

# TEXTILES AND DYES

IN THE MEDITERRANEAN  
ECONOMY AND SOCIETY



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#### Conference Website

<http://purpureaevest.es.weebly.com/>

17 – 18 OCTOBER 2016  
**Padova, Orto Botanico**

19 OCTOBER 2016  
**Este, Museo Archeologico Nazionale**

20 OCTOBER 2016  
**Altino, Museo Archeologico Nazionale**

Università di Padova, Progetto di Ateneo "Textile Roman Archaeology: Methods and Analysis.  
Tools, technology, products" (TRAMA) (CPDA142705/14)

European Research Council under the European Union's Seventh Framework Programme, Project "Production and Consumption: Textile Economy and Urbanisation in Mediterranean Europe 1000-500 BCE" (PROCON) (FP/2007-2013-312603)

Università del Salento, FutureInResearch Project "L'attività tessile nell'Italia  
meridionale preromana: tecniche, tecnologie, materiali e protagonisti" (JPCNYJ5)

VI PURPUREAE VESTES  
INTERNATIONAL SYMPOSIUM

# **TEXTILES AND DYES**

**IN THE MEDITERRANEAN  
ECONOMY AND SOCIETY**

Padova - Este - Altino, Italy  
17 – 20 October 2016

## **BOOK OF ABSTRACTS**

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### **Acknowledgements**

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and with the contribution of:

Venice Textile Manufacturing - Tessitura Bevilacqua (Venezia)

Cantina dei Colli Euganei s.c.a. – Vo' Euganeo (Padova)

## INTRODUCTION

*PURPUREAE VESTES* International Symposium was first held in 2002 in Ibiza, Spain, organised by Prof. Carmen Alfaro Giner. The idea was to create a Mediterranean, Southern, counterpart to the North European Symposium for Archaeological Textiles, which takes place every three years since 1981. It has proven a much needed and ever-growing forum for everyone working on ancient Mediterranean textiles and dyes and has since travelled to Athens, Naples, Valencia and Montserrat. This year in Padua, the program features almost fifty papers and more than twenty posters.

The VI *PURPUREAE VESTES* Symposium will focus on the role of textile production and dyeing in the economic activities of the various ancient cultures of the Mediterranean area. An important impetus for this has been provided by the recent advances in textile studies and the numerous scientific projects that are using textile evidence to understand wider economic developments of ancient Mediterranean societies.

In addition to the better known sources of the Mediterranean textile production, such as the written evidence, iconography and tools, we particularly tried to prioritise archaeological evidence relating to textiles themselves, which for long has been largely neglected in many regions due to the perceived difficulty of preservation. In recent years, a significant progress has been made not only in the identification and study of archaeological textiles, but also in the methods of their investigation.

In the program we tried, whenever possible, to follow chronology (from the Bronze Age to the High Middle Ages) and geography (from East to West and from Italy to the provinces), in hopes to grasp not only possible similarities and differences, but also conservatism and innovations in the various Mediterranean textile traditions and customs. We have also included a session focusing specifically on the region of Veneto, in order to highlight the recent researches on the ancient textile heritage of this area. The symposium venues – Padua, Este and Altino – and the city of Venice (the location of the Tessitura Bevilacqua workshop) were at some point in history important textile production centres and we hope they will provide appropriate and inspiring settings for the symposium.

*The Organising Committee*



# PROGRAMME

**Monday, 17 October**  
**Padova, Orto Botanico, Sala Convegni**  
**Via Orto Botanico 15**

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**14.30-15.00**

*Welcome:* Jacopo Bonetto (Head Dept. Cultural Heritage, University of Padua)

*Introduction:* Maria Stella Busana

**Chair: Margarita Gleba**

**15.00-16.15**

J. Cutler: *Tools, tablets and textiles: interweaving strands of evidence for Bronze Age textile economies on Crete*

M. Siennicka, A. Ulanowska: *The economics of textiles in Bronze Age Greece*

C. Minniti, G. Recchia: *New evidence of purple dye production from the Bronze Age settlement of Coppa Nevigata (Apulia, Italy)*

E. Bianchin Citton: *Strumenti per la filatura e la tessitura dall'abitato protostorico di Montagnana Borgo S. Zeno/Spinning and weaving tools from the protohistoric settlement of Montagnana Borgo S. Zeno (Veneto, Italy)*

J. De Grossi Mazzorin, C. Minniti: *Caprine varieties in Italy in the Iron Age. The evidence from archeozoological data*

**DISCUSSION - COFFEE BREAK**

**17.00-18.15**

H. Landenius Enegren: *Ancient Cyprus: Bronze Age/Iron Age textile remnants and tools. A strategic crossroads of spinning and weaving cultures?*

I. Benda-Weber: *Early Greek garments: indications for weaving techniques and textile ornaments on representations and evidence of contemporary textile remains*

C. Margariti: *A 5th century BC textile find with evidence of embroidery from Attica, Greece*

S. Spanditaki: *Investigating maritime textiles in Classical Greece: sails and rigging of the Athenian fleet*

M.D. Kechagias: *Spinning the lifeless thread of Thanatos: funerary textiles and burial rituals from Macedonia, Greece*

**DISCUSSION**

**Tuesday, 18 October**  
**Padova, Orto Botanico, Sala Convegni**  
**Via Orto Botanico 15**

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**Chair: Massimo Vidale**

**9.00-10.00**

M. Gleba, J. Cutler, B. Marin Aguilera, S. Harris: *Production and Consumption: Textile Economy and Urbanisation in Mediterranean Europe 1000-500 BCE*

B. Costa, C. Alfaro: *Spinning, weaving and vestimenta at the necropolis of Puig des Molins, Ibiza (Spain)*

B. Marín-Aguilera: *Producing purple on the other side of the Mediterranean: raw material procurement and relations between local people and Phoenician settlers in the Early Iron Age Southern Iberia*

K. Caulfield: *The hand-held distaff also known as the underestimated stick*

**DISCUSSION – COFFEE BREAK**

**10.45-12.00**

F. Meo: *Textile production in Magna Graecia*

F. Merlati: *Versabat pollice fusum. Manufatti relativi alla produzione tessile nelle sepolture femminili di età orientalizzante dalla Piana del Sarno/Versabat pollice fusum. Artefacts related to textile production in Orientalising female burials from Piana del Sarno, Italy*

A. Quercia: *Weaving in the archaic societies of South Italy (6th-first half of the 5th century BC): two key studies*

M. Kleibrink: *From labyrinths to swastikas: an iconography of the Timpone della Motta (Italy) loom weights*

M. Corrente, M.C. Laurenti, E. Catalli: *A well-warped fabric: the case of Herdonian women (Ortona, Italy)*

**DISCUSSION**

**13.00: LUNCH**

**Chair: Giovanna Gambacurta**

**14.00-15.00**

R. Laurito: *Etruscan textile tools: spinning and weaving in Southern Etruria*

E. Pizzuti: *Tessitura a tavolette: tecniche esecutive e loro riconoscimento/Tablet weaving: techniques and their identification*

L. Ambrosini, S. Gatti: *Strumenti in osso per la tessitura da vecchi e nuovi scavi di Palestrina/Bone textile tools from the old and new excavations at Palestrina, Italy*

G. Leonardi, I. Albertini, M. Cupitò, P. Michelini, C. Reggio, M. Vidale: *The visibility of textile manufacturing in Padua (Italy) in the 1st millennium BC*

**DISCUSSION – COFFEE BREAK**

**Presentation V *Purpureae Vestes* International Symposium**

**17.00: VISIT OF BOTANIC GARDEN**

**20.00: OFFICIAL DINNER**

**Wednesday, 19 October**

**Este, Museo Archeologico Nazionale**

**Via G. Negri, 9/C**

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**Chair: Francesco Meo**

**9.30- 10.30**

M. Gamba, G. Gambacurta: *The loom. From excavation to textile in pre-Roman Veneto (Italy)*

M. Ruta, M. Gleba: *Evidence of ossuary dressing in the funerary ritual of pre-Roman Veneto (Italy)*

M. Tirelli, M. Rottoli: *Astucci con tracce di tessuto dal santuario del dio Altino/ Bronze cases with traces of fabric from the sanctuary of the god of Altino, Italy*

M. Marchesini, M. Migliavacca: *The inscribed loom weights from Monte Loffa, Monti Lessini (Verona, Italy): can we "crack" the code?*

**DISCUSSION – COFFEE BREAK**

**11.15-12.30**

F. Coletti, D. Döppes, S. Mitschke: *Cultura tessile a Pompei: materiali, tessuti, tecniche, calchi/Textile culture at Pompeii: materials, textiles, techniques, casts*

E. De Carolis, M. Galli, C. Lemorini, V. Forte: *Cultura tessile a Pompei: attori, contesti, instrumenta textilia/ Textile culture at Pompeii: agents, contexts, instrumenta textilia*

A.R. Tricomi: *Textile tools from Roman Venetia (Italy): an overview*

M.S. Busana, M. Gleba: *Textile Production and Consumption in Roman Venetia (Italy): preliminary results of the study of mineralized fibers and textiles*

C. Rossi: *Tibi...sunt castae Palladis artes. Textile tools in Roman funerary practice*

**DISCUSSION**

**13.00: LUNCH**

**14.00: VISIT OF ESTE MUSEUM**

**Chair: Lise Bender Jørgensen**

**15.00-16.00**

M. Rigoni, M. Rottoli: *La conservazione di frammenti di tessuti attraverso il processo di mineralizzazione: due casi del Veneto/ The preservation of textile fragments through the mineralisation process: two cases of Veneto, Italy*

M. Rottoli, G. Cavaliere Manasse: *La sepoltura longobarda di Verona, vicolo Bernardo da Canal: un caso insolito di conservazione dei resti tessili/ The Longobard burial of Verona, vicolo Bernardo da Canal: an unusual case of preservation of textile remnants*

F. Médard, D. Djaoui: *Chiffons gallo-romains: un exemple inédit de recyclage/ Gallo-Roman rags: a previously unknown example of recycling from France*

A. Stauffer: *A Roman hairnet from the Rhineland (Germany) and its context*



## **DISCUSSION – COFFEE BREAK**

**16.45-18.00**

H. Granger-Taylor: *Fragments of underwear found at Masada, Israel (c. 30 BCE to 100 CE)*

N. Sukenik: *A re-evaluation of the textile dyes in the Cave of Letters (Israel)*

L. Larson Loven: *Searching for dyers in Roman textile production*

M.J. Martínez-García: *¿Alchemist ou artisan teinturier? Faire la teinture dans l'Égypte romaine/ Alchemist or dyer? Dyeing in Roman Egypt*

C. Broens: *Pigments and dyes: representation of garments in mummy portraits from Fayum (Egypt)*

## **DISCUSSION**

**Thursday 20 October**

**Altino, Museo Archeologico Nazionale**

**Via San Eliodoro, 56**

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**Chair: Mary Harlow**

**9.30-10.30**

I. Bogensperger, A. Koroli: *Qualities of textiles and their terminology*

L. Bender Jørgensen: *The textiles from Mons Claudianus in a North African context*

J. Ortiz-García: *Painted religious cloths from Roman Egypt*

A. Cabrera-Lafuente: *Fibre, dye and mordant analysis of Late Antique and Early Medieval Egyptian textiles from the former Museu Tèxtil i d'Indumentària de Barcelona*

## **DISCUSSION – COFFEE BREAK**

**11.15-11.45**

C. Alfaro: *A new wool fabric from the Roman port of Oiasso, modern Irún (Basque Country, Spain)*

M. Bustamante, A. M. Bejarano: *Recent discoveries from the site of the ancient capital of Roman Lusitania, Augusta Emerita.*

## **DISCUSSION**

**Conclusions: Margarita Gleba**

**12.30: VISIT OF ALTINO MUSEUM**

**13.30: LUNCH**

**14.30: DEPARTURE FOR VENICE**

**16.00: VISIT OF TESSITURA BEVILACQUA (VENICE)**

## POSTERS

- Caneva, S. Ficco: *Spinning and weaving in Mersin-Yumuktepe (Turkey) in the 6th-5th millennium BC.*
- Vanden Berghe, M. Gleba: *Italian textiles from the first Millennium BC - Dye investigation of degraded and mineralised textile remains by non-destructive and micro-destructive techniques*
- A. Tonc, I. Radman Livaja: *Protohistoric dye production on the Eastern Adriatic coast?*
- N. Cuddeback: *The decorated loom weights of Iron Age Southern Italy*
- L. Pedroni: *Tra le pieghe della tradizione. Agatocle inventore della trabea (LYD. Mens. 1.21 W)/ Between the folds of tradition: Agatocles inventor of trabea (LYD. Mens. 1.21 W)*
- F. Saranti, G. Nikolovieni: *Textile tools from Ancient Makyneia, Greece: the case of Buildings A and B*
- M.R. Luberto, F. Meo, F. Rizzo: *Textile production along the Ionic coast of Calabria, Italy: data from Sybaris and Kroton*
- S. Scansetti: *Resti tessili da sepolture tardoceltiche in provincia di Pavia/Textile fragments from Late Celtic burials in the province of Pavia (Italy)*
- L. Russo, I. Fiore: *Manufatti in osso per la produzione e la confezione di stoffe ad Ostia/ Bone artefacts for the production and packaging of fabrics in Ostia, Italy*
- C. Corti, M. Sanfelici: *Bone needles and textile production in the Roman times: a proposal for a re-interpretation*
- F. Médard, F. Maeder: *Too nice to be true - no sea-silk in Pompeii*
- M. Ohrman: *A warped version: manipulating Roman looms for metaphorical effect – Potamius, De Substantia, 5-9*
- C. Corti: *La produzione tessile a Mutina: il caso della villa della Scartazza/Textile production in Mutina. The case of Villa della Scartazza (Modena)*
- S. Cipriano: *Filatura e tessitura nel santuario di Reitia a Este in età romana: permanenza o discontinuità?/ Spinning and weaving in the Reitia sanctuary of Este (Italy) in Roman times: Permanence or discontinuity?*
- D. Francisci: *Statistica multivariata applicata agli strumenti da filatura e tessitura della Venetia romana/Multivariate statistics applied to spinning and weaving instruments from Roman Venetia (Italy)*
- P. Basso, M. Gleba: *Una lucerna con resti di stoppino dalla necropoli di Gazzo Veronese/ A lamp with remains of the wick from the necropolis of Gazzo Veronese, Italy*
- D. Garmi: *Découverte d'une nebula linea et fibrilles de coton/soie en Gaule au I<sup>er</sup> siècle de notre ère, dans une cité secondaire de Gaule/Discovery of a nebula linea and cotton/silk fibres in the 1<sup>st</sup> century AD, in a secondary city in Gaul (France)*
- Facen, M. Fiorillo: *Weaving and dyeing: the lexical evidence from Greco-Roman Egypt*
- J. Ortiz-García, M.J. Martínez: *Folding the portrait: manufacturing decorated shrouds in Roman Egypt. A case study from the Egyptian Museum in Berlin*
- M.I. Ruiz De Haro: *The meaning of the votive deposit of spindle whorls on Zacatín (Granada, Spain) and their relationship to the cult of the Darro River*
- Giostra: *Strumenti tessili da contesti altomedievali italiani/Textile instruments from Early Medieval Italian contexts*
- R. Invernizzi, C. Giostra: *Il tessuto dalla tomba della badessa Aripurga: la seta a Pavia tra VIII e IX secolo d. C./The textile from the tomb of the abbess Aripurga: silk in Pavia (Italy) between the 8th and 9th centuries*
- Luciano: *Tessuti per i Santi. L'epoca tardoantica/Textiles for the saints in the Late Antique period*



# ABSTRACTS

Monday, 17 October  
Padova, Orto Botanico

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Joanne Cutler - *University of Cambridge (UK)*

## **Tools, tablets and textiles: interweaving strands of evidence for Bronze Age textile economies on Crete**

The production and consumption of textiles was a core aspect of economy and society in the Bronze Age Aegean. On Crete in the Final Palatial period (c. 1490/1450-1300 BC), a mainland Greek Mycenaean administration was in place at the palace of Knossos. The large number of Linear B tablets recovered from the site, written in an early form of Greek, document the existence of a major palatial textile industry, which was highly specialised and large-scale, during this time. Considerable research has been undertaken on the Knossian Linear B evidence for textile production, but the archaeological evidence has received much less attention. This paper will discuss how the study of the archaeological evidence from a range of Cretan sites (drawing on the recent advances in textile experimental archaeology regarding the analysis of textile tools), assessed in combination with the textual and iconographic evidence, can provide a new window into Mycenaean period cloth production systems, with regard to the organisation of production, specialisation, standardisation, and labour requirements. Knossos will be a particular focus, since the Linear B tablets record that certain types of textiles were produced at Knossos, and textile tools have been recovered from a range of contexts at this palatial site. For the preceding Minoan palatial periods on Crete (c. 1950-1490/1450 BC), negligible textual evidence for the scale and nature of the textile industry is preserved, although the archaeological record provides extensive evidence for textile production at both palatial and non-palatial settlements. Furthermore, the few earlier Linear A tablets do indicate that the palatial Mycenaean textile industry developed out of an already established Minoan textile production system. Comparing the evidence for the Mycenaean period with the earlier palatial periods, the potential insights that can be gained by applying a new and richer textinformed model to the preceding Minoan palatial period data will be considered.



Małgorzata Siennicka  
*Centre for Research on Ancient Technologies, University of Copenhagen (Denmark)*  
Agata Ulanowska  
*Institute of Archaeology and Ethnology, Polish Academy of Sciences (Poland)*

## **The economics of textiles in Bronze Age Greece**

Recently, textile production in Bronze Age Greece (i.e. in the third and second millennia BCE) became the focus of intensified research in which the socio-economic importance of textiles and the key role of textile technology have been clearly acknowledged, especially as regards Minoan and Mycenaean palatial polities.

However, the overall picture of diachronic and regional changes in the economics of textiles is still quite difficult to trace and to investigate throughout the Bronze Age in Greece. In this paper we aim to focus on those less recognisable phases of textile economics by presenting a few case studies from Early, Middle and Late Bronze Age Mainland Greece and Crete. By integrating archaeological, iconographic and textual evidence with experimental approach to textiles and textile tools, we discuss how, in those periods, economics of textiles may have been related to general models of organisation of (textile) production and what were its specialisation and standardisation levels. We also consider how textiles may have been distributed and traded, and, if it is possible to assign a certain quality of textiles and their technical advancement to a specific organisation model of production. We attempt to determine what was the level of elite control over the textile production and how much the Bronze Age elites were directly and, possibly, personally involved in the manufacturing and trading of textiles. In conclusion we suggest that various models of textile economics were likely coexisting together and, possibly, mutually interacting. Therefore, we argue against the linear evolutionary model of development of textile production and economics, from a household to an attached and (early) state controlled production.



Claudia Minniti - *Università del Salento (Italy)*  
Giulia Recchia - *Università del Salento (Italy)*

#### **New evidence of purple dye production from the Bronze Age settlement of Coppa Nevigata (Apulia, Italy)**

The gathering of murex for purple dye production at the Bronze Age settlement of Coppa Nevigata (Apulia, Italy) is well attested and widely discussed elsewhere. Previous results showed that the processing of purple dye could have started from the early Protoapennine (1800 ca. BC), continued throughout the entire Bronze Age reaching its highest peak in the Apennine (14th c. BC), and decreased in the Subapennine period (13th – 12th c. BC). The variation in the amount of crushed murex shells at the site during different periods is likely to be linked to the network exchange with eastern Mediterranean, where purple dye was much appreciated. In previous studies we have pointed out that the apparent fluctuation of murex proportion per period could be, to some extent, affected by a recovery bias, as the majority of the Apennine layers yielding crushed murex shells resulted from movements of predating deposits. In view of a better understanding of the dynamics and change of purple dye production and defining of the use of murex shells through time, new data from the on-going excavations at the settlement will be presented. Specific attention will be paid to taphonomic and contextual details of shell assemblages, particularly to deposition processes, as well as to the "shell fragments/estimated earth removed" ratio, in order to evaluate to what extent bias factors could have affected the formation and the significance of the samples.



### **Spinning and weaving tools from the protohistoric settlement of Montagnana-Borgo S. Zeno (Veneto, Italy)**

The protohistoric settlement of Montagnana-Borgo S. Zeno (11<sup>th</sup>-9<sup>th</sup> century BC), in western Veneto, developed on the left bank of an ancient course of the River Adige at its junction with the River Fiumicello (a branch of the Agno-Guà-Frassine of the Monte Lessini). The settlement is located about 20 km from the south-western slopes of the Euganei hills, where the main protohistoric center of Este is located. The site was discovered during the 1970's and since then numerous research projects (fieldwork including surface surveys by walking, core sampling, trial trenching and excavation) created a vast database of paleo-economic information. The site produced a large amount of ceramic artefacts that we can associate with domestic activities, including spinning and weaving: spindle whorls, reels, bobbins, loom weights. In this paper we will consider size, weight and decorative patterns of a high number of spinning and weaving tools, searching for possible relationships between these artifacts and the different types of yarn and fabric that were likely produced in this settlement. It will also consider the decorative motifs that very frequently adorn spindle whorls and loom weights. These decorative motifs, also present in the ceramic pottery, could belong to the ideological sphere. The archaeozoological and palynological /paleobotanical data available at the moment for the settlement will be examined to identify the most commonly used plant and animal fibers. Of particular importance will be the examination of dress on a clay figurine from Montagnana site and its comparison with similar figurines from other Palaeovenetic contexts.



Jacopo De Grossi Mazzorin - *Università del Salento (Italy)*

Claudia Minniti - *Università del Salento (Italy)*

### **Caprine varieties in Italy in the Iron Age. The evidence from archeozoological data**

The presence of Greek varieties of caprines in southern Italy is attested by at least Roman times, especially in relation to the development of Italian breeds with much appreciated wool. However, we do not know if the caprine varieties that were present in Magna Grecia and are described by ancient sources in Roman time derived from imported livestock associated with the arrival of Greek colonists or from varieties developed locally in the preceding Iron Age. The aim of this paper is to use archaeozoological data to delineate hypotheses on the process of development of caprine varieties and mobility of livestock in central and southern Italy during the Iron Age. The measurements of animal bones from archaeological sites can be valuable for the distinction of taxa, morphological types, sexes and also age groups. Innovations in animal husbandry and forms of breeding control brought about changes in the morphology and size of domestic animals that can be detected biometrically. Although affected by the size difference that distinguishes the sexes and the difficulty of distinguishing between the two genera of sheep (*Ovis aries* L.) and goat (*Capra hircus* L.), the biometric analysis carried out on animal bones from Italian Iron Age contexts nevertheless provided important results on the presence of greater size variability in caprines during the most recent periods of the Iron Age, suggesting a progressive diffusion of a greater number of varieties through time. Biometric analyses focused mainly on the identification of wither heights in large samples, while smaller samples, analysed in isolation, proved to be insignificant. This study proposes a revision of biometric data from different Italian Iron Age sites through the use of a more

comprehensive and complete documentation, which can include samples with relatively small number of bones and measures.



Hedvig Landenius Enegren  
*Centre for Textile Research of Copenhagen (Denmark)*

**Ancient Cyprus: Bronze Age/Iron Age textile remnants and tools.  
A strategic crossroads of spinning and weaving cultures?**

The strategic location of Cyprus has made it a natural crossroads of cultural encounters and a key player in the ancient Mediterranean trade routes. How is this manifested in the island's ancient textile manufacture? The Uluburun shipwreck bears witness to an array of finds reflecting the goods that were once likely to pass through Cypriot ports. Among these finds were traces of textiles, discovered in a disintegrated state due to the prevailing unfavourable environmental conditions. Although textile finds in archaeological records are rare, the tools used to manufacture them can provide information. With respect to cross-cultural links, the phenomenon of diverse spinning traditions being culturally determined, as evidenced by high-whorl spinning in Egypt and the Middle East and a preference for low-whorl spinning in Anatolia and Europe, the position of Cyprus is particularly interesting. The paper discusses some of the results obtained in my project 'West and East –textile technologies and identities in South Italy and Cyprus in the 1st millennium BC'.

Moreover, it offers a re-examination of mineralised 2nd millennium cloth remains and provides new textile tool data from select Cypriot Bronze and Iron Age contexts.



Isabella Benda-Weber - *Austria Archaeological Institute (Austria)*

**Early Greek garments: indications for weaving techniques and textile ornaments on representations and evidence of contemporary textile remains**

Only a few textile remains survive in the Aegean region dating from about 1000 BC until ca. 600 BC. The earliest fragments from Lefkandi provide evidence for using chevron twill and the decoration of a cloth band with diamonds. Textile fragments from Kerkyra, Athens, Tiryns and Corinth were woven as weft-faced as well as warp-faced tabbies, which seem to have been popular in early Greek time. If we widen the view to other contemporaneous textile remains outside the Aegean –to Italy, Anatolia (Gordion) and the eastern Mediterranean – we have a wider repertoire of weaving techniques and textile decoration for the period around the 10<sup>th</sup> – 7<sup>th</sup> centuries BC. With this knowledge in mind, it is much easier to recognise textile structures when observing early Greek artefacts carefully. Geometric, Daedalic, Orientalising and early Archaic sculptures, reliefs, paintings, small finds made of gold, ivory or wood and other finds show a wide range of textile patterns, which are not only decorative but may give a clear hint of concrete textile techniques. Simple geometric patterns occur as well as ornamental garlands; borders and edgings show more elaborate patterns. Check and diamond patterns are easily explained as weaving

patterns, but can we also recognize the depiction of zigzag-, herringbone and diamond twill, soumak weaving and even tablet-weaving and tapestry? Selected examples of patterns like windmill-motives, diagonal meanders, floral sprinkle, coffered and scaly patterns will be analysed from a textile point of view, especially those showing small parallel dashes along the edge of a pattern. This approach of investigation is a very necessary one, for very seldom scholars use terms showing affinities to textiles like “fabric-like” when they are describing patterns of early Greek artefacts. It will lead again to the old question about the derivation of pottery decoration in general from textiles, which has been suggested for Greek Geometric pottery. We can start from the premise that many ancient artists focused on attentive and well-informed depiction of textile details, which reflected the reality.



Christina Margariti - *Ministry of Culture Athens (Greece)*

### **A 5<sup>th</sup> century BC textile find with evidence of embroidery from Attica, Greece**

The aim of this paper is to present a very important excavated textile find from Greece, which although it was excavated many years ago, has never been studied and/or published before. It also aims to show the potential and limitations of non-destructive instrumental analysis for the study and conservation of rare excavated finds, such as textiles. In 1983 the then B' Ephorate of Prehistoric and Classical Antiquities (EPCA), conducted a rescue excavation, which brought to light part of a Classical (5<sup>th</sup> century BC) cemetery in Thevon avenue at Piraeus. Among the finds retrieved there was a sealed copper vessel, which contained a substantial quantity of textiles. It was a funerary vessel containing the incinerated bones of the deceased. The copper vessel was conserved in the past, but this was not the case with the textiles, due to lack of specialised personnel at the time. Visual examination of the find revealed three different textiles present, based on weave analysis. They were given the numbers Y1, Y2 and Y3. Stereomicroscopy, ESEM-EDS, XRF, and FTIR microscopy were applied to the textiles. The stereomicroscope revealed information on the method of construction and yarn making of the textiles. It also revealed information on the decoration of textile Y2, which was possibly embroidered in a floral pattern, although the embroidery thread has not been preserved. All textiles are plain weave with single-ply, Z-twist warps but wefts and different average yarn diameters and weave counts. The ESEM enabled fibre identification and accurate measurements, allowing categorisation as cellulosic bast fibres. It also proved very useful in the characterisation of the condition of the fibres, providing information on how they had been affected by the copper degradation products, further corroborated by EDS analysis. Although a precise, localised analysis cannot be achieved with a portable XRF, it was able to highlight that the proximity of a textile to a metal greatly affects the amount of minerals deposited on the fibres. FTIR identified cellulose in the fibres, providing in this way information on their condition, since the organic matter of the fibres has been preserved.





### **Investigating maritime textiles in Classical Greece: sails and rigging of the Athenian fleet**

Since their early history, the Greeks have always been a seafaring people travelling to establish new contacts, found colonies and engage in trade in near and far lands. The peak of the Greek maritime power is Classical Athens, one of the most prominent cities of the Mediterranean world, which experienced unprecedented dynamism in politics, art and economy. In the 5<sup>th</sup> century BC, Athens became a powerful maritime force with a large fleet of hundreds of triremes, the state of the art military ships of the period. Its naval prominence continued, with fluctuations, into the 4<sup>th</sup> century BC and until the naval battle of Amorgos in 322 BC. A major part of the Athenian military might during this period was its fleet. Despite a widespread popular belief that ancient Greek ships were powered exclusively by oars, sails played a crucial role in ancient Greek navigation and naval technology. Sail and rope production constitutes a substantial part of Athenian textile production in this period and should be included in the Greek archaeological textile research. However, despite thorough investigation of other parts of the trireme, issues related to sails and ropes (catalogue and function of the materials, production techniques and organisation, administration and maintenance of sails and rope) have been so far neglected and left out of the body of the research. A preliminary investigation on the textile products for the fleet demonstrates the use of different qualities and sizes of rectangular sails as well as several types of rope, mainly of plant material. The comparison of written sources, iconography, archaeological remains and experimental archaeology allows us to collect information about the materials, the technology, the organisation of production and the maintenance of sails and ropes for the fleet and thus to better understand this neglected aspect of the Classical Athenian society. This paper presents first observations on the textile products for the Athenian fleet.



Dimosthenes Kechagias - *University of Peloponnese (Greece)*

### **Spinning the lifeless thread of Thanatos: funerary textiles and burial rituals from Macedonia, Greece**

Macedonia, as a regional unit of north Greece is a fragmentary known region with limited textual evidence through written sources of the ancient Greek literature. Up to now in existing bibliography for archaeological textiles a large research gap is evident since there are no adequate studies, in comparison with the research for the mainland and insular Greece. This scarcity led to the need for further investigation of this important thematic aspect. New multi-prismatic and comprehensive interdisciplinary research, including archaeological investigations conducted on various sites, usually carried out in rescue circumstances, produced new important finds, invaluable evidence of a well-developed textile production in the area, and revealed a particularly impressive wealth of archaeological textile fragments dated from prehistoric period to the late antiquity. The material reported here comes exclusively from funerary contexts. Wool and flax are the raw fibres used for textiles, with flax being the main raw fiber, while cotton is poorly represented among the excavated fragments. Variations occur in the types of weave and in the thread spin direction, with similar or mixed spin in warp and weft. The multidisciplinary approach allows to interpret the significant role of textiles in funerary rituals, a role with specific symbolic importance.

Margarita Gleba - *University of Cambridge (UK)*  
Joanne Cutler - *University of Cambridge (UK)*  
Beatriz Marin Aguilera - *University of Cambridge (UK)*  
Susanna Harris - *University of Glasgow (UK)*

**Production and Consumption:  
Textile Economy and Urbanisation in Mediterranean Europe 1000-500 BCE**

The paper will present an interim report on the results of a 5-year project, funded by the European Research Council starting grant, *Production and Consumption: Textile Economy and Urbanisation in Mediterranean Europe 1000-500 BCE (PROCOM)*. The project aims to test the hypothesis that textile production and consumption was a significant driving force of the economy and of the creation and perception of wealth in Mediterranean Europe during the period of urbanisation and early urbanism in 1000-500 BCE. The emphasis is on the significance of the production and consumption of textiles for the development of city-states (as clothing, elite regalia, trade and exchange items) and the implications of this for other aspects of the economy, such as the use of farm land, labour resources and the development of urban lifestyle. The geographical area selected for this study is eastern, central and western Mediterranean Europe: Greece, Italy and Spain. The chronological period chosen is the period between 1000 and 500 BCE, which roughly corresponds to the Early Iron Age in this area. Using established and novel approaches to textile research, the project results aim to change the landscape of urbanisation research by providing new data sets demonstrating textile production and consumption as major economic and social factors.



Carmen Alfaro - *Universidad de Valencia (Spain)*  
Benjamin Costa - *Arqueological Museum Ibiza (Spain)*

**Spinning, weaving and *vestimenta* at the necropolis of Puig des Molins, Ibiza (Spain)**

Our research in the Pitiuses islands (Ibiza and Formentera) started at the beginning of this century. Two years later *Purpureae Vestes* was born, a publication that was intended as a collaborative vehicle for the dissemination of studies and new research about the textiles and dyes in the ancient Mediterranean (the result was the first symposium of 2002 published in 2004). At the time of entrusting the organization of the sixth symposium in Padua (October 2016) into the hands of our colleagues Margarita Gleba, Stella Busana and Francesco Meo, we want to present a collaboration that demonstrates our work within the scope of the "Proyecto Timaeus", so-called in honor to the author from whom we know about the extraordinary quality of the local wool. This study has been continuing for six years, focusing not only on the wool work, but also on sheep husbandry, spinning, dyeing, fabric and their possible commercialization. Here we will concentrate on the anthropological information which provides us with clues of what seems to have been a small herd husbandry linked to agricultural use structures of family type and the *instrumenta textilia*, i.e. spinning and weaving tools found in important Punic necropolis of Puig des Molins in the city of Ibiza. The final results of this chain of different activities, that of

making clothing, the appearance of the island's inhabitants, will be treated briefly through the small votive figures also discovered in the tombs carved into the rock of the small mountain (*Puig* in Catalan) that for at the time it was full of mills (*molins* in Catalan).



Beatriz Marín-Aguilera - *University of Cambridge (UK)*

### **Producing purple on the other side of the Mediterranean: raw material procurement and relations between local people and Phoenician settlers in the Early Iron Age Southern Iberia**

Phoenicians set up permanent colonies across the Mediterranean from the 9<sup>th</sup> century BC onwards. Traditionally, those foundations have been largely associated with the Phoenician search for precious metals, particularly silver, according to classical authors. Archaeological research over the past decades in South Iberia has shown, however, that Phoenician colonial activities were greatly diversified. One of the pillars of their economy was indeed the production of purple dye. Phoenicians left a trail of murex shell heaps at Toscanos, Almuñécar and Morro de Mezquitilla, and a purple-dye workshop has been recently uncovered at Cerro del Villar. The procurement of raw materials involved a high degree of connectivity, and the local knowledge of natural resources was crucial. Iberian communities readily learned and developed their own muricid fishery to trade with the newcomers, broadening their economy. In this regard, this paper gathers all the information available for murex fishing and purple production in South Iberia, and explores the impact of the Phoenician purple industry on the local society and thus the relations established between Phoenicians and natives between the 9<sup>th</sup> and 6<sup>th</sup> centuries BC.



Kim Caulfield – *Independent researcher (U.S.A.)*

### **The hand-held distaff also known as the underestimated stick**

In ancient Europe, where there were spindles, there were almost always distaffs. They turn up together in literature, and in excavations. Making cloth was time consuming, painstaking, and important work, so it is no surprise that textile tools were designed, and redesigned, to facilitate production. Spindles and their whorls developed in a wide variety of styles, and many people have studied and analyzed them to determine how these differences affected thread production. Throughout all of this study, however, most of us just thought of a distaff as being rather like a hat rack: just a stick used to hold stuff. It is time to re-examine this assumption.

A hand-held distaff is actually a highly practical tool. It does hold prepared fiber for spinning, but it also allows the spinners left hand and arm to stay largely relaxed, in an ergonomically sustainable position. It allows controlled drafting of fine thread without tension in the spinner's hand. This translates into greater ease and comfort in spinning, allowing the spinner to produce much more thread in a given time. A distaff is a surprisingly practical stick. I will trace the evolution of early distaffs, looking at how their designs improved their usefulness. I will look at how to recognize distaffs, even when some forms are frequently misidentified. Finally,

I will offer my hypothesis of how a simple stick evolved into a delicate glass rod with a loop at one end and a sliding whorl on its shaft, and I will demonstrate why this is a spectacularly refined tool for the production of large quantities of very fine thread. Understanding the practical nature of hand held distaffs holds strong implications for the understanding of textile production in cultures where these tools were used.



Francesco Meo - *Università del Salento (Italy)*

### **Textile production in *Magna Graecia***

The present paper will focus on textile production in Magna Graecia through a series of case studies analysed during the last years. The comparison of a series of contexts from Kaulonia, Herakleia, Metapontion, Taras and Poseidonia/Paestum, different in terms of chronology and typology, will allow to trace possible changes in textile production, the organisation of the activity and its role inside the different societies thanks to the research conducted on textile tools. On the other hand, the beginning of systematic studies on some textiles and imprints of textiles from some indigenous settlements of southern Italy will complete the picture allowing a possible comparison between Greek and non-Greek productions. The combination of these data will provide the first overview of the qualities of the several textile productions through the first millennium BC in the different geographical areas and of the importance of the textile process inside the settlements.



Francesca Mermati - *Università degli Studi di Napoli Federico II (Italy)*

### ***Versabat pollice fusum*: artifacts related to textile production in Orientalising female burials of Piana del Sarno, Italy**

The necropolis of Piana del Sarno, Campania, constitutes a quantitatively and culturally significant site, although so far very little studied, in the context of studies on indigenous Campania between the Iron Age and the Orientalising period, through to the Archaic period. The high number of burials found - about 2100 - covers a time span between the second half of the 9<sup>th</sup> and the 5<sup>th</sup> century BC, allowing a significant diachronic and synchronic analysis of one of the most important areas in the field of so-called *Fossakultur*. A recent resumption of studies now allows us to interpret the funerary data in the light of the evidence already known, among which is the site of Longola Poggiomarino, the only settlement so far fully explored. The burial sets of Piana del Sarno, in the various chronological phases, are strongly differentiated in terms of quantity and quality of objects, with sharp and clear indicators of age, gender, role and status. In particular, towards the middle of the 8<sup>th</sup> century BC they begin to emphasize, in the adult female burials, the activities linked to the production of textiles. Spindle whorls, spools, loom weights mark, in number and variation in size, the position of the deceased within the group to which she belonged. The possibility to compare the funerary and settlement data allows us to clarify the logic of the choices in the composition of burial sets, and the obvious difference with the settlement

context: specific objects clearly convey specific messages, the communication of which is essential and necessary for the wider community. Their presence/absence, shape, material, size and quantity obviously depend on a specific selection, which in the necropolis takes on meanings related to the structuring of the society of the living, whose articulation often eludes us in the vision that the settlement offers. Through the reading of these data it is therefore possible to interpret the will of representation/self-representation of women of Sarno during the Orientalising period.



Alessandro Quercia  
*Soprintendenza Archeologia del Piemonte (Italy)*

### **Weaving in the archaic societies of South Italy (6<sup>th</sup> - first half of the 5<sup>th</sup> century BC): two key studies**

Recent studies on the textile production have been demonstrating how the societies of Pre-Roman Italy in the Archaic age (7<sup>th</sup>- 6<sup>th</sup> centuries BC) engaged in a development of new productive processes and technological variability in the manufacture of textiles, which determined also specialization and standardization of the objects used for the different productive steps, and their general increase in number.

These changes were likely caused by social and cultural factors, as well as by individual experimentations and choices. Within this general picture, Archaic South Italy represents a paradigmatic area of intense and deep contacts and cultural exchanges between Greek communities and indigenous societies. In particular, this paper focuses on two key-study sites: Selinunte, a Greek town of Western Sicily, and Torre di Satriano, a Lucanian site in Basilicata. These examples show two different approaches in the technical changes on textile tools used for weaving, that is the loom weights. We explore: 1) the significance of morphological and technical characteristics, for understanding social links; 2) the role of technological changes in the textile production of the archaic societies 3) how innovations may be met by adaptation and 'resistance' 4) the role of female in the craft production of loom weights.



Marianne Kleibrink - *University of Groningen (Netherlands)*

### **From labyrinths to swastikas, the iconography of the Timpone della Motta (Italy) loom weights**

During excavations under my direction on the summit of Timpone della Motta, Francavilla Marittima (Calabria) about 50 complete and circa 150 larger fragments (and many smaller) of decorated loom weights turned up. These were embedded in an ash and earth-filled layer, together with fragments of cooking stands, bucket-shaped *pithoi* and other (datable) pottery. The layer is attributed to a 28m long, apsidal, timber structure (*Edificio V.b*) built by Oenotrian elite in the 8<sup>th</sup> century BC. The presentation includes a reconstruction and report on my further study of the loom weights, seeking to show that the many variations on meander-swastika motifs may be interpreted as inspired by woven fabrics. Specific to all patterns is that motif and counter motif are identical, making these motives very suitable for double

weaves, but other techniques resulting in an equal front and backside are also possible. Included is the presentation of associated, light, finger-shaped weights (not known to me from elsewhere), which may have served to weave bands via tablet-weaving, since the weights of the many spindle whorls of the associated contexts give no indication for the spinning of thin yarn.

The excavation stratigraphy shows that in the successive temples (V.d, V.e) spinning or weaving was no longer practised, although there is ample iconographic evidence that in the 7th and 6th century a goddess (presumably Athena Ergane) was revered. The earliest phase of the intermediate Temple V.c remains by the small number of associated finds a problem. A final conclusion expands on the possibility that in the 8<sup>th</sup> century BC apsidal Weaving House (*Edificio V.b*) 'commercial' textile production under control of an elite took place, whether or not combined with worship of a protective goddess, while in the 7th c. BC this production changed to home weaving under the control of merchants.



Marisa Corrente - *Soprintendenza Archeologia della Puglia (Italy)*  
Maria Concetta Laurenti - *Istituto Superiore per la Conservazione e il Restauro (Italy)*  
Emiliano Catalli – *Freelance (Italy)*

#### **A well-warped fabric: the case of Herdonian women (Ordonia, Italy)**

The recent discovery of textile fragments in a male tomb at Herdonia (Ordonia-Fg) is the reason for reflection on the activity of women as spinners and weavers in this important settlement on the Carapelle River, known because of the systematic research of the Belgian archaeologists in the second half of the last century.

The context under investigation by the Superintendency of Archaeology Puglia in an extramural, Daunian area of the town, southeast of the Roman city of Herdonia, is of archaeological relevance and includes two funerary structures of the first quarter of the 4<sup>th</sup> century BC that, in terms of monumentality and peculiarities of funerary types adopted, emerge from the common pit graves. Despite the compromised documentation gathered, caused by illegal excavations, two graves, connected by the identical socio-political background, can be traced back to the themes of self-representation of local aristocracies, with forms of political-military legitimacy for the tomb 382, destined for the grave of a warrior with a complex panoply and participation of the woman's grave 384 at the same aristocratic display. The cultural transmission dynamics help to define in Hellenic key the participation of the two individuals buried. In this framework of cultural interaction should be seen the wooden and textile finds from the tomb 382. Probably a decisive role in textile production is assigned to the *domina lanifica* of the nearby tomb 384. The incomplete mineralisation of the fabric wrapped around a core of bronze sheet belts, has allowed the preservation of exceptional fabrics and "embroidery" decorated with geometric patterns. In highlighting the importance of the discovery of textile items from Herdonia, it is evident that they solicit questions on the complexity of the production of fabrics, the use of animal and plant fibers, on technologies and learning proper of domestic scope. Some archaeological records in Daunia and, in particular, from Herdonia, connected to textile activities are to be framed in the context of wool production that historical sources point to Daunia as a region specialised in the selection of the ovine species, noting the importance of the productive activity. In some areas of the town, recent discoveries of textile instruments, loom weights and spools, appear to be plausibly linked to single-family households, with activation of the production processes and the presence of frames. The behavioral sequences for women should not be limited to the manufacture of textiles: the correct interpretation of geometric pottery of Herdonia, marked by highly specialised and decorative work of multiple bands, the cultural transmissibility

of the decorative repertoire and the ability to apply technical knowledge, would appear common social heritage connected in the domestic sphere to the role of women.



Romina Laurito  
*Soprintendenza Archeologia del Lazio e dell'Etruria Meridionale (Italy)*

### **Etruscan textile tools: spinning and weaving in Southern Etruria**

The high quality of Etruscan textiles is well known and attested by the Tarquinian paintings and sculptures as well as the decorative pottery created throughout Etruria (in modern Central Italy). They show the wide variety of fabrics and occasionally the richness and attention to detail that went into creating the clothes that were once worn. Less well known are the spinning and weaving tools that were necessary to create these fabrics. This is the starting point and background of the European project called *TexSEt (Textiles in Southern Etruria) 2014-2016*. The *TexSEt* project has had the main aim to study the spinning and weaving tools of the Etruscan-Italic world, connecting to the analyses of preserved archaeological textiles. The research further has integrated use wear analyses, experimental archaeology combined with an ethnographic approach to explore what constituted pre-Etruscan and Etruscan textile tool kits and the range of qualities that could be produced by these tools, as well as looking for changes in the chronological and/or geographical record. In this paper I present the results obtained in the project. Observations on the Etruscan spinning and weaving tools and activities will be shown. I will start from an analysis based on CTR (Centre for Textile Research, University of Copenhagen) principles: the morphological-technological study combined with recent advances in textile experimental archaeology now make it possible to ascertain the function of textile tools, and the types of textiles that could have been produced at specific sites with specific tools. This provides valuable information on the nature of cloth manufacture, even in areas where the textiles themselves have rarely survived. This paper will consider the insights that can be gained by applying this approach.



Ettore Pizzuti – *Independent researcher (Italy)*

### **Tablet weaving: techniques and their identification**

The paper will seek to clarify what tablet weaving consist of and in what ways it is used. It will examine possible ways of handling the tablets as well as their morphological characteristics, which can be modified depending on the function of their use. Some significant textile artifacts executed using this technique will be examined (such as the edges of the mantles 1 and 2 of Tomb 89/1972 Lippi of Verucchio, Italy; the fragment of the edge of the Tomb 2 Santa Palomba near Rome; the fragment of the edge of a mineralized kadiophilax type Paglieta from Alfedena; borders IA123 and IA152 from Hallstatt, Austria) in order to assess similarities and differences, focusing on implementation methods rather than on their aesthetic appearance.



Laura Ambrosini - *CNR ISMA (Italy)*

Sandra Gatti - *Soprintendenza Archeologia del Lazio e dell'Etruria Meridionale (Italy)*

### **Bone textile tools from the old and new excavations at Palestrina, Italy**

During the excavations carried out in 2004 in Palestrina (ancient Praeneste) by the Soprintendenza in the Colombella necropolis, in an area that seems to have already been investigated in 1855 and in 1859, a "*pilozzo*" was found containing a high-level kit, one of the finest known so far for the Republican period, confirming the city's prosperity and the economic power of the elites of Praeneste. The kit, belonging to a female person, included a large number of bone plaques from the covering of a wooden casket. The two triangular plaques that constitute their pediments are decorated with incised busts of youth with Phrygian cap (Dioscuri?). Together with them were found a fragment of an *unguentarium* in alabaster gypsum, a silver handle, bronze handle with a chain connected to a bronze cap in the shape of a male bust and the mouth of a small wooden container attached to an iron chain. Extraordinary is the presence of two spindles and many other carved items, all bone, including the box set hinges, drilled elements, perhaps disks for the spindles, and several rods decorated with complicated mouldings, enhanced by movable rings, whose "assembly" is still uncertain. They are, in part, identical to some objects belonging to another kit from Praeneste, attributed to the so-called Pasinati cist, kept in London, in the British Museum. The bone objects found in 2004 likely belong to a more complex tool compared with the simple winding of yarn, as assumed by H. Brunn. They are also much more elaborately carved and refined, and are more delicate and fragile than those identified as spindles; thus, these characteristics make it difficult to ascertain their practical use. Therefore, it seems that we should think of it as a complex tool set for sewing, perhaps used for embroidery or twists or mixtures of different threads, or spindles, but certainly with symbolic character, not intended for a practical use.



Giovanni Leonardi - *Università degli Studi di Padova (Italy)*

Ilaria Albertini - *Università degli Studi di Padova (Italy)*

Michele Cupitò - *Università degli Studi di Padova (Italy)*

Paolo Michelini - *Università degli Studi di Padova (Italy)*

Chiara Reggio - *Università degli Studi di Padova (Italy)*

Massimo Vidale - *Università degli Studi di Padova (Italy)*

### **The visibility of textile manufacturing in Padua (Italy) in the 1st millennium BC**

This contribution tackles the archaeological problem of identifying the sites where plant and animal fibers were processed, spun and woven in the pre-Roman center of Padua, from its foundation to its emergence in the Roman state. Indicators of this industry, in fact, on one hand are widespread in every domestic context (spindle whorls and loom weights scattered in household ruins and garbage deposits); on the other, permanent and specialized installations for retting, washing and dyeing the fibers, and specialized workshops, so far, have not been identified with certainty. We present the results of a recent,



systematic survey of the craft workshops in Iron Age Padua, and the state of the art of this intriguing investigation.



Wednesday, 19 October  
Este, Museo Archeologico Nazionale

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Mariolina Gamba - *Polo Museale del Veneto (Italy)*  
Giovanna Gambacurta - *Polo Museale del Veneto (Italy)*

### **The loom. From excavation to textile in pre-Roman Veneto (Italy)**

This paper attempts to analyze the archaeological contexts in pre-Roman Veneto in which evidence related to looms was found, which is dated between the 6th and 2nd centuries BC. We propose a reconstruction that highlights similarities and differences resulting from different productions in different geographical areas, between places on the hills and in the plains. There is both direct evidence, such as wooden remains, as well as indirect, such as postholes of possible loom beams or alignments of loom weights, dating primarily to the late Iron Age. It seems possible to assume that looms of different sizes, or set up in various ways, might reveal peculiar specializations related to individual contexts and to specific productions.

We think that not only the morphology and the weight values of the loom weights, but also the presence of imprints and pseudo-alphabetical signs on them are important. These could have been used for several purposes, but probably to identify different factories in a landscape with a complex economic system. A further element of analysis will consist of correlating types of looms and textile remains, which come mainly from the pre-Roman funerary contexts. Diversity of textiles, mostly made of wool, but of different qualities, underlines an integrated production system between different geographical areas, connected by trade and transhumance routes.



Mariangela Ruta Serafini - *Soprintendenza Archeologia del Veneto (Italy)*  
Margarita Gleba - *University of Cambridge (UK)*

### **Evidence of ossuary dressing in the funerary ritual of pre-Roman Veneto (Italy)**

The topic of ossuary dressing, in the broader context of the celebration of death in pre-Roman world, today is very timely. Thanks to the more and more extensive studies this ritual practice does not appear linked to exceptional circumstances in Italy, but appears to be quite common, as documented by the new evidence from the cemeteries of Verucchio, Tarquinia, etc. In Veneto, at the end of the nineteenth century, Alessandro Prosdocimi, the discoverer of Palaeovenetic civilization, wrote a few pages entitled *On the custom of the ancients to cover cinerary urns with cloth*. In recent years, the more

refined techniques of excavation, resulting in microstratigraphy and careful reading of the archaeological record of the past have identified in the graves of Este (Pd), as well as elsewhere, a number of textile traces that are now the subject of expert analysis and detailed studies. We will present here some emblematic cases, to demonstrate the considerable ritual variability that characterizes the depositional sequence of funerary objects during the chronological period from the 8th to the 3rd century BC.



Margherita Tirelli - *Soprintendenza Archeologia del Veneto (Italy)*  
Mauro Rottoli - *Laboratorio di archeobiologia - Musei Civici di Como (Italy)*

### **Bronze cases with traces of fabric from the sanctuary of the god of Altino, Italy**

The excavation of the pre-Roman sanctuary of the god of Altino, conducted between 1997 and 2007 in the area of the new National Archaeological Museum, has produced very numerous votive material, belonging to various typological classes and from multiple geographic area. Among the votives are numerous cylindrical cases made of bronze sheet, a large number of which comes from a single pit, in which had been deposited other particularly significant votive materials. The deposition of the cases is dated to the chronological period between the end of the 4<sup>th</sup> and 3<sup>rd</sup> centuries BC. Laboratory tests carried out on the contents of the cases identified the presence of remnants of fabric, which probably served to wrap some perishable offering deposited inside. The paper will focus on this discovery, in search of possible comparisons and in an attempt to decode the specific rituals involved.



Simona Marchesini - *Università degli Studi di Padova (Italy)*  
Mara Migliavacca - *Università degli Studi di Padova (Italy)*

### **The inscribed loom weights from Monte Loffa, Monti Lessini (Verona, Italy): can we “crack” the code?**

In the fortified site of Monte Loffa, Lessini Mountains, north to Verona, a significant number of inscribed loom weights was discovered in the time span of a century (from the end of the 19th to the end of the 20th century) in different and not always well documented excavations. They are dated in the late Iron Age, and are exceptional both because of the material (stone) and the presence of inscriptions. In fact, the stela-shaped loom weights present a wide repertoire of inscribed signs, including numerals and icons often connected, combined and modified by small diacritic signs. No real "text", i.e. personal or divine names, as known on the loom weights from the Graeco-Roman world, is attested here. The weights have been compared by the authors both with the archaeological evidence of textile production and with all the known inscriptions coming from an area comprising Trentino, Alto Adige and western Veneto: their pertinence to a Rhaetic writing system is assured, but no precise comparison for this particular type of loom weight has been found until now.

Nevertheless some other sign repertoires connected to production activities or farming, in the past as well as in more recent times, are the nearest candidates for a possible comparison. In the present

contribution we attempt to find possible similarities to other sign codes, primarily by analyzing ethnographic parallels of textile production in space and time.



Francesca Coletti - *Università La Sapienza di Roma (Italy)*  
Doris Döppes - *Curt-Engelhorn-Zentrum Archäometrie, Mannheim (Germany)*  
Sylvia Mitschke - *Curt-Engelhorn-Zentrum Archäometrie, Mannheim (Germany)*

### **Textile culture at Pompeii: materials, textiles, techniques, casts**

The CEZA scholars present a selection of findings aimed at giving an overview of the different materials used (wool, linen, silk, gold thread) and the relevant techniques documented; integrated archaeometric investigations in a new analysis protocol allow to shed light on crucial aspects such as "levels of quality and standards" and "operational chain", fundamental for the reconstruction of the textile production methods; finally, the study of the textile traces preserved in the human casts of Pompeii, through the use of 3D scanners, has set up a entirely new and particularly effective methodology for documenting precise correspondence between the found materials and their effective use.



Ernesto De Carolis - *Soprintendenza Speciale per Pompei (Italy)*  
Marco Galli - *Università La Sapienza di Roma (Italy)*  
Cristina Lemorini - *Università La Sapienza di Roma (Italy)*  
Vanessa Forte - *Università La Sapienza di Roma (Italy)*

### **Textile culture at Pompeii: agents, contexts, *instrumenta textilia***

A systematic study of all the tools (needles, combs, shuttles, loom weights etc.) provides, directly related to the results of 1), an acknowledgment of the phases and of the full extent of the Pompeian textile production; the creation of experimental archeology protocols for these materials has been helpful to identify, for example, through the analysis of traces of wear, the actual functionality of the objects and practices of execution. Finally, the relationships that we were able to establish between objects and contexts of discovery, as well as between materials/fabrics and images have identified some totally new aspects of both textile production sites, and more generally of the textile culture of the city of Pompeii.



### **Textile tools from Roman *Venetia* (Italy): an overview**

Textile economy, especially wool based, was very important in the Roman *Venetia* (North-eastern Italy), thanks to geography and natural environments of fertile plains, alpine pastures and coastal salt works. After investigating topographic evidence, notably identifying transhumance routes, and literary and epigraphic sources pertaining to textile processing, recently the interest turned to archaeological data concerning textile making. In 2009 started the PONDERA Project aimed at investigating technological, economical, social and ideological aspects of textile craft. The main goal was a systematic survey of archaeological textile implements exhibited in museums or stored in museum storerooms. More than 2800 tools have been recorded and particular attention has been paid to the analysis of their functional and morphometric parameters. This paper offers an overview of the technical, chronological and distributional features of these implements. Supported by the application of the 'CTR methodology' and statistical analyses, the attempt is to reveal the landscape of ancient yarns and fabrics.



Maria Stella Busana - *Università degli Studi di Padova (Italy)*

Margarita Gleba - *University of Cambridge (UK)*

### **Textile Production and Consumption in Roman *Venetia* (Italy): preliminary results of the study of mineralized fibers and textiles**

Within the investigation on textile production in the Roman *Venetia* (North-eastern Italy), after the systematic survey of the textile tools carried out by the Pondera project, in 2014 started a new scientific project aimed at identifying samples of ancient Roman fabrics: the TRAMA Project - Textiles in Roman Archaeology Methods and Analysis. Because of the climatic and the terrain features, fibres, yarns and textiles are rarely preserved in the *Venetia* region, as well elsewhere in Italy: the only Roman fabric known from the *Venetia* until recently was a fragment of a wool textile from Adria, studied by Margarita Gleba in 2012. The new project is focused on a systematic census of organic and mineralised fabrics, in order to achieve a statistically significant sample. To date over 30 metal items with mineralised fibres have been recorded and analysed. They are bronze or iron objects coming mainly from funerary contexts in urban (the main Roman cities of Veneto including Altino, Este, Padua, Verona), and rural cemeteries. The study provides new data regarding the funerary rituals and the textile production, offering for the first time a real picture of textiles produced in the area.



***Tibi...sunt castae Palladis artes. Textile tools in Roman funerary practice***

In each grave nothing is left to chance and everything has its own meaning. This assumption is particularly true for the artefacts laid into the grave: there are goods intended for funeral celebrations, goods that had to guarantee the passage to the Underworld, and finally goods that are justified by the public dimension of the funeral and aimed to encode the memory, portraying the deceased according to a preconceived public image. Compared with the anthropological data, these objects help to define the human being, suggesting values, ideals and models, as well as their role within the household and the position within the community. Carefully chosen as elements of individual characterization, working tools generally belong to this latter category. Among them, those connected with textile manufacturing (from the first treatment of the raw material, to spinning and weaving) often gain a relevant role. The paper aims to present the LANIFICA project recently launched by the University of Padua, which is focused on the analysis of textile tools coming from the Roman cemeteries of northern Italy and north-western provinces. The purpose of the research is to enlighten the meaning acquired by such kind of tools in the funerary context, an issue rather well known as in pre-Roman times but barely discussed for the Roman age and now dealt with with a multidisciplinary approach to the graves. Considering the topics of the conference, reflections will be focused on both the technological and sociological inferences of the project, with particular attention to the selection of tools in connection with the socio-economical profile of the deceased, so far as revealed by the anthropological data combined with the study of tombs and grave goods.



Wednesday, 19 October  
Este, Museo Archeologico Nazionale

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Marisa Rigoni - *Soprintendenza Archeologia del Veneto (Italy)*  
Mauro Rottoli - *Laboratorio di archeobiologia - Musei Civici di Como (Italy)*

**The preservation of textile fragments through the mineralisation process:  
two cases of Veneto, Italy**

Two funerary contexts of different periods, both with burial sets consisting mainly of metal objects, have given the chance to recover fragments of mineralised textiles. The case which will be discussed more fully covers a small Longobard necropolis brought to light in Montecchio Maggiore (VI), with two groups of burials in mass graves in earth fossae dated between the second quarter and the end of the 7<sup>th</sup> century AD or beginning of the following. Here, in some male burials, the presence of *spatha* and/or the *scramasax*, and especially belt for the suspension of the arms with metal elements of metal, made possible the preservation of small fragments of fabric, through the corrosion products of iron and bronze. The analysis has documented the almost exclusive use of flax for different weaves. The second case is instead a Roman necropolis discovered in San Donato di Lamon (BL), currently under study, some important data will therefore be anticipated. It is a complex of about 90 inhumation graves, male and

female, dating from the second half of the 1<sup>st</sup> through the 4<sup>th</sup> century AD. The deceased were placed in small graves and buried with items of clothing, ornaments and tools, and often with one or more coins. The almost exclusive presence of metal objects in the burial sets also in this case allowed the preservation of small fragments of organic material, including those of different textiles.



Mauro Rottoli - *Laboratorio di archeobiologia - Musei Civici di Como (Italy)*  
Giuliana Cavalieri Manasse - *Soprintendenza Archeologia del Veneto (Italy)*

### **The Longobard burial of Verona, vicolo Bernardo da Canal: an unusual case of preservation of textile remnants**

During the excavation that the Superintendence for Archaeological Heritage conducted in 2004 in Verona, in the vicolo Bernardo da Canal a burial of Longobard period was excavated with an articulated set of weapons. Inside the tomb, which consisted of large rectangular slabs of limestone skeletons of several individuals were found. To make room for the rider with spurs buried on top, the buried previously placed in the tomb were moved and the rider's arms were placed at his side. The corrosion products of the metal of the weapons have thus conserved part of the rider's clothes, and part of those of another individual buried close to him, providing interesting elements for the reconstruction of the history of both individuals and the use and reuse of the monumental tomb.



Fabienne Médard – *UMR 7044 - Strasbourg (France)*  
David Djaoui - *Musee Departemental Arles Antique (France)*

### **Gallo-Roman rags: a previously unknown example of recycling from France**

The value of used textiles, torn and patched is well known: they turn out to be among the richest and most instructive, even if their fragmentary condition rarely allows to identify the initial function. In Roman times, as the archaeological discoveries attest, the reuse of cloth was a common practice. In domestic, artisanal or specialist context, depending on the degree of wear, there existed several levels of recycling: known are examples kitchen towels, household dish packages and funerary furniture, corks of amphorae, upholstery fabrics, caulking for waterproofing river boats. The latter case will retain our attention here. Textile collections associated with the Gallo-Roman shipbuilding are outstanding and with the recent attention to this type of remains, we now know many examples. It is usually used fabrics that were used one last time to seal the boats. The technique consists in stuffing the rags between planks. They provide rich information about both building techniques (assembly techniques) and textiles themselves, however, that is not all. We were recently able to identify a new use of used textiles in this type of context.

In 2011, a rescue operation and lifting of a Gallo-Roman barge, named Arles Rhône 3, resulted in the discovery in the river of thousands of amphorae and other ceramics. The constitution of this port dump fits between the sinking of the barge, dated between AD 66 and early 70s and a *terminus ante*

*quem* around AD 140. The large quantity of amphorae, reflecting the intense commercial activity in Roman times, is supplemented by the thousands of objects which tell us about the ship equipment as well as consumption and craft activities in the city in that period. In this dump, a series consisting of seven more or less similar items caught our attention as much for their strangeness as for their recurrence. Artifacts made of rags and stones, they appeared to be either enigmatic purses filled with ordinary stones or rag dolls. The improbability of the first function, the number and the context of discovery incompatible with the second hypothesis led us to further interpretations. These curious assemblies probably belonged to the series of tools used in the ship yard. The part filled with stones composed the gripable part of the object, while the fabric parts were a kind of hardened coarse brush dipped into pitch. In all likelihood, these rag dolls were actually kinds of "whitewash" designed to coat the hulls of ships with pitch.



Annemarie Stauffer - *Cologne Technical University (Germany)*

### **A Roman hairnet from the Rhineland (Germany) and its context**

During excavations at Erkelenz-Borschemich situated in the large industrial zone of Garzweiler I and II, the structures of a large *villa rustica* from the beginning of the 2nd century AD have come to light. Within the large *latifundium* there was also a funerary area with several tombs. In one of the lady's tombs 72 golden elements were found. They most probably belong to a precious hairnet. This hairnet is one of at least four pieces found in the Rhineland all dating to the second and third century AD. The hairnet from Erkelenz-Borschemich will be compared in terms of its material and manufacturing technique with similar accessories found in the Rhine region as well as in contemporary tombs in Spain and Italy.



Hero Granger-Taylor – *Independent researcher (UK)*

### **Fragments of underwear found at Masada, Israel (c.30 BCE to 100 CE)**

Underwear in the classical world is largely a hidden subject, scarcely represented in art (Aphrodite/Venus tantalizingly unwinding her strophion is a rare exception) and little mentioned in texts. Items of underwear were also apparently seldom included in burials. Fragments of underwear recovered at settlement sites are therefore introducing us to what is essentially a new topic. Pieces of about 2,000 different textiles have been found at the site of Masada in Israel. As well as adding to our knowledge of Masada's dramatic history, these fragments are a precious record of the role of textiles in the daily life of the period: between them, the Masada finds may represent almost every category of textile made at the time. Fragments found at Masada of underwear and other small items of clothing have been identified on the basis of comparison with larger pieces from other settlement sites, particularly those in the Eastern Desert of Egypt. Among the Masada fragments we have found parts of loincloths (two different types), of breast wrappers (male and female) and of foot wrappers; these items are all textiles woven as narrow widths.



Naama Sukenik - *Israel Antiquities Authority (Israel)*

### **A re-evaluation of the textile dyes in the Cave of Letters (Israel)**

The textiles from the Cave of the Letters which were found by Yigael Yadin are among the important discoveries of archaeological textiles in the Land of Israel. In the present research we focused on reexamining the dyes in the textiles from the Cave of Letters, using a significantly larger sample than what had been tested in the past, consisting of 126 samples, and using HPLC, which is presently the most appropriate analytical tool for identifying dyestuffs in archaeological textiles. According to the results, the textiles from the Cave of Letters were dyed with a small number of plant-based dyes and by a professional artisan. The broad rainbow of colors was achieved principally through the use of three different dyes: madder (*Rubia tinctorum L.*) plant-based indigotin (*Isatis tinctoria L.* or *Indigofera tinctoria L.*), and weld (*Reseda luteola L.*). All these plants are known in the Jewish written sources and were probably cultivated in the Land of Israel for the dyeing industry. The other hues were produced by double-dyeing techniques and by changing various parameters that affect the dyeing process, such as using different stabilizers, periods of time the wool was immersed in the dye solution, level of acidity, etc. An examination of the textiles using advanced analytic instruments made it possible to identify the species of madder and to identify for the first time in Israel weld dye in the textiles dyed yellow.

Although the analysis found that no animal based dye had been used in dyeing the textiles, the high quality and the many hues of textiles from the Cave of Letters required great precision and proficiency in the dyeing process. Last, an attempt was made to answer the question of why shellfish purple dye (*Argaman*) was not found in the textile collection from the Cave of Letters.



Lena Larson-Lovén - *University of Gothenburg (Sweden)*

### **Searching for dyers in Roman textile production**

Roman textiles presented a wide range of colours with different colours, shades and patterns used in various types of textiles: in garments, clothing details, and textiles for interior decoration. The most prestigious dye stuff throughout antiquity was purple but we know from both archaeological and literary evidence that the Roman colour spectrum was much more diversified and that it was not limited to purple or red shades similar to purple. According to some literary evidence dyeing was an occupational speciality already in the Roman regal period (Plut. *Vit. Numa* 17). The trade of dyeing developed as more colours and types of dyestuff came into use in textile production. In the 3<sup>rd</sup> century BC comedy *Aulularia* by Plautus, we are presented with a range of shades used especially for women's clothing as a mark of social and economic status. The dyeing of textiles required skilled knowledge but what can we know of the people involved in the dyeing process of Roman textile production? In contrast to the many colours and shades mentioned in literary sources and to some extent documented in material remains, the people behind the products are largely invisible and unknown to us. This paper aims to discuss some aspects of the occupational categories related to the stage of dyeing in Roman textile production, of possible specialities in the dyeing process, and the social status of Roman dyers.





Julia Martínez-García - *Universidad de Valencia (Spain)*

### **Alchemist or dyer? Dyeing in Roman Egypt**

Technical papyri from Greco-Roman Egypt and Greek Alchemical Corpus, dated between ca. 3<sup>rd</sup> and 5<sup>th</sup> century AD, explained the most interesting recipes for the preparation of textile dyes and dyestuff for other materials, such as stone, glass or metal. We know that professional dyers from Greco-Roman Egypt, *infectores* and *offectores*, and more general craftsman, knew and practiced some rituals or magical incantations that specified the most auspicious moment for opening a workshop or protecting recipes. These actions were learned from magicians and alchemists. Furthermore, they worked in workshops equipped with a set of specific, similar instruments to those described in the treatises on alchemy. Considering these aspects, we analyse in this paper the possible relationships between artisan dyers and activities of the alchemists, who experimented with the recipes described in the Greek papyri and other texts cited above.



Cecilie Brøns - *Ny Carlsberg Glyptotek (Denmark)*

### **Pigments and dyes: representation of garments in mummy portraits from Fayum (Egypt)**

The present paper addresses the link between ancient polychrome painting and textiles. Up until now, research has primarily focused on a specific category of materials, such as painting with pigments on stone and terracotta or the use of colourants for the dyeing of textiles. It turns out, however, that there are several examples of materials being used for colourants for painting as well as for dyeing textiles. This is the case, for instance, with murex purple, kermes, madder, woad, and indigo. UV radiation can be utilized to detect dyes. Madder lake for instance fluoresces in a particular coral red shade. The examination of madder can thus contribute important knowledge as to how colours were chosen to be depicted and the significance of this, for instance, as to whether the “right” pigments were used to depict clothes, but also to a deeper understanding of the craftsmen’s traditions. This may indicate that, to a far higher degree than expected, we are dealing with an overlap between the various craft traditions with regard to the use and procurement of raw materials for the colouration of the ancient world. The present paper has its point of departure in the scientific examinations of the mummy portraits of men and women from the collections of the Ny Carlsberg Glyptotek and the National Museum of Denmark. The portraits belong to the 2<sup>nd</sup> century CE and are from Fayum in Egypt. The examinations of the mummy portraits are compared with examinations of ancient dyes and garments.



Ines Bogensperger - *Department of Papyri, Austrian National Library (Austria)*

Aikaterini Koroli - *Department of Papyri, Austrian National Library (Austria)*

### **Qualities of textiles and their terminology**

Egypt offers a unique possibility for textile research, as it is the only place where textiles together with texts written on papyri, parchments or ostraka are preserved due to the dry climate. These documentary texts provide information about various aspects of textiles; terms denoting specific qualities are frequently attested, but hardly understood thoroughly. With regard to preserved textiles from Late Antique Egypt (300-800 CE) textile research has investigated characteristics such as materials, shapes, dyes, techniques as well as the way textiles were used. In the frame of our research, the question remains as to whether, and to what extent, the terminology occurring in the documentary papyri coming from the same era can help us to form a more complete picture regarding the objects themselves, and the *chaîne opératoire* of textile production in general.

Our paper aims to contribute to a better understanding of the terminology, defining specific qualities of textiles and also to demonstrate the types of textiles produced and used in everyday life of Late Antique Egypt.

This systematic and in-depth analysis of the terms will be based on a thorough study of the vast papyrological evidence, namely a large corpus of published documentary papyrus texts dated to Late Antiquity. Our goal is to locate the terms defining particular qualities of textiles, study them in their context, and group them. The thorough examination of their meaning and use follows methods of both papyrological and philological analysis and, whenever possible, the evidence of preserved textiles is taken into consideration. A study on the quality of the textiles will enrich significantly our knowledge not only of the manufacture of textiles but also of the economy, trade, as well as the material and culture of everyday life in Egypt and the ancient Mediterranean world.



Lise Bender Jørgensen

*Norwegian University of Science and Technology, Dept. of Historical Studies (Norway)*

### **The textiles from *Mons Claudianus* in a North African context**

Recent excavations at a series of sites in the Eastern Desert of Egypt such as the Roman quarry of Mons Claudianus have recovered large quantities of textiles, mostly rags but quite well-preserved, and well dated. Work is still in progress on the majority of these finds, but many preliminary publications along with a few final ones make it possible to compare textiles and sites. Furthermore, remains of textiles and textile tools are beginning to emerge from the oases of the Western Desert of Egypt and its extension across North Africa, the Sahara. Finds from the Sahara are as yet exceedingly rare, but they allow us to begin to look for similarities and differences in designs and techniques that can throw light on changing preferences, the introduction of new technologies, fibres or fashions, and give us an inkling of what kinds of textiles were traded across the North African continent. The proposed paper uses finds from the Mons Claudianus Textile Project, published data from other sites in Egypt, Nubia and North Africa, as well as ethnographic sources as starting points for a discussion of what we know on textile production in Egypt and other parts of North Africa in the first Millennium AD.



Jonatan Ortiz-García - *Universidad de Valencia (Spain)*

### **Painted religious cloths from Roman Egypt**

Textile studies focusing on Roman Egypt have a long tradition, but not all materials have drawn the attention of scholars in the same way; for instance, painted cloths. The largest surviving ancient collection of these materials comes from Egypt, mainly but not limited to funerary wrappings. This tradition comes down from Predynastic times, and from the Late Period onwards it gradually intensified until the advent of the Roman Empire, when it reached its maximum extension. The aim of this paper is to present an overview of the practice of painting on cloth in ancient Egypt, demonstrating the potential of these textiles for the historical studies on ancient technique, economy, and society.



Ana Cabrera-Lafuente - *Museo Nacional de Artes Decorativas de Madrid (Spain)*

### **Fibre, dye and mordant analysis of Late Antique and Early Medieval Egyptian textiles from the former Museu Tèxtil i d'Indumentària de Barcelona**

This paper presents the results of fibre, dye and mordant analysis from my Ph.D. on the study of 166 objects that make up the collection of ancient Egyptian textiles in Barcelona's Museu del Disseny, formerly Museu Tèxtil i d'Indumentària de Barcelona (MTIB). Among the most innovative aspects of the study is its integrated methodology, which includes the detailed documentation of each textile fragment and scientific analyses, in the absence of an archaeological context for the vast majority of the pieces in question (although some are fragments of known pieces with a clearer context or known origin). The results of the scientific and textile analyses have proven valuable in determining the chronology of the objects, their use, and the type of looms on which they were woven. This is the first time that a study of this kind, focused on Late Antique and Early Medieval Egyptian textiles, has been carried out in Spain. As such, it is not only innovative, but it also contributes with a new interpretation of a largely understudied collection, which includes fragments from periods that range from Imperial Roman times to the High Middle Ages. The scientific analyses performed include the study of fibers with SEM, of dyes with chromatography (TLC and HPLC), of mordants with SEM and of radiocarbon dating of 8 samples. Given the quantity of samples, it has been possible to study the broader use of specific fibers, dyes and mordants that we are presenting for the first time. It is important to note that this is the first study to analyze metallic salts in the fibers, in order to document the use of alum and of iron and copper salts to darken and lighten (respectively) colors. It is also important to note the use of mordants with alum in undyed fibers, probably to soften the fibers and facilitate weaving. The systematic and multidisciplinary study of Late Antique and Early Medieval Egyptian textiles in museums allows us to reevaluate these objects from a historical perspective. Together with new archaeological finds in Egypt, such methodologies are opening new lines of research that continue to develop and deepen our understanding of our cultural past.



Carmen Alfaro - *Universidad de Valencia (Spain)*

### **A new wool fabric from the Roman port of Oiasso, modern Irun (Basque Country, Spain)**

Among the ancient Greek and Roman textiles from the Mediterranean world which have come down to us, the great majority were made with thread of flax or hemp, and only rarely do we find fragments of woolen cloth. The reasons for this are of a physical nature, owing to the ways that the different types of fiber hold up to the passage of time. Hence our interest in the discovery of a new woolen fragment that allows us to study from an archaeological point of view the purpose of a material which was so highly valued, according to the written sources which dwell on thread, cloth, and dress. As a matter of course, this labour, normally allocated to women, was known by the word *lanificium*, i.e. wool working. In ancient Hispania, the scarcity of woolen cloth was the usual scheme of things until the preservation of archaeological remains recently began to improve. The case of the Roman city of Oiasso (modern-day Irun) is especially relevant as three different woolen fragments have turned up there in the last ten years. Two of them were found in the tunnels of an immense silver-bearing lead mine, while the third fragment comes from the vicinity of the city's Roman gate. The Arkeolan Foundation, successor since 2011 to the Center for the Study and Research of Historical Archaeology, has been the protagonist in these important discoveries which allow us to understand the development of a textile industry in the fertile pastoral context of a territory which the ancient sources singled out for its agro-pastoral economy. According to the foundation, director Mertxe Urteaga, the presence of archaeological deposits submerged in estuarial and marshy areas has contributed to the conservation of the buried organic remains. This is particularly true in the case of the cloth in question, whose study will yield precious new information about textile production in the north of Hispania.



Macarena Bustamante - *Universidad Autonoma de Madrid (Spain)*

Ana Maria Bejarano Osorio - *Consortio Ciudad Monumental*

*Historica- Artística y Arqueológica de Merida (Spain)*

### **Recent discoveries from the site of the ancient capital of Roman *Lusitania, Augusta Emerita***

They are analyzed from the point of view of both the material and architectural evidence. Using these data we will make a first attempt to evaluate urban crafts linked to the production and storage of textiles in Roman times at this important site.

Isabella Caneva - *Università del Salento (Italy)*

Silvia Ficco - *Università del Salento (Italy)*

### **Spinning and weaving in Mersin-Yumuktepe (Turkey) in the 6th-5th millennium BC**

Textile production played an important role in all ancient societies. Spindle whorls and loom weights are the only archaeological evidence of textile activities in early prehistoric contexts. The combination of factors involved in their study provide, however, a large quantity of multifaceted information not only on the specialised handicraft activities but also on the dynamics of settlement organisation and layout. The present work focuses on the evolution of spinning and weaving implements at Mersin-Yumuktepe (Turkey), from their first appearance in the Late Neolithic (early 6th millennium BC), to their extensive use in an organised pre-urban context (mid 5th millennium BC). The considerable variations in form, raw material, size and weight of the implements suggest that these are decisive elements to define tool function and spinning and weaving methods through time. The evaluation of the importance of textile production among the prehistoric craft activities and the analysis of tool functionality, technology and recovery contexts demonstrate how textile production significantly reflected changes in style, technology and social organisation in this crucial period.



Ina Vanden Berghe - *Royal Institute for Cultural Heritage, Brussels (Belgium)*

Margarita Gleba - *University of Cambridge (UK)*

### **Italian textiles from the first millennium BC - Dye investigation of degraded and mineralised textile remains by non-destructive and micro-destructive techniques**

The poster presentation will give an overview of the dye investigation from several, primarily Etruscan and Palaeovenetic archaeological sites of Italy, ranging in date from the 8th through 1st century BC. Very few ancient dye investigations have been carried in Italy until the present study, primarily due to lack of ancient textile studies in general and the fact that the vast majority of prehistoric Italian textiles are preserved in charred or mineralised state. The present study comprises fragments from Adria, Cerveteri, Este, Padova, Perugia/Corciano, Sasso di Furbura, Tarquinia, Veio and Verucchio. Micro Raman spectroscopy and scanning electron microscopy with energy dispersive X-ray detection were used for the characterisation of the mineralisation. Many textiles were found to be heavily mineralised into calcium carbonate or calcium sulphate.

Reversed-phase liquid chromatography analysis resulted in the identification of wild madder, woad and shellfish purple among others as biological sources, suggesting the presence of sophisticated dyeing technologies in the Apennine Peninsula by the Early Iron Age. Additional research of the applicability of micro Raman spectrometry for the non-invasive investigation of colouring substances in these rare textiles remains proved its efficiency for the detection of brominated compounds, markers for purple dyeing with molluscs, even in completely mineralised samples.



Asja Tonc - *Institute of Archaeology, Archaeological Museum in Zagreb (Croatia)*  
Ivan Radman Livaja - *Institute of Archaeology, Archaeological Museum in Zagreb (Croatia)*

### **Protohistoric dye production on the Eastern Adriatic coast?**

Excavations at the hillfort of Sv. Trojica (Holy Trinity), situated on the northern Adriatic coast in Croatia, yielded significant amounts of pottery and several metal finds, including coins, dated between the 4th and end of 1st century BC. The settlement is attributed to the autochthonous protohistoric population, i.e. a local Liburnian community. Early Roman finds come from the slopes closer to the sea shore, including a very interesting grave of an auxiliary soldier of the late Augustan-early Tiberian period. Although remains of different sea mollusks were found in different layers alongside various other zooarchaeological materials that can be associated with food consumption, a interesting superficial layer of crushed shells was noticed on the western slopes of the hillfort. This consists of muricid shells, heavily fragmented and obviously deliberately crushed. A connection with possible use for dye production has therefore been hypothesised. The material evidence, i.e. shell remains, is considered here as a possible trace of a small-scale purple dye production, alongside other evidence of production on the Eastern Adriatic coast in the Roman period and data from ancient sources on textile production among the Liburni in an attempt to offer possible new approaches and discuss possibilities of a protohistoric dye production.



Nicole Cuddeback - *Università degli Studi di Firenze (Italy)*

### **The decorated loom weights of Iron Age Southern Italy**

The tradition of decorating loom weights seems to have arisen during the Iron Age in several indigenous communities in southern Italy. The most well-known examples of decorated weights, many of which are significantly larger than the weights most often found in domestic contexts, began coming to light in Calabria: in the early 20<sup>th</sup> century in the chamber tombs of the indigenous necropoleis of Canale and Janchina, near Locri, and, in the 1960's, at the site of the indigenous settlement at Timpone della Motta and the adjacent necropolis of Macchiabate at Francavilla Marittima, near Sybaris. Others have been documented in the fossa tombs of the necropolis of Incoronata - San Teodoro near Metaponto in Basilicata, and some additional single examples have come to light at sites such as Amendolara near Francavilla Marittima, at Roccella Jonica, province of Reggio Calabria, and at Serra D'Aiello, province of Cosenza. The weights from Timpone della Motta in particular, which present patterns that often bear a striking resemblance to labyrinths, inspired a number of 20<sup>th</sup> century archeologists to develop theories about the origin of the weights' decorations, the ethnicity of their creators, and their functions. For example, Paola Zancani Montuoro proposed a Mycenaean-Aegean influence for the Francavilla patterns, associated with the myth of the Cretan labyrinth, a theory later upheld by Louis Godart. Through an analysis of the decorated weights that have thus far been published, this study offers an initial attempt at a classification of these objects that also takes into consideration their possible function. This study additionally proposes a new response to the earlier attempts to interpret the weights' decoration and determine its possible origin.



### **Between the folds of tradition: Agatocles inventor of *trabea* (Lyd. Mens. 1.21 W.)**

The *trabea* was a Roman cape decorated with different color bands, among which purple played a key role. It was among the regalia of the first king of Rome and represented the distinctive coat of the Sallii and the *equites*. Several traditions circulated about the origin of the garment in Rome: according to some, it was a native robe known since mythical times, while others attributed the introduction to the Etruscans, but the Byzantine antiquarian John the Lydian is the only one to attribute the invention to Agathocles, tyrant of Syracuse. This point, which has not so far attracted the attention of scholars, is not only missing in the whole tradition of studies, but also seems, at first sight, completely groundless. So, what could be the source of it? It is not clear whether we should think of a simple mistake by the Byzantine antiquarian, or whether it has a greater foundation.

In fact, there is a tradition known through Byzantine works (Syncellus, Suda) that the *trabea* was introduced by Numa, who would have seen it worn by some Isaurian or Pelasgian ambassadors. This point seems to derive from that handed down by Dionysius of Halicarnassus, according to which the Romans would have known the *tebenna* (a purple robe) through an embassy from Caere (a Pelasgian city according to some) to king Tarquinius, presented in more detail Artemidorus Daldianus, who believed in the Arcadian origin of the *protos eures* (first inventor). If the Lydian's claim of Agatoclean invention is judged on some historiographic basis, one could then search between the folds of the literary tradition the reason and the occasion that would have generated it at the end of the 4<sup>th</sup> century BC. On the one hand, it seems natural to follow the thread of *basileia* and *imitatio alexandri*; on the other, the one leading to the reforms which were the subject of the Roman knights.



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### **Textile tools from Ancient Makyneia, Greece: the case of Buildings A and B**

The site of ancient Makyneia lies in Aitolo - Akarnania in Western Greece, between the famous site of Kalydon and the modern town of Antirrio. The site revealed a large part of a settlement consisting of 31 buildings and dating from the late Archaic to Classical and Hellenistic times. In these buildings approximately 2400 textile tools, mainly loom weights and spindle whorls, were examined. The overall study aims at reconstructing the evolution of textile technology, as well as the role of textile production for the domestic economy of the site. Buildings A and B of late Archaic/early classical period are a most characteristic and interesting case concerning the former. Built at the northwest edge of the site, as a building complex united by a common stone-paved street, they contained 362 textile tools, of which 350 are loom weights, 11 are spindle whorls and 1 is a spool. Among these at least five groups of loom weights, three in Building A and two in Building B, were found on stratified floor deposits and were more thoroughly studied. In Building A two of the textile tool groups were uncovered at domestic spaces and one in a storage space, while in Building B, one of the groups was found at a probable work area and one at what seems to be a shop. Both the technological features of these groups, as well as the contextual analysis, suggest that either the textile tools per se, or their final products played a significant role in the commercial and the economic life of the settlement.

weights, three in Building A and two in Building B, were found on stratified floor deposits and were more thoroughly studied. In Building A two of the textile tool groups were uncovered at domestic spaces and one in a storage space, while in Building B, one of the groups was found at a probable work area and one at what seems to be a shop. Both the technological features of these groups, as well as the contextual analysis, suggest that either the textile tools per se, or their final products played a significant role in the commercial and the economic life of the settlement.



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### **Textile production along the Ionic coast of Calabria, Italy: data from Sybaris and Kroton**

A recent review of the published data of the archaeological excavations conducted in Sybaris and Kroton has returned a very interesting and significant set of evidence connected to textile activities. In both cases the majority of the archaeological objects, mostly represented by truncated pyramidal loom weights, belongs to the Archaic period. The Sybarite examples mostly come from the sites of Stombi and Parco del Cavallo, while those from Kroton have been discovered during the excavations 'Crugliano 1975'.



Serena Scansetti (*Italy*)

### **Textile fragments from Late Celtic burials in the province of Pavia (Italy)**

The paper will present a preliminary catalogue of mineralised and organic textile fragments from burials found in different sites in the Province of Pavia: mostly Valeggio and Dorno, but also Gambolò, Garlasco, Gropello Cairoli, Ottobiano, Tromello. They date from to the second half of the 3rd century BC to the Augustan age and are related with the local late La Tène Culture. This group, which has never been studied, comprises approximately 30 fragments, which are mineralised on iron instruments (shears, razors, reaping hooks, knives). There is also an organic fragment, in tabby, from Ottobiano, dated to the Augustan age: this is an *unicum* for the province. Cremation, which is the predominant burial ritual during the Iron Age and Roman period in this territory, reduces the chances of textile survival. These textiles could have been part of garments or, more likely, part of clothes some objects were wrapped in, just before the deposition in the grave. These textile fragments are quite small: only some of them are more than 10 cm wide; nevertheless, their discrete conservation state reveals quite well the thread twist and the thread count. The most common weave is tabby, which can be coarser or finer; only a few examples are woven in twill. The material is deposited in the Museo Archeologico Nazionale in Vigevano and in the Museo Archeologico Lomellino in Gambolò.



### **Bone artefacts for the production and packaging of fabrics in Ostia, Italy**

The excavations conducted during the 20th century in Ostia, the ancient port of Rome, allowed to retrieve numerous objects of daily use, including a wide range of woodworking tools and bone working debris. The discovery of accumulations of these objects in different areas of the city suggests that there were different workshops for wood and bone processing. The typological analysis has been applied to the entire repertoire of artifacts kept in the storage of the Ostiense Museum, classified as personal items, tools for the production and packaging of textile articles, scraps of raw materials (Russo 2003-2004). In view of the frequent uncertainty in the identification of their use, a portion of these items has been the subject of the use wear trace analysis (Fiore et al. 2012). Here, some issues arising from this survey are presented: the identification and distribution of processing waste on the territory, which indicate possible productive activities; the likely tools for weaving; the results of production/use wear trace analysis of 178 needles with an eye. In particular, the latter were observed both at the macro- and microscopic level, presenting the traces of manufacture and finishing. Traces of wear are reason to believe that the needles were used on soft materials. In a considerable number of needles, the proximal end is broken, with the typical characteristics of the fracturing for flexion, which most likely occurred during use.



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Michela Sanfelici  
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### **Bone needles and textile production in the Roman times. A proposal for a re-interpretation**

Bone needles are often found in Roman sites. The finds come both from settlements, including those with a strong textile production, and also from burials. The interpretation as tools relegated only to the operations of sewing, however, it's not always enough to justify their number and spreading on the one hand, such as some technical characteristics (size and presence of multiple needle eyes) on the other. In particular, are needles with three eyes that have attracted our attention.

We can interpret the use of the bone needles also in the realization of nalbound fabrics. Needles similar (shape and size) to those of the Roman period are indeed used in nålbinding (nålebinding, naalbinding, Nadelbinden, etc.), also known in ancient times. With this technique it's easy to obtain wool garments without sewings, including important complements of clothing, like socks or leggings.

To support our hypothesis about the use of bone needles in Roman time also for nålbinding and to understand characteristics of this technique, we have experimented them by making a nalbound fabric, with special attention to the use of three-eyed needle.

The wider presence of bone needles in Roman sites could then be explained by a use of nålbinding for making garments inside the *familia* and in textile workshops too.

Our proposal could lead to consider the realization of nalbound fabrics in Roman time as a possibility to diversify production, which represents an important economic opportunity for the textile workshop.



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Fabienne Médard – *UMR 7044 - Strasbourg (France)*

### **Too nice to be true - no sea-silk in Pompeii**

Since some years we hear in worldwide mass media - especially in religious and cultic context – about the discovery of Medieval or ancient byssus items. Unfortunately, in most of these cases byssus is understood as sea-silk, yet they are all characterized by the fact that a scientific fibre analysis is lacking. Not only in public media, but also in scientific journals, discussions about byssus and sea-silk get more frequent. The oldest sea-silk item dates to the 4th century AD. On this background it does not astonish that a paper announcing the find of “byssus fibres coming from secretion of the *Pinna* mollusc” – which means the raw material of sea-silk – in Pompeii excavations found great interest by archaeological textile experts. All the following scientific papers refer to one analysis published in 2000. Without knowing of each other, Fabienne Médard and Felicitas Maeder - independently - had the possibility to analyse samples of these presumed „byssus“ fibres. They both came to the same result: the presumed byssus fibres are in fact fibres of a bath sponge (*Spongia officinalis* L. 1759). In fact, already in the excavation protocol to this find and the collection inventory mentions sponge fibres. The identification of the fibres as sponge is shown using SEM. From this follows that we have no certainty regarding the presence of byssus fibres of *Pinna nobilis* and their use for sea-silk textiles in the 1<sup>st</sup> century AD in Pompeii.



Magdalena Ohrman  
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### **A warped version: manipulating Roman looms for metaphorical effect – Potamius, *De Substantia*, 5-9**

This poster highlights a text little discussed by textile historians: the description of weaving and weavers' tools that emerges in Potamius of Lisbon's highly metaphorical explication of the nature of the Trinity. The poster shows how this 4th century AD text combines stylistic manipulation of intertexts, both Christian and pagan, with in-depth technical knowledge of textile crafts, and draws to our attention the potential contribution to our understanding of technological development by literary sources. Using images both of iconographic representations of two-beam looms and of experimental reconstructions, this poster will show that Potamius' challenging and, at times, unparalleled Latin technical terminology (e.g. the hapax *staminis fibula* in *De Subst.* 9) can be successfully related to the detailed operation of the two-beam loom. Highlighting the rhetorical complexity of the text, I will also argue that technical phrases as appropriate to a description of the older, warp-weighted loom occur in Potamius' text alongside references to the two-beam loom. The poster acknowledges the importance of literary intertexts like Ovid's *Metamorphoses* (6.53-69) and shows that influence from their descriptions of weavers using pin-beaters, wool-combs, or spools, colours the vocabulary in *De subst.* 9.

Based on a discussion of warping in the fifth chapter of *De Substantia*, the poster also makes the more controversial assertion that Potamius draws on both loom types due to the continued contextual relevance of the warp-weighted loom in Potamius' period and area. Thus, the poster will show that, in addition to exhibiting a detailed knowledge of the practicalities of wool-preparation as well as of weaving, misunderstood in literary and patristic analysis thus far, Potamius enhances the effectiveness of his metaphor by carefully manipulating the presentation of technological detail.



Carla Corti

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### **Textile production in Mutina. The case of the villa Scartazza (Modena, Italy)**

The city of Mutina (Modena) was known throughout the Roman world for the quality of its wool and textile production, in various way, was in Roman times an engine of economic development and social mobility.

The literary and epigraphic sources are quite clear in this regard. Near the city, at the Campi Macri, starting from the beginning of the imperial age the most important trade suburban cattle fair in north Italy took place. It was also associated with Pescennius Niger, to whom Varro dedicated his book on *ars pecuniaria (rust. 2, praef. 6)*. The archaeological evidence related to this important productive sector of Mutina has been more elusive. Apart from the epigraphic data, the subject of interest have been loom weights of truncated pyramidal shape decorated using matrix stamps. No installation intended for sheep keeping, or the various activities related to the processing of wool (*lanariae, textrinae* and *fullonicae*) has been so far identified. In the light of the review of old discoveries, it is however possible to suggest the presence of a textile workshop at the villa Scartazza, partially excavated in 1877. Of particular interest is the transformation of the residential part into a productive installation through the inclusion of *dolia* in the masonry and the presence of adjacent areas, of which at least one is interpretable as a tub with a drain channel, arranged on two levels. Interesting is also the finding of various balance weights and an *aequipondium* for scales of large dimensions, possibly usable for weighing of large quantities of wool or textiles. The villa is located in a favorable position to the system of a textile workshop ca. 200 m south of the Via Aemilia and not far from the course of the river Panaro (Scultenna), on whose banks Strabo (5, 12) noted a pasture for sheep with precious wool.



**Spinning and weaving in the *Reitia* sanctuary of Este (Italy) in Roman times:  
permanence or discontinuity?**

During the excavations of the sanctuary of Reitia at Este in Veneto, Italy numerous materials related to the sphere of spinning and weaving were found. Through the analysis of the finds, a reconstruction of textile related activities during the Roman period is proposed, comparing them with those of the preceding Palaeovenetic period.



Denis Francisci - *Università degli Studi di Padova (Italy)*

**Multivariate statistics applied to spinning and weaving instruments  
from Roman *Venetia* (Italy)**

The statistical analysis is one of the research methods used for the study of the instruments related to textile activity, in particular spindle whorls and loom weights. Scholars generally use almost exclusively the most common or basic statistical techniques, in particular the univariate analysis methods, that is, those based on a single variable (measures of central tendency, measures of dispersion, histograms, bar charts, etc.), or at best bivariate analysis methods, that is, those based on two variables (contingency table, scatter diagram, linear regression, etc.). More rare is instead the use of the the Multivariate analysis techniques which take account simultaneously of two or more variables of a specific set of data and allow to synthesize, distinguish and classify the numerous components that characterize a phenomenon or an archaeological object. In this short contribution the intent is to apply some of the most common techniques of multivariate analysis (Cluster Analysis, Principal Component Analysis, Correspondence Analysis, etc.) to the sample of objects related to spinning and weaving collected in recent years within the scope of the project "Archaeology of the wool: breeding, production and trade in the Roman Cisalpina", coordinated by the Department of cultural heritage of the University of Padua (Maria Stella Busana).

After a brief introduction on the sample of data and methods used, the results of these analyzes will be described and discussed. They partially confirm what has already been highlighted by previous work on the synthesis of the material in question, but also provide new insights into situations and correlations not considered to date among textile tools of the Roman *Venetia*.



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Margarita Gleba - *University of Cambridge (UK)*

### **A lamp with remains of the wick from the necropolis of Gazzo Veronese (Italy)**

The poster presents an analysis of the fibers found inside a Roman clay lamp (firmalampe) recovered in one of the graves discovered near the Via Claudia Augusta (open from Hostilia in Verona and from there to Tridentum and beyond the Alps) in Gazzo Veronese (Verona) during the excavations conducted in 2015 by the Department of Cultures and Civilisations, University of Verona. The lamp, which has blackened spout and a Vetilii stamp, is dated to the second half of the 1st century AD. Fibre identification of the wick preserved inside the lamp indicates the use of unusual non-bast fibres.



Dejla Garmi - *Laboratoire ArAR- Archeologie et Archeometrie (France)*

### **Discovery of a *nebula linea* and cotton/silk fibres in the 1<sup>st</sup> century AD, in a secondary city in Gaul (France)**

During a rescue excavation conducted in 1998 by Valérie Bel and the team at Clérieux, near Valence, ancient Valentia the "Vigorous", in a funeral enclosure a sandstone sarcophagus was discovered dated to the 1<sup>st</sup> century AD and preserving numerous textile fragments. The fragments were preserved in different states, flexible, semi-mineralised and mineralised metallised and are also of different sizes and thicknesses. Their detailed analysis has identified a specific textile production, as well as brought to light the use of precious fibers in a secondary city of Gaul. They belong to two different fabrics. The first was wrapping cremated remains and is a fabric of very fine linen, with fringes completed by a network of nodes recalling the Spanish Manila shawl.

These fringes are obtained by chain effect in Latin *fibriato*. This type of border is called *attenante* because it is woven on a foundation. This type of fringe is obtained by interrupting the weaving for a double interval of the space destined for its realization; cutting between the woven parts is carried out within this range. This textile could be a *textilem Ventum* or *nebula linea*.

The second fabric was deposited above the linen veil and balsamaria. Its presence could be detected with the microscope by the presence of silk and cotton fibres which has contaminated the surface of *ventum textilem*. This rare and unique discovery allows us to enrich our knowledge on the consumption of these precious fibers.



Alessandro Facen - *Università degli Studi di Padova (Italy)*  
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### **Weaving and dyeing: the lexical evidence from Greco-Roman Egypt**

This work will give an overview of the words attesting the production, trade and use of textiles in the Hellenistic and Roman evidence, including people involved in these activities, from the earliest stages of carding, weaving and dyeing to the marketing of finished products. Special attention shall be paid to the evidence coming from Tebtynis (Umm el-Baragat), a city located in the southern edge of the Arsinoites (Fayum), which produced substantial papyrological evidence partially preserved at the Museum of "Scienze Archeologiche e d'Arte dell'Università di Padova". A possible connection between the papyri and the surviving archaeological evidence will be examined.



J. Ortiz- García - *Universidad de Valencia (Spain)*  
Maria Julia Martínez - *Universidad de Valencia (Spain)*

### **Folding the portrait: manufacturing decorated shrouds in Roman Egypt. A case study from the Egyptian Museum in Berlin**

Decorated shrouds were commissioned according to the dead person's measurements and identity; the details of the matter could even be settled in advance. These materials have not been studied too much from the point of view of its manufacture. The purpose of this poster is to discuss certain aspects of how the workshops operated and, in particular, the actual work of the artisans. As a case study I use inv.-no. 11659, *Ägyptisches Museum*, Berlin, dating to the 3<sup>rd</sup> century AD, and coming from Memphis.



Irene Ruiz De Haro - *University of Granada (Spain)*

### **The meaning of the votive deposit of spindle whorls on Zacatín (Granada, Spain) and their relationship to the cult of the Darro River**

Tools used in the textile technology are often recovered as cult offerings in areas such as sanctuaries, foundation pits, *favissae*, votive deposits in wells, product of a varied types of communal rituals and acts of religious nature. In the present case, a votive deposit can relate to a feast or ritual feast dedicated to a female deity and possibly made on the banks of the Darro river (Granada, Spain).

The significance of documentation of textile technology in the votive deposits is still unclear and appears to vary depending on chronology, context and geographical area. In this poster we examine a set of ten spindle whorls and its symbolic meaning and function.



Caterina Giostra - *Soprintendenza Archeologia della Lombardia (Italy)*

### **Textile instruments from Early Medieval Italian contexts**

Instruments related to textile activities are increasingly frequent among early Medieval Italian finds, although they are often not properly identified or adequately appreciated. The poster aims to present an overview of the main types of instruments relating to the entire textile production chain, from fibre preparation (possible scotching knives, carding combs), spinning (not just whorls, but also possible hook cast, although interpreted as netting hooks), weaving (not only loom weights, but also tablets, pin beaters and weaving swords), embroidery or sewing (needles and perhaps hooks, small shears). They are found in Longobard or later burials or contemporary settlements. Despite being well known across Europe, in Italy textile tools of this period have not been systematically studied.



Rosanina Invernizzi - *Università Cattolica di Milano (Italy)*

Caterina Giostra - *Soprintendenza Archeologia della Lombardia (Italy)*

### **The textile from the tomb of the abbess Aripega: silk in Pavia (Italy) between the 8th and 9th centuries AD**

In 1996, during archaeological investigations carried out by the Superintendence for Archaeological Heritage of Lombardy in the church of San Felice in Pavia (Longobard monastic foundation of the mid-8<sup>th</sup> century AD), several tombs were discovered with masonry structure internally plastered and painted and bearing inscriptions. Additionally remains of organic material were preserved: in the tomb of the abbess Aripega small fragments of the veil were found, in all likelihood made of silk.

The discovery appears exceptional in the context of early Medieval Italian finds and allows us to reconsider and integrate scanty hints contained in written sources regarding the circulation of silk fabrics in northern Italy at this time and in particular in Pavia, where in the Carolingian period silk is documented as being available on the market.



### **Textiles for the saints in the Late Antique period**

The aim of the intervention is to show, using the historical and archaeological sources, how fabrics were used in religious contexts in Late Antiquity. They could be used to wrap the holy relics and conserve them in a reliquary, or become themselves *ex contactu* relics (*brandea*), to be worshiped directly. Of different type were the textiles not in contact with the relics. We distinguish, in this regard, the curtains, that marked restricted areas of the sanctuary, from *vestes*, noted in the *Liber Pontificalis*; like the liturgical furnishings, they adorned the venerated tombs or altars. Finally, sometimes the hagiographical sources associate the saint with a particular garment, which becomes an attribute in iconography, as in the case of Abdon and Sennen. The belief that objects that came in contact with a saint or his remains, especially clothing and handkerchiefs, acquired the characteristics and powers of a true relic, was rather rooted in the mentality of the early Christians: it was based on the Holy Scriptures, was maintained by the early Church Fathers and remained alive up to the days of Gregory of Tours and even later. The veneration of relics of contact led the ecclesiastical hierarchies to organize confessional spaces to ensure the production. Architectural details, to be hypothetically associated with this practice, were found in the tombs of saints Felice in Cimitile, Erasmus in Formia, Gervasio and Protasio in Milan, Paul, Lawrence and Panfilo in Rome, and the early Christian complex of Venosa. The fabrics that wrapped the remains in their reliquary are known for several medieval contexts, while only the purple cloth interwoven with gold thread wrapping the bones of Peter in the Vatican seems to date to an earlier period. Even the curtains are little known archaeologically but often represented in iconography, as documented by the capsella of Samagher and the Successa medal. Whether they were valuable or simple fabrics, textiles which are sanctified by the relics acquired a very high value, as this poster intends to prove.





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