

ENCOUNTERING CHALLENGES AND FINDING SOLUTIONS FOR THE DISPLAY OF AN OBSCURED ARCHAEOLOGICAL ASSEMBLAGE FROM THEVA, GREECE

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ABSTRACT

The interpretation of excavated archaeological organic assemblages for display can be a challenging endeavour, all the more complicated where they are in a state of poor preservation. This contribution illustrates the role of conservation in the interpretation of such artefacts. A complex assemblage, excavated in Theva in 1985, was later sent to Athens for investigation, conservation and display. The assemblage included textile, wood, bones, ceramic and the surrounding soil, with evidence that some of these materials had been deliberately or accidentally burnt. Instrumental analysis was crucial in giving information on the composition, properties and state of preservation of the finds. Collaboration between the conservators and the archaeologists was also vital to the decision-making process. Several options were considered in order to select the most appropriate and objective way to present this find and communicate the information it revealed to the public.

ÖZET

Arkeolojik kazılardan çıkan organik kümelerin sergileme amacıyla yorumu, hele de iyi korunmamışlarsa, son derece zor bir çabadır. Bu çalışma, böyle kalıntıların yorumunda konservasyonun oynadığı rolü göstermektedir. Theva’da 1985’te yapılan kazılarda bulunan karmaşık bir buluntular kümesi araştırma, konservasyon ve sergileme amacıyla Atina’ya gönderilmişti. Küme içinde dokuma, tahta, kemik, seramik parçaları ve etraflarındaki toprak vardı; bu malzemenin ya bilerek ya da kaza eseri yandığına dair kanıtlar da bulunuyordu. Buluntuların kompozisyonu, özellikleri ve korunma durumu hakkında bilgi edinmekte araçsal analiz hayati önem taşımaktaydı. Karar verme sürecinde konservatörler ile arkeologların işbirliği de çok önemliydi. Bu buluntu kümesini sergilemek ve içerdiği bilgiyi ziyaretçilere sunmak için en uygun ve nesnel yöntemi seçmek üzere birkaç opsiyon üzerinde duruldu.

INTRODUCTION

Theva

Theva, also known as Thebes, is a city situated to the north of the Kithairon mountain range, which divides Boeotia from Attica. In Greek mythology Kadmeia (the ancient citadel) was founded by Kadmos, the son of the king of the Phoenician city of Tyre, when he went to Greece in search of his sister Europa who had been abducted by Zeus. According to Greek mythology, Theva was also the birthplace of Herakles. Excavations showed that the city was first inhabited in the third millennium BC [1, p. 14]. The area was a great power during the Mycenaean period (fourteenth to twelfth centuries BC). The fortified settlement of Theva developed on the hill of Kadmeia and became the capital of a centralized monarchy that ruled an extensive network of smaller settlements in the surrounding fertile area. Theva gradually developed into a political and military power with great influence in central Greece as it was strategically situated at the crossroads of important land and sea trade routes. The numerous and intriguing finds from excavations there indicate wealth, prosperity and close contacts with the rest of the Mycenaean world and the Aegean, as well as with the great cultures of the Eastern Mediterranean. Linear B tablets of the Mycenaean period have been one of the most important finds [2, p. 21]. An ancient rivalry with the city of Athens led Theva not to participate in the Persian Wars and it was conquered by Athens immediately after the latter’s victory against the Persians in 479 BC. Theva had regained power by 400 BC with the help of the Spartans during the Peloponnesian War [2, pp. 185, 296, 319]. In 335 BC it was conquered and completely destroyed by Alexander the Great and then rebuilt in 315 BC [2, pp. 388–389]. Theva became powerful again during the Byzantine period as a prosperous silk production and textile-dyeing centre [1, p. 157].

The modern city of Theva is built on the same location as the ancient one.

Organic finds excavated in Greece

Museum archaeological collections contain mainly inorganic artefacts such as stone, ceramic, metal and glass. This does not accurately reflect our past but, rather, what has survived burial for hundreds or thousands of years [3]. Indeed evidence suggests that it is not stone, and perhaps not pottery or bone, that were used to create and establish the identities of ancient peoples [4]. In reality, the vast majority of objects used in the past were made of perishable materials and easily worked organic substances such as wood, textile and skin [3, 5]. In a study of Paleolithic central and eastern Europe, it is argued that “prehistoric material culture comprises as little as 5% of inorganic objects, and therefore such objects should not form an overall basis for understanding the past economies and technologies” [6, p. 18]. Perishable implements and structures are not frequently discovered due to the aggressiveness of the burial environment, inadequate recovery techniques and the poor state of preservation of the organic material itself. As this is usually the case in the semi-arid Greek archaeological environment, any fragment of organic material recovered from an archaeological investigation there triggers a special research interest.

The contribution of instrumental analysis

The material evidence recovered in an archaeological excavation includes not just the surviving artefacts and structures but any associated evidence such as the archaeological deposit itself. The process of reconstructing past events from material remains requires a scientific approach to the evidence [7].

THE HISTORY OF THE FIND SINCE EXCAVATION

The excavation at Agios Georghios Square, on the northern edge of Kadmeia, was conducted in 1985 by θ’ (Theta) Ephorate of Prehistoric and Classical Antiquities (θ’ EPCA), Boeotia, Central Greece. The archaeologist in charge was Ms B. Stasinopoulou. The excavation revealed important finds of the Byzantine, Classical and Mycenaean Periods, including a Byzantine church, a Classical pit containing several figurines — possibly connected to worship of goddess Demeter, whose temple was thought to be in the centre of the settlement — and finally a disturbed stratum of the Mycenaean settlement from the thirteenth century BC. It was in the last stratum that the textile was recovered, in a context of burnt wood/charcoal and among 80 small spindle whorls, according to the excavation diary. No final conclusions have been drawn about the role of this area (domestic, industrial or palatial) in the Mycenaean period.

When the textile was revealed, the Directorate of Conservation of Ancient and Modern Monuments (DCAMM) in the Hellenic Ministry of Culture (HMC) was contacted and asked to send a conservator to supervise the lifting of the find. DCAMM responded by sending a team of three conservators. The find was lifted and transferred to the Archaeological Museum of Theva (AMT). Six months later, in December 1985, θ’ EPCA asked for the find to be transferred to Athens. The last existing document in DCAMM’s General Archive about the Theva find is approval from the HMC for the Theva textile finds to be transferred from

AMT to DCAMM. This transfer apparently took place and the finds remained in storage in DCAMM.

Two blocks of soil containing the textiles had been lifted from the excavation and placed in wooden frames. The soil was secured in place with gauze strips and plaster of Paris. Both frames were located at DCAMM, with several textile fragments lying loose on the blocks of soil. In January 2007 θ' EPCA asked DCAMM to prepare the Theva find for exhibition in the AMT's refurbished galleries.

SOIL REMOVAL

In response to θ' EPCA's request, the two wooden frames containing the excavated textile finds were transported to the conservation laboratory, in order to proceed with soil removal, Fig. 1. All stages of the procedure were thoroughly recorded and photographed. First, the loose textile fragments resting on the surface of the soil were collected. Subsequent soil removal revealed charred wood fragments as well as charred textile fragments, although the soil itself did not appear burnt. This raised certain questions. Why were the wood and textile fragments burnt? What was the role of the wood and textile fragments within the assemblage? Were all wood fragments of the same species? Were all textile fragments from the same textile? As soil removal progressed more materials were revealed, such as bones and ceramics, which raised further questions. Unlike the wood and textile fragments, the bones and ceramics were not burnt. Why were not all of the organic finds burnt? Were the bones of human or animal origin? To what period did the ceramics belong? Were all the ceramic fragments from the same object? Pieces of a floor were also recovered, which prompted the question: what is the association, if any, of the floor with the rest of the finds?

The most puzzling features of the assemblage were five soil formations of a fairly well defined cylindrical shape and very similar dimensions (120 ± 20 mm height, 120 ± 20 mm diameter), Fig. 2. A layer of charred wood fragments was present in the middle of each, while charred textile fragments sat loosely on the top surface. These formations raised a new question: were they created by accident or on purpose?

To retain their three-dimensional shapes, the formations were consolidated with Primal SF-016, an aqueous acrylic emulsion that is formaldehyde and ammonia free. The charred textile fragments were mechanically surface cleaned with a low suction vacuum cleaner. The surface of the fragments was very gently brushed with alcohol to help loosen the deposited soil and dust particles. The poor condition of the fragments did not allow for any further treatment to be carried out.



Fig. 1 One of the wooden frames containing the Theva assemblage as received for conservation in 2007. Photo: © θ' Ephorate of Prehistoric and Classic Antiquities 2007.



Fig. 2 Defined soil formations of cylindrical shape as recovered during soil removal. Photo: © θ' Ephorate of Prehistoric and Classic Antiquities 2007.

Five hypotheses were made about the nature of the assemblage, based on the findings from soil removal and the little information recorded during excavation period:

1. It is a wooden construction/setting for the textile (e.g. a shelf or casing) that was accidentally burned;
2. It is a hearth on which the textile was burned in some ritual process;
3. It is the remains of an accidental fire that burned the surroundings;
4. It is a rubbish deposition pit into which all the fragments were thrown;
5. Another explanation, not covered by the previous four hypotheses.

To try to answer the questions posed above and if possible shed light on the interpretation of the assemblage, it was decided to investigate all the materials further using instrumental analyses combined with archaeological research.

INSTRUMENTAL ANALYSES AND ARCHAEOLOGICAL RESEARCH

Textiles

Stereo-microscopy revealed that the fragments originally belonged to two different textiles, as suggested by the weave count and yarn diameters. One fragment is from an open, balanced plain weave fabric (12 warps and 12 wefts per square centimetre) with warps and wefts made from a 2-ply, 'S' twist yarn (with a twist angle of approximately 20°) and an average yarn diameter of 0.4 ± 0.1 mm. The plies in this yarn are made from loose 'Z' twist threads (with a twist angle of approximately 10°) and the wefts are more loosely twisted than the warps. The second fragment is from an open, balanced plain weave fabric (17 warps and 17 wefts per square centimetre) with single-ply, 'S' twist warps and wefts and an average yarn diameter of 0.2 ± 0.1 mm [8]. No selvages or starting edges were detected in any of the fragments examined. An Olympus SZ61 stereo-microscope with magnification from $\times 6.7$ to $\times 45$ was used for the analysis.

Environmental scanning electron microscopy (ESEM) showed that both textiles are made of cellulosic bast fibres. The diameters (7–20 μ m) and cross-sections (thick cell walls and narrow lumens) are suggestive of flax fibres, Fig. 3. A Philips XL30 ESEM (with magnification up to $\times 50000$) with a 15 kV beam was used for the analysis.

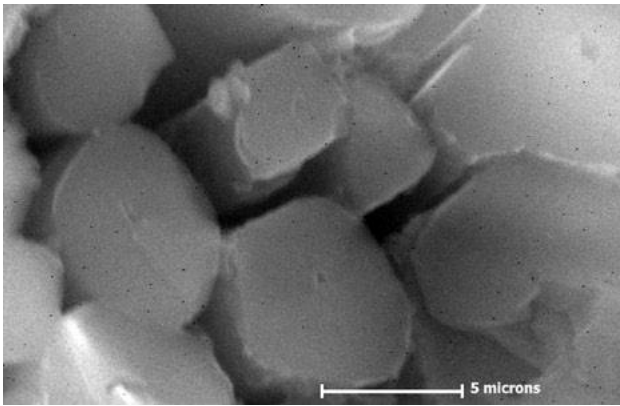


Fig. 3 Scanning electron photomicrograph of the cross-section of the textile fibres. The fibres occur in bundles and the polygonal cross-sections, with narrow lumens and thick cell walls, suggested the presence of flax fibres. Photo: © Christina Margariti 2008.

The presence of linen textiles in a find from Mycenaean Theva was not unexpected. As shown by inscriptions on Linear B tablets, linen fibres have been used in Greece since the thirteenth century BC [9, pp. 70, 74–75, 102]. During the Mycenaean period, the palace meticulously controlled the output of linen and its redistribution to various professions. It was used in a variety of different trades, such as fishing, hunting, ship building, bronze working and weaving.

Wood / charcoal

The identification of wood and charcoal was initially intended to highlight the context of the assemblage. It was unclear whether the assemblage was a single piece of wood supporting the textile (something like a shelf) that was accidentally burned, or whether it was an undefined group of burnt wood fragments, Fig. 4. Such information can contribute to discussions about the social context and development of ancient life in Theva. Information drawn from identification of the wood samples can sketch the habits, structure, function and operation of past societies.

The attempt to identify the wooden samples from the assemblage beyond the generic level was difficult, as their highly charred nature complicated the observation of diagnostic features. It also made it difficult to take thin sections for observation using transmitted light microscopy. For these reasons, only cross-sections were taken and examined using reflected light microscopy.



Fig. 4 Wood/charcoal samples as recovered during soil removal. Photo: © θ' Ephorate of Prehistoric and Classic Antiquities 2007.

The wood cell structure discussed below is seen best in clear-cut surfaces of the charcoal. Flat transverse sections were studied under a low power reflected light microscope at a magnification range of $\times 1$ to $\times 6$ (Nikon SM2-2T with objective lenses between $\times 1$ and $\times 100$). This enabled distinction between hardwood and softwood samples. A more detailed observation in conjunction with a wood identification key to European and Greek woods allowed the genus of most of the charred wooden samples to be identified [10–14], Table 1. Identification beyond this level was not critical at this stage of the research.

Wood charcoal analysis provides information about anthropogenic impact on vegetation during the Bronze Age. Identifying several species of hardwoods and softwoods in the archaeological assemblage might imply that the people at Theva had access to, and exploited, woodland from different habitats. The study of archaeological wood could contribute to future site catchment analysis, especially if improvements are made to the application of wood sourcing studies. It has been suggested that by the Late Bronze Age the natural woodland of the most fertile districts of the lowlands and uplands in the Boeotia and Lake Kopais regions had been transformed into an arable- and scrub-dominated landscape [15]. The identification of the wood species listed in Table 1 supports the suggestion that a contemporary decline in woodland might be attributed to human impact through grazing as well as fuel collection.

It is obvious from the identification of several wood species recovered from the assemblage that the charred remains belonged to more than one artefact and so the hypothesis that they come from a wooden setting for the textile (such as shelf or

Table 1 Identifications of the charred wood fragments

Type of wood	Characteristics	Identification	Number of fragments identified
Softwood	Resin canals	<i>Pinus</i> sp.	40
Softwood	Small, sparse resin canals	<i>Picea</i> (Spruce) sp.	15
Softwood	No resin canals	<i>Cedar</i> sp. <i>Abies</i> sp. <i>Juniperus</i> sp. <i>Cupressus</i> sp. <i>Taxus</i> sp.	34
Hardwood	Ring-porous Tyloses in the vessels Broad rays visible to the naked eye Characteristic 'flame design'	<i>Quercus aegilops</i> <i>Quercus cerris</i> <i>Quercus trojana</i>	50
Hardwood	Diffuse-porous Broad rays visible to the naked eye.	<i>Quercus ilex</i> <i>Quercus coccifera</i>	25
Hardwood	Diffuse-porous Pores solitary or in short radial files of two to three pores Growth ring boundaries more or less distinct	<i>Salix fragilis</i> <i>Salix alba</i> <i>Populus nigra</i> <i>Populus alba</i> <i>Populus tremula</i>	15
Hardwood	Diffuse-porous Small pores solitary and in radial multiples of two to four Rays are broader than the pores	<i>Acer monspessulanum</i> <i>Acer pseudoplatanus</i> <i>Acer campestre</i> <i>Acer platanoides</i>	10
Hardwood	Diffuse-porous to semi-ring-porous Large rays generally distended along growth ring boundaries	<i>Fagus moesiaca</i>	6
		Total	195

casing) seems rather unlikely. It cannot be determined whether the fire was intentional or accidental. If the fire was intentional the charred remains were most likely used as firewood. If the fire was accidental the charred remains could have been random small branches and/or artefacts that had been set aside in a group.

Bones

The initial analysis of archaeological skeletal fragments recovered from the assemblage aimed to determine whether they were animal and/or human. The faunal collection was well preserved, consisting of highly fragmented pieces that, interestingly, had not been burned. Visual inspection of the bone material and identification of key morphological features through analysis of bone anatomy and comparison with reference collections determined that the bones were of animal origin. Further categorization of animal species was not attempted since it was not critical at this stage of the research, but it was considered of great interest to reveal why animal bones were found in this assemblage and whether they had been interred in a ritual context, discarded or accidentally buried.

Ceramics

The ceramic fragments recovered were also not burnt. The fine ware of the fragments and the decoration identified the sherds as from two periods, Mycenaean and Classical. Dating of the assemblage through the pottery fragments appeared therefore to be a difficult task.

Floor

A fragment of lime mortar floor, also unburnt, was found in the wooden frames. The main body of the fragment has coarse aggregates whereas the top surface has a lime rendering. There was only one fragment of floor recovered during soil removal in the conservation laboratory. A more complete piece of flooring is mentioned in the excavation diary, but this was not transported to Athens for conservation.

Soil formations

The five soil formations were very similar in dimension and shape. In addition, each had a layer of burnt wood in the middle. These similarities suggested that their formation was not accidental.

ANSWERING THE QUESTIONS AND CONSIDERING THE HYPOTHESES

The analytical findings in combination with the archaeological research provided answers to some of the questions raised during soil removal. The textile fragments belonged to two different textiles, both made of flax fibres. The textiles had been burned. More than six different species of wood fragments were identified, all of which had also been burned. The bones revealed were of animal origin. The ceramics did not all originate from the same period and were consequently not from the same object. The bones, the ceramics and the surrounding soil were not burnt. The soil formations were not formed by accident.

Specific answers were not given to the questions concerning the association between the different finds and the hypotheses about interpretation of the assemblage. Nevertheless, the five hypotheses suggested earlier were better informed after this investigation:

1. The wood fragments were probably not from a single setting for the textile, since more than six species of wood were recovered.
2. It is possible that the assemblage is a hearth in which a fire was lit with small branches of wood that were

intentionally covered with soil (as they are not burned to ashes) and that the textile was set on the soil for an unknown (possibly ritual) reason and was charred but also not burnt to ashes.

3. The possibility of an accidental fire has been excluded, since not all the finds are burnt.
4. The recovered floor pieces exclude the possibility that this was a rubbish deposition pit.
5. The assemblage could still be something else, as yet undefined.

DISPLAY OPTIONS

Bearing in mind the results of instrumental analysis and archaeological research and considering the fact that the interpretation of the assemblage was not conclusive, the following three options were considered for display in AMT:

Option 1: display only the textile finds and relevant technological information

The first option was to display the textile fragments alone, accompanied by the relevant technological information. This method would provide important information to the viewer about technological advancements in textile production in this region. It would also provide information on the types of plants cultivated there and consequently on the types of fibres used for making textiles. The total information provided would be limited because this display option would not cover the association of the textile fragments with the rest of the find.

Option 2: display all finds and relevant technological information

Another display option proposed was to present each material separately. The ceramic fragments could be reassembled and displayed in the museum's ceramic display cases. A similar process could be followed for the bone fragments. However, the fragments of both ceramic and bones recovered from this assemblage are disparate and few in number and do not provide any valuable information in themselves. This is in contrast to the integrated ceramic and bone assemblages already displayed in the museum. In this display option, it would be essential to emphasize the textile and wood fragments, which seem to be closely related to each other. As in option 1, only technological information would be provided about the finds.

Option 3: display all finds in their original associations

The third option was to display the assemblage as a whole, supported by the relevant technological information. In that way the association between the different finds would be preserved and communicated to the viewer. No attempt would be made to interpret it, since current analyses and research do not provide any conclusive results. However, this method would enable evidence of the association to be retained for future analyses and research.

THE DISPLAY OF THE ASSEMBLAGE

As previously stated, information about the interpretation of the assemblage was limited and unclear. Nevertheless, the association between the finds is probably very important so it was decided to follow the third display option.

The assemblage will be displayed in a purpose-made horizontal display case with a transparent lid (dimensions in mm: 600 width × 800 length × 1000 height excluding the lid). A tray made of 13.7 mm Hexlite (fibreglass skins with an aluminium honeycomb core) will be used as a support as it is an inert, lightweight, rigid material. The side edges of the tray will be

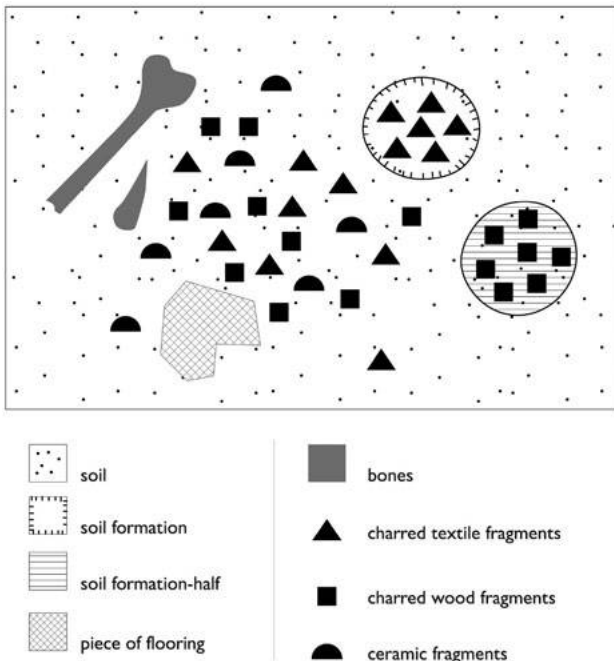


Fig. 5 Diagram of the proposed display method. Image: © Christina Margariti and Andreas Koutouvalas 2009.

covered with 10 mm thick high density Plastazote strips. A film of antistatic Melinex (175 µm) will be placed on the top surface of the board, with a thin layer of soil sprinkled on top. Two examples of soil formations will be included in the display, one with the upper part removed to expose the layer of charred wood fragments found in the middle. Textile fragments will be placed on the top surface of the second soil formation and also scattered on the loose soil. Bone and ceramic fragments will also be included in the display, Fig. 5. An explanatory text panel will be placed above the display case. This will provide technological information about the different materials present in the display, clearly indicating their association but stating that this remains uninterpreted. There are few other examples of textile finds from the same period that have been excavated in Greece [16, 17]. One is on display at the National Archaeological Museum in Athens, where the textiles are attached to copper spearheads [16, pp. 18–19; 17, p.100]. A similar display method to that chosen for the Theva find can be seen at the Archaeological Museum of Volos. The association of human remains and offerings has been reproduced in that display in order to better inform the viewer.

CONCLUSION

The display option chosen — which includes all finds and places them in a way that reproduces their original association — was considered to be the most objective way to present the assemblage. Evidence of the association between the fragmented artefacts and the soil formations would remain available for future analyses and comparison with any similar finds (potentially better documented) that might be recovered in the future. The hypothesis that the assemblage was a hearth where some kind of ritual was performed seems to be the most probable. However, this interpretation will not be included on the text panel accompanying the display because it may bias viewers in favour of that hypothesis, while in essence the assemblage is still not fully understood. This project showed that collaboration between archaeologists and conservators from different areas of specialization could provide answers to a majority of the questions formed and shed light on the hypotheses made,

thus providing a neutral, uncontentious solution for the display of this complex find.

ACKNOWLEDGEMENTS

Thanks to Dr Dimitris Papageorgiou, Research Co-ordinator, Titan Cement Company SA, for unlimited access to the ESEM-EDX facilities, Dr Panayiotis K. Kavvouras, Forest Research Institute of Athens, for providing the wood identification keys, Mr Andreas Koutouvalas, Art Director, Fox Design General Partnership, for producing the graphics, and Dr Vassilis Aravantinos, Director, 0⁷ EPCA, HMC and Mr Nikolaos Minos, Director, DCAMM, HMC, for allowing us to publish this paper.

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MATERIALS AND SUPPLIERS

Plastazote: Zotefoams plc, 675 Mitcham Road, Croydon, Surrey, CR9 3AL, UK (www.zotefoams.com).

Hexlite: Executive Offices, 281 Tresser Blvd, Two Stamford Plaza, 16th Floor, Stamford, Connecticut 06901, USA (www.hexcel.com).

Melinex: DuPont Teijin Films U.S. Limited Partnership, 3600 Discovery Drive, P.O. Box 411, Hopewell, VA 23860, USA (www.dupontteijinfilms.com).

Primal SF-016: Water- & Air Treatment Holding B.V., Rotterdamseweg 402 M, 2629 HH Delft, Netherlands (www.lenntech.com).

AUTHORS

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