Petras, Siteia
The Pre- and Proto-palatial cemetery in context

Acts of a two-day conference held at the Danish Institute at Athens, 14-15 February 2015

Edited by
Metaxia Tsipopoulou

Monographs of the Danish Institute at Athens
Volume 21
This volume is dedicated to all those individuals who participated over the years in the excavation, conservation, study, site development and publication of the results.

This lofty vision for Petras and its region was made possible by their hard work, dedication and support.
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Cretan mantinada for death

Sevasti Triantaphyllou

House Tomb 5: A preliminary analysis of the human skeletal remains

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# Abbreviations

**Archaeological periods**

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<thead>
<tr>
<th>EBA</th>
<th>Early Bronze Age</th>
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<tr>
<td>EH</td>
<td>Early Helladic</td>
</tr>
<tr>
<td>EM</td>
<td>Early Minoan</td>
</tr>
<tr>
<td>FN</td>
<td>Final Neolithic</td>
</tr>
<tr>
<td>LH</td>
<td>Late Helladic</td>
</tr>
<tr>
<td>LM</td>
<td>Late Minoan</td>
</tr>
<tr>
<td>LN</td>
<td>Late Neolithic</td>
</tr>
<tr>
<td>LBA</td>
<td>Late Bronze Age</td>
</tr>
<tr>
<td>MBA</td>
<td>Middle Bronze Age</td>
</tr>
<tr>
<td>MH</td>
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<tr>
<td>MM</td>
<td>Middle Minoan</td>
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<tr>
<td>MN</td>
<td>Middle Neolithic</td>
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<table>
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<tr>
<th>PTSOU</th>
<th>Petras Rock Shelter</th>
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<tr>
<td>Σ-palace</td>
<td>Stratigraphical trenches of the palace</td>
</tr>
<tr>
<td>W</td>
<td>Wall</td>
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**Other**

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<th>A.S.L.</th>
<th>Above Sea Level</th>
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<tr>
<td>diam.</td>
<td>diameter</td>
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<tr>
<td>gr</td>
<td>gram</td>
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<tr>
<td>h</td>
<td>height</td>
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<tr>
<td>kg</td>
<td>kilogram</td>
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<td>w</td>
<td>width</td>
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<tr>
<td>wt</td>
<td>weight</td>
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<tr>
<td>th</td>
<td>thickness</td>
</tr>
<tr>
<td>lt</td>
<td>liter</td>
</tr>
<tr>
<td>MMD</td>
<td>Mean Measure of Divergence</td>
</tr>
<tr>
<td>MNI</td>
<td>Minimum Number of Individuals</td>
</tr>
<tr>
<td>NISP</td>
<td>Number of Identifiable Specimens</td>
</tr>
<tr>
<td>SM</td>
<td>Archaeological Museum, Siteia</td>
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<tr>
<td>vol.</td>
<td>volume</td>
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**Petras Area**

<table>
<thead>
<tr>
<th>HT</th>
<th>House Tomb</th>
</tr>
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<tbody>
<tr>
<td>R</td>
<td>Room</td>
</tr>
<tr>
<td>L</td>
<td>Lakkos</td>
</tr>
<tr>
<td>P</td>
<td>Petras</td>
</tr>
<tr>
<td>PTSK</td>
<td>Petras Cemetery</td>
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The form of the English language for the native speakers (British or American) was the author’s choice. For the non-native speakers the American form was used.
Bibliographic Abbreviations

AAA – Archaiologika Analekta Athinon
ActaPalaeobot – Acta Palaiobotanica
AJA – American Journal of Archaeology
AJPA – American Journal of Physical Anthropology
AJS – American Journal of Sociology
AmJHumBiol – American Journal of Human Biology
AR – Archaeological Reports
Arachne – (on-line access to the CMS, with corrected information and enhanced illustrations) http://arachne.uni-koeln.de/drupal/?q=de/node/access date March 2016.
ArchDelt – Archaeologikon Deltion
ArchEph – Archaeologike Ephemeris
ASAtene – Annuario della Scuola Archeologica Italiana di Atene
BAR-IS – British Archaeological Reports, International Series
BCH – Bulletin se correspondence hellénique
BICS – Bulletin of the Institute of Classical Studies of the University of London
BSA – Annual of the British School at Athens
CMS – Corpus der minoischen und mykenischen Siegel, Berlin 1964-2000, Mainz 2002-
CretChron – Kretika Chronika
EtCret – Études Crétoises
JAS – Journal of Archaeological Science
JMA – Journal of Mediterranean Archaeology
Kentro – Kentro: The Newsletter of the INSTAP Study Center for East Crete
MA – Monumenti Antichi
OJA – Oxford Journal of Archaeology
Prakt – Praktika tes en Athenai Archaeologikes Etaireias
SIMA – Studies in Mediterranean Archaeology
SMEA – Studi Micenei ed Egeo-Anatolici
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An intriguing set of discs from the Protopalatial tombs at Petras

Thomas M. Brogan & Alessandra Giumlia-Mair

Abstract

An intriguing set of twelve concave metal discs were recovered during excavations in the Pre- and Protopalatial cemetery at Petras, all in Protopalatial contexts, between 2011 and 2014. Five had been placed inside Room 2 of House Tomb 10, and several more were found in the exterior space north of the same Ceremonial Area 2. The discs are small and have a shallow but noticeably concave profile. Where preserved the upper surface is often polished, but there are no other visible traces of decoration or piercing that might shed light on their use in antiquity. To determine their function, we employed a combination of contextual and material analysis. The discs form part of a large deposit of small copper, bronze, silver and gold objects in Tomb 10. Ten of the discs were examined by XRF and the results reveal interesting choices of metal. One is made of a silver alloy. The others are copper alloys with a high percentage of arsenic which indicates that they originally had a silvery color. The use of such a special alloy suggests the discs had a specific function and meaning. Various possibilities are explored including their use as balances, mirrors and ornaments.

Among the objects recovered in Room 2 of Tomb 10 of the Pre- and Proto-palatial cemetery at Petras are a pair of bronze discs. Found together with MM II material, the objects resembled balance pans which are usually found in pairs. What makes this hypothesis so intriguing is the fact that so few sets of balance pans had been found in Bronze Age levels on Crete. Moreover, all the extant examples come from Late Minoan contexts, including seven sets of LM IB pans from Mochlos and Gournia.1 While a handful of stone and lead discoid weights were found in MM II levels at Malia, no contemporary pans had been found either on the island or on any other site in the EB or MB II Aegean.2 The Petras material thus posed several problems, including its early date (MM II), its funerary context which is more common on the mainland, the small size of the pans and the apparent lack of suspension holes. We agreed to take a look, thinking some of the anomalies might be explained by the early date of the contexts. Moreover, if any site was likely to have served as a gateway for the introduction of measurement tools and technology,

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* Clio Zervaki carefully cleaned the objects with the help of a microscope. The objects were then drawn by Doug Faulmann & Lily Bonga, photographed by Chronis Papanikolopoulos and X-rayed by Kathy Hall. The authors would also like to thank Ariel Pearce who recorded the excavation diaries for these contexts.

1 For the Gournia balances, see Boyd-Hawes et al. 1908, 34, pl. iv, no. 63a; for the Mochlos balances, see Soles 2008, 147-51; Giumlia-Mair et al. 2011, 151.

2 For Malia, see Alberti 2000. For Aegean pans, see Petruso 1992, 75-77; Michailidou 2008, 43-58, 131-78.
An intriguing set of discs from the Protopalatial tombs at Petras

It was Late Prepalatial and Protopalatial Petras where raw materials, finished goods and ideas were arriving from sources in the eastern Mediterranean where measurement systems with differing standards are attested from even earlier periods.

In this paper we employ a combination of contextual, material and experimental analysis to explore their possible function. The Petras Pre- and Protopalatial cemetery offers a rare opportunity to examine complete assemblages from several undisturbed communal tombs (with the exception of some later LM III building). The recovery techniques used in the field, which include 100% flotation of all the soil from the site, have produced an unparalleled set of artifacts and ecofacts, including an impressive set of copper, bronze, silver and gold objects. Looking through the entire corpus of metal objects, the authors identified 12 total discs with a similar concave shape (Fig. 1a–j).

Eleven discs were found in or near Tombs 9 and 10; another lay in surface levels nearby. Two come from Tomb 9. PTSK12.161 (Fig. 1a) was found in House Tomb 5, Room 9 in a context dated EM III–MM IA. More than half of this bronze concave disc is preserved, with a diameter of 1.8 cm, but the surfaces of both the convex and concave sides are corroded making it impossible to assess its original appearance. PTSK14.2246 (Fig. 1b) was found in Level 6 of Room 4 of Tomb 9 with MM II material. This concave disc, measuring 3 cm in diameter, is nearly complete and the only example made of a silver alloy.

Nine more discs were found in the MM II levels inside and outside House Tomb 10, and we will concentrate on this group in the paper. Five were found inside Room 2. PTSK13.899 (Fig. 1c) was recovered in Level 3. This small bronze disc is nearly complete and bears almost no traces of surface corrosion. It measures 2.6 cm in diameter and both its concave and convex sides are polished. A pair of larger discs was recovered in Level 4 of Room 2. PTSK12.737 (Fig. 1d) is three-quarters preserved and measures 4.6 cm in diameter. It is made of very thin bronze sheet which is corroded but traces of the original polished surface are visible on both the interior and exterior. PTSK12.767 (Fig. 1e) is its better preserved twin, again measuring 4.6 cm in diameter. It is nearly complete and polished on both the interior and exterior and like its twin, the rim was also noticeably folded over in places to create a round shape. Two more discs were found in Levels 5 and 6 of Room 2. PTSK12.809 (Fig. 1f) was recovered in Level 5. This bronze disc is more than ½ extant and exhibits no corrosion on either polished side. It measures 2.6 cm in diameter and part of the rim was folded in to create a round edge. PTSK12.1128 (Fig. 1g) was found in Level 6. It is nearly complete and measures...
2.8 cm in diameter. The rim was again folded over to create a round edge and both the interior and exterior surfaces were polished (Fig. 1h).

Four more discs were recovered with MM II material in the space immediately north of the tomb excavated as part of Trenches Gamma 4 and Delta 4. PTSK13.56 (Fig. 1i) was found in Level 2. It measures 2.8 cm in diameter and both its concave and convex sides were highly polished. One side has also been pushed upwards creating a distinct fold, but it is not possible to determine if this was an accident of preservation or an intentional feature. Small clay cups with this same shape are known from the Protopalatial period, like the examples from the Archanes cemetery. Parts of three more discs were recovered in Level 3 of the same area. Only PTSK13.899 (Fig. 1j) is preserved enough to warrant description (roughly 75% extant). It measures 2.7 cm in diameter, and both the interior and exterior surfaces were well polished with fine abrasives (figs. 1k–l).

To learn more about the manufacture and possible function of these discs, we analyzed them with a Faxitron X-Ray. The chief conservator of the INSTAP Study Center for East Crete, Kathy Hall, took the images and reports that the tiny holes visible on the images could be interpreted either as corrosion pits or fresh breaks when examined later under the microscope. The X-rays thus confirm our macroscopic study. The pans were highly polished but not decorated or altered for attachment to other objects.

Alessandra Giumlia-Mair then analysed 10 of the 12 discs from the cemetery with an XRF. The equipment employed for the analyses is transportable and consists of several parts: the head of the system with the X-ray’s source, the support with devices for position and stability control, a transformer, a stabilizer and a computer with dedicated software. Several standards of different composition, as similar as possible to the ancient alloys and expressly produced by AGM Archeoanalisi for the investigation of cultural heritage items, have been employed for the calculation of the results. They are important to determine drift and interference effects and were run at regular intervals so as to retain the standard of analytical precision and obtain reliable data. All the objects were again examined under the microscope before analysis to check their conservation and to determine the best spot for the measurements. Regrettably almost all the discs are in poor state of preservation. The analysis results of corroded items must be considered approximate and indicative only.

All but one of the discs are made of copper-based alloys, mostly containing noticeable amounts of arsenic. The other is made of a silver alloy, which is interesting because it is well known that copper alloys with higher amounts of arsenic assume a silvery color. This is due to the phenomenon of inverse segregation that occurs in the alloy during the cooling phase of the metal. The eutectic alloy with 21% of arsenic, commonly called “arsenic sweat”, is pushed to the surface through interdendritic filaments, also called “feeders”, and forms a silvery layer on the surface of the objects. As various laboratory experiments have showed in the past, this can happen with as little as 1-2% of arsenic in the alloy (Table 1).3 The maximum limit of solid solubility of arsenic in copper is 7.5% As. The microstructure of the eutectic shows a phase of solid solution α and a compound γ, containing 29.6% As (Cu3As). The compound gamma is malleable and can be hammered and worked as required. Antimony behaves like arsenic, and the presence in copper of both elements, as well as other elements such as silver, nickel or cobalt, enhances the segregation phenomena.4

The disc PTSK14.2446 appears to be made of a well-refined silver; unfortunately it is corroded, as confirmed by the presence of iron. Again the results can be only indicative. If we consider that most discs contain arsenic, some low amounts of silver and often some antimony, we can deduce that they

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3 Budd & Ottaway 1991; Giumlia-Mair 2000, 300-301, fig. 2; 2008.
must have had a rather silvery look. This composition using particularly high amounts of arsenic and the fact that one disc was made of a silver alloy suggest that all the objects had special value and meaning.

Before considering the possible function of the discs, it may be useful to summarize what we have learned. The 12 discs come in different sizes. The smallest is probably 1.8 cm and it is the only one not dated to an MM II horizon. Five more found inside and outside Tomb 10 cluster between 2.6 cm and 2.8 cm while two more measure 4.6 cm in diameter. A unique silver example is 3.0 cm in diameter. The largest discs were also found together in the same level. None show any signs of decoration or mode of attachment to another object by thread, nail or adhesive. The surfaces are often corroded but where preserved both the concave and convex sides are polished to a high finish. Although 11 were made of copper alloy with arsenic, all 12 were probably originally silver in color, and one was actually made with a silver alloy.

What are these objects and how were they used? Our preliminary contextual analysis reveals an unhelpful taphonomy that is all too common in Minoan communal tombs. Ariel Pearce recorded the excavation of Rooms 1 and 2 of Tomb 10 where five of the discs were found. The tomb appears to have been used several times. To make room for new interments, the bones and grave goods of earlier burials were pushed to the side making it nearly impossible to associate particular goods with individual burials in the tomb. Drawing on her experience studying ancient metal objects around the world, Alessandra noted that the size, shape and color of the discs suggest their use as ornaments for everyday life or as funerary equipment. In this light it may be worth noting that the Petras tombs contained a large number of metal grave goods including jewellery, tweezers and small knives or awls, and a substantial number were recovered in Room 1 of Tomb 10.

Branigan’s monumental corpus of EBA and MBA bronze weapons, tools, toilet implements and jewellery is a valuable resource for research questions like ours. In it he identifies two types of metal discs which he distinguishes by the absence or presence of decoration. Examples of the first include discs made of bronze, gold and silver with diameters of

Table 1. Table of results of the XRF analysis.

<table>
<thead>
<tr>
<th>an. n</th>
<th>object</th>
<th>inv.nr.</th>
<th>Cu</th>
<th>Sn</th>
<th>Pb</th>
<th>As</th>
<th>Sb</th>
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<td>disk</td>
<td>PTSK14.2446</td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td>disk</td>
<td>PTSK13.56</td>
<td>94</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
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<td>disk</td>
<td>PTSK13.899</td>
<td>91</td>
<td>0.3</td>
<td>0.8</td>
<td>4</td>
<td>0.9</td>
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<td>disk</td>
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<td>90</td>
<td></td>
<td>2</td>
<td>4</td>
<td>1.6</td>
</tr>
<tr>
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<td>disk</td>
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<td>0.5</td>
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<td>1</td>
<td>2.5</td>
<td>2</td>
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<tr>
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<td>94</td>
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<td>0.7</td>
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<td>1.5</td>
<td></td>
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<td>1.3</td>
<td>3.5</td>
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<td>disk frg</td>
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<td>98</td>
<td>0.3</td>
<td>0.3</td>
<td>0.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>

5 Branigan 1974.
1.2 cm to 6 cm. Of the six that are unperforated, none, however, exhibit concave profiles like those of the discs from Petras. Instead, the Petras material is closer to Branigan’s group of decorative bosses which occur in several types: hemispherical or conical bosses with or without flat surrounding rims and bosses with projecting stems that acted as studs. Among the hemispherical and conical bosses known in 1974, 11 were made of gold and bronze. The eight made of gold were found on Crete at Kalathiana, Platanos A, and Malia and at Sesliko and Troy, and range in size from 0.9–2.8 cm. Of the three bronze examples, two are tiny (0.6 cm) while another from MBA levels at Kilindir in Macedonia is 4.0 cm in diameter. Branigan also records dishes in bronze, silver, gold and lead but all were larger in size. Among the nearly 3,500 objects he recorded, the closest fit is probably the bosses which may have been attached to something with an adhesive. The problem with this hypothesis is the polished interior surface of the Petras discs. This feature would have been unnecessary if not counterproductive for attachment.

As part of the study, we also considered the possibility that the largest pair of discs served as a set of real or symbolic balance pans. The problem for this hypothesis is the absence of suspension holes which are otherwise present on all the balances so far identified from MB III and LBA contexts in the Aegean. Otherwise, the concave shape of the Petras discs would be suitable for this use. Moreover, the largest pair of discs from Petras were found together in the same layer, which is a hallmark of balance pans. Measuring 4.6 cm in diameter, the Petras discs are the same size as the smallest set of pans from the Vapheio Tholos, and one centimeter smaller than the smallest bronze pans from Akrotiri.

Interestingly, Michailidou suggests this pair from House Delta South was probably used to weigh precious metal with the stone weights found in the same context. Michailidou’s publication is an essential tool for anyone pursuing this topic. In it she provides a contextual analysis for the Aegean balances from Akrotiri, Mycenae, Pylos and Vapheio to explore both what was being weighed and by whom (i.e., merchants).

To examine the possibility that some of the Petras bronze discs were suitable for use as balance pans, we considered two issues. First, was there any evidence for weight measurement at Protopalatial Petras (e.g., balance weights or weighable commodities) and second could experimental archaeology offer clues to the use of small pans without suspension holes? Lead and stone discoid weights are known from MM II levels at Malia, but none have been recovered so far from the Protopalatial levels at Petras. The excavation did record a large number of pebbles from Tomb 10, which may have been part of the burial process. Several were weighed, but none offered any correspondence with known weight systems from the Aegean or eastern Mediterranean. The stones also did not appear to have been modified to achieve a specific mass.

The search for small, weight-appropriate commodities drew our attention to several gold and silver beads found in Room 1 of Tomb 10. I weighed 5 silver beads, 2 gold beads and one gold ring, and the data reveals a consistent pattern, with clusters around 6 grams, 8-9 grams, 17 grams, and 25 grams. This consistency may simply reflect a craftsman’s interest in making beads in consistent sizes by dividing the raw materials first, but it is difficult to ignore the fact that the chosen weights also conform to the weight of the Mesopotamian Shekel of 8.4 grams, which was widely used in the eastern Mediterranean as a standard reference for mass and more importantly

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6 Branigan 1974, 42, 186, type Ia–c discs, nos. 2412-2459.
7 Branigan 1974, 42-43, 186-87, type I, nos. 2470-481.
9 Michailidou 2008.
11 Michailidou 2008, 50, no. 6874, fig. 11.9.
13 Dierckx pers. comm.
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value. An example offered by Michailidou is an Old Babylonian marriage document recording the value of gold and silver jewellery by their mass and value using these same amounts. Given Petras’ position on important trade routes that developed between Crete and ports in the eastern Mediterranean from EM II, it would be a surprising coincidence if the manufacturer or owner of the Petras beads was not aware of their underlying values.

With the suggestion that artifacts from Petras Tomb 10 could be measured by mass, our attention turned to experimental archaeology to test if replicas of the Petras discs from Tomb 10 could function as balance pans. The objective was not to build a working balance but simply to learn if it was possible to suspend pans of this small size without suspension holes. A craftsman selling copper jewellery on Aiolos Street in Athens beat out three sets of brass discs: one flat set, one concave set with suspension holes and another concave set without holes. The craftsmen also suggested that we use waxed thread. Our first experiment attempted to rest the pan inside two knotted loops but the disc kept falling from this flimsy cradle. The solution was to build a more stable cradle of net or macramé employing a base loop that was smaller than the pan and to which we tied four suspension strings (Fig. 1n). While this allowed me to suspend the pan easily, the INSTAP Publication Team Illustrator, Doug Faulmann, reminded us that a Minoan artist capable of making seals and silver pans would probably also have been able to make suspension holes. This is however not true: the discs cannot be easily pierced. Arsenical copper is malleable, but when heavily worked, as in this case, it becomes hard and fragile. Trying to pierce the metal would be quite risky: the thin sheet would very easily crack. Nevertheless, it is probably fair to say that while the experiment was successful, it still failed to prove conclusively how the discs were used in antiquity.

The safest conclusion is the suggestion of several possible uses of the discs rather than one definite function. These include serving as silver colored bosses on one or more objects, working as small ceremonial dishes of silver color, or even operating as pans suspended from a balance. One final thought is inspired by the three gold balances found in Shaft Grave III at Mycenae (Karo 1930-33, 53-56 and Michailidou 2008, 135-49). Is it possible that one pair or more of the silver colored metal pans from Tombs 9 and 10 at Petras were deposited as symbolic balances, reflecting the status of the deceased as a merchant (a point stressed by Michailidou in her recent interpretation of the gold balances, 2008, 135-49) rather than with reference to Homeric belief of weighing souls in the afterlife? At least one silver balance was reported from excavations beneath the floor of Room 5 of the temple of E-Nun-Mah in Ur (Michailidou 2008, 135).

15 Michailidou 2008, 262.
16 Colburn 2008; Brogan 2013.
Discussion

MacGillivray: I think your paper was really excellent. I have a comment. I do not think you have to go as far as Homer for the weighing of the soul. People working in the Kahun and El Alahun – they were Minoans and of course they knew about the weighing of the soul. When someone leaves their body the first thing that you want to preserve are the eyes. What if they had these polished things put on the eyes to preserve them much longer.

Brogan: It could be a possibility. One of the arguments against their use as pans is the fact that there are so many of them.

Wright: Would that exclude them being used as blanks for the production of jewellery?

Giulmia-Mair: Which kind of jewellery?

Wright: I do not know, you said that one could just hammer them.

Giulmia-Mair: Of course they could hammer them to make them usable again, but I do not see how one could use this kind of shape.

Wright: So you think this is a finished product?

Giulmia-Mair: I think it is; you have seen the edges, and all of them have been polished, so I believe they are finished objects.

Wright: Maybe they are cymbals for dancing.

Brogan: I think it is very odd that we cannot find a better parallel. I visited several museums in Greece and was unable to find anything that was remotely similar.

Giulmia-Mair: There are many objects at Petras without parallels. Anyway, these discs are too small to be used as cymbals.

Greek abstract

Ένα αξιοπερίεργο σύνολο δισκαρίων από Παλαιοανακτορικούς τάφους του Πετρά
Ένα περίεργο σύνολο 12 κυρτών μεταλλικών μικρών δίσκων ήρθε στο φως στην ανασκαφή του Προ- και Παλαιο-ανακτορικού νεκροταφείου του Πετρά, μεταξύ του 2011 και του 2014. Πέντε ήταν στο Δωμάτιο 2 του Ταφικού Κτιρίου 10, και μερικοί ακόμα δίσκοι βρέθηκαν στον εξωτερικό χώρο βόρεια του ίδιου τάφου. Τα δισκάρια έχουν περίγραμμα ρηχό, αλλά σαφώς κυρτό. Όταν σώζεται η άνω επιφάνεια είναι συνήθως γυαλισμένη, αλλά δεν υπάρχουν άλλα ορατά ίχνη διακόσμησης ή διάτρησης, που θα πρόσφεραν ενδείξεις για τη χρήση τους την Εποχή του Χαλκού. Για τον καθορισμό της λειτουργίας τους χρησιμοποιήθηκε μια
σύνθετη ανάλυση τόσον του υλικού, όσον και του περιβάλλοντος εύρεσης. Τα δισκάρια αποτελούν τμήμα μεγάλης απόθεσης μικρών αντικειμένων από χαλκό, ορείχαλκο, ασήμι και χρυσό, τα οποία βρέθηκαν εντός ή κοντά στο Ταφικό Κτίριο 10. Δέκα από τα δισκάρια εξετάσθηκαν με XRF και τα αποτελέσματα αποκαλύπτουν ενδιαφέρουσα επιλογή μετάλλου. Ένα από αυτά είναι κατασκευασμένο από κράμα αργύρου. Τα άλλα είναι από κράματα χαλκού με υψηλό ποσοστό αρσενικού, δηλαδή και αυτά αρχικά είχαν χρώμα ασήμι. Η χρήση αυτού του ειδικού κράματος δηλώνει ότι οι δίσκοι είχαν ειδική χρήση και σημασία. Συμπερασματικά ερευνήσαμε διάφορες δυνατότητες, συμπεριλαμβανομένων δίσκων ζυγών για μέτρηση βάρους και ταφικών στολιδιών.

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