the TexMeroe project explored the life of textiles beyond their manufacturing



Figure 7. Close-up of a cotton thread showing the ribbon-like aspect of the fibres twirling on themselves, from a textile fragment found on Sai island in cemetery 8-B-5.A. DinoLite picture, magnification x205 (photo E. Yvanez © Sai Island Archaeological Mission).



Figure 8. Textile implements from Ash Shokan: clay loom weight, bone weaving picks and wood spindle whorls (F1964/5.54, © National Museum of Antiquities, Leiden).



Figure 9. Example of an elite male garment: embroidered apron from Gebel Adda (973.24.2669, photo E. Yvanez, taken courtesy of the Royal Ontario Museum).

process, as key actors in socially important consumption patterns. The goal was to investigate the position of textiles as luxury items in Meroitic Sudan, extending the investigation to the use of garments as social indicators. Sociology has long recognised the power of fashion to convey personal and group identities, a garment offering for all to see, a large, tactile and colourful canvas to display gender, age, social status and cultural affiliations (Barthes 1957; Stig Sørensen 1997). Well-preserved garments have been discovered in several Meroitic graves. Together with iconographic comparisons, they offer a rare opportunity to reconstruct full clothing ensembles. Our understanding is limited to the dress practices of the upper classes, as most of the material comes from elite cemeteries. Case-studies from Karanog and Gebel Adda have shown the establishment of a highly-codified wardrobe for both men and women, made of a few pieces of clothing of homogenous style: a long wrapped-around skirt for women – which could be lined with a row of openwork lattice and tasselled fringes and sometimes decorated with blue tapestry patterns – and a loincloth and decorative apron for men. The aprons are generally long, going down the chin with a series of decoration: either an openwork and fringes combination, or a set of blue embroideries (Figure 9). In the latter, the embroidered apron always goes together with a matching loincloth carrying the same typical pattern (a sort of circular flower in chain stitches) and sometimes a cape. Well-known from the relief of the Meroitic embassy at Philae (Adams 2015; Pompei 2015),

the ‘tripartite costumes’ found at Gebel Adda and elsewhere seem to have strong connections to military officials. Reiterated over the whole Meroitic territory in both textile finds and iconographic representations, this ensemble can almost be understood as a ‘uniform’ worn by selected administrators and their successors (Yvanez 2018a; 2018b).

Once again, cotton and blue textiles fashion our view of the Kushite elite during the classic Meroitic period. Other aspects of the garments, namely their large scale and volume, the emphasis of sexual attributes, and the predilection for long moving fringes, provide interesting information on past body conceptions and social representations. Towards the end of the late Meroitic and especially during the Post-Meroitic period, this type of dress tradition slowly fell into disuse to be replaced by the wool tunics and mantles of Mediterranean origin. The corpus from Gebel Adda clearly shows this progression in both textile and iconographic sources (Yvanez 2018b). In that sense, Nubian dress history reflects the ‘Big History’: textile production and wardrobe choices closely followed the evolution of political allegiance from the Kushite authorities at Meroe to the Romano-Egyptian neighbours of the Nobades (Wozniak and Yvanez, forthcoming). The study’s results, summarised here, cannot hide the rich diversity of dress practices, especially well attested during the later periods. The number of imported fabrics also grew during this time, framed in evolving political ties between the Roman authorities in Egypt and the authorities at Ballana, adding yet another layer to textile consumption patterns (Yvanez 2019). Whether locally produced or imported through gift-giving or ‘commercial’ endeavours, textiles were easily transportable and sometimes of considerable economic value. In Meroitic Sudan, they seemed to have fulfilled an important role in structuring relationships between the royal family, the court, and the local elites (Török 1990).

Conclusion

The 24 months of the project employed a focused approach and a selection of case studies. The multi-aspect structure

of the project nonetheless permitted us to deal with the four ‘spheres’ of textile archaeology: resources, technology, production, and society. It contributed to a better knowledge of Meroitic crafts and brought forward interesting data in favour of a ‘Sudanic’ organisation of the economy and political relations. Thanks to several partnerships with museums and excavation teams, TexMeroe led to the study of 235 textiles and 244 tools, significantly enhancing the data available. Many artefacts, and indeed research themes, still need to be appropriately published (see References). Yet, preliminary results open new lines of enquiries for future work. Meroitic textiles, especially the highly specialised cotton fabrics with blue décor, increasingly appear as an elite production involved in a codified socio-economic system. Despite their overwhelming representation in the assemblage, they seem to have been limited to a fraction of ancient weaving and clothing practices. It remains to place this very specific textile production into a more global framework, including other strata of the population and to gain understanding of how it evolved through time and in contact with other textile traditions and crafts. I hope to pursue this direction and to continue my collaboration with ongoing excavation programmes, as modern and detailed observations *in situ* in the field offer the best opportunities for new information and understanding.

N.B. All detailed photographs of textiles are shown in the ‘weaving direction’, with the warps vertical and the wefts horizontal.

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