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

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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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## Abbreviations

### Archaeological periods

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<thead>
<tr>
<th>Code</th>
<th>Period</th>
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<tr>
<td>EBA</td>
<td>Early Bronze Age</td>
</tr>
<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>
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<td>LN</td>
<td>Late Neolithic</td>
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<tr>
<td>LBA</td>
<td>Late Bronze Age</td>
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<td>MBA</td>
<td>Middle Bronze Age</td>
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<tr>
<td>MH</td>
<td>Middle Helladic</td>
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<tr>
<td>MM</td>
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<td>MN</td>
<td>Middle Neolithic</td>
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### Other

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<tr>
<td>PTSO</td>
<td>Petras Rock Shelter</td>
</tr>
<tr>
<td>Σ-pal</td>
<td>Stratigraphical trenches of the palace</td>
</tr>
<tr>
<td>W</td>
<td>Wall</td>
</tr>
<tr>
<td>A.S.L.</td>
<td>Above Sea Level</td>
</tr>
<tr>
<td>diam.</td>
<td>diameter</td>
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<td>gr</td>
<td>gram</td>
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<td>h</td>
<td>height</td>
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<td>kg</td>
<td>kilogram</td>
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<td>width</td>
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<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

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<td>HT</td>
<td>House Tomb</td>
</tr>
<tr>
<td>R</td>
<td>Room</td>
</tr>
<tr>
<td>L</td>
<td>Lakkos</td>
</tr>
<tr>
<td>P</td>
<td>Petras</td>
</tr>
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<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

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

Olga Krzyszkowska

Abstract

Excavations carried out in the Petras cemetery between 2010 and 2014 have added a further 20 seals to those recovered in the 2005 and 2006 campaigns, already presented at the first Petras symposium. In date the new seals range from EM II/III to LM III, with many attributable in stylistic terms to MM II. The earliest examples are two foot amulets — one engraved, one unfinished — recovered from a deposit underlying House Tomb 3. Other pre-palatial seals include a cube and a zoomorphic seal of bone, and three stamp cylinders of hippopotamus ivory. Regrettably all are in poor condition, though in broad terms they can be associated with central Cretan output of EM III–MM IA date. However, two of the cylinders found in House Tomb 5 seemingly bear hunting scenes, virtually unparalleled in the extant repertoire, and stylistically unique.

Among the seals of MM II date, pride of place goes to a fine silver ring with round bezel bearing a star motif, comparable to seal impressions from Vano 25 at Phaistos. Ornamental designs also occur on two cushions; one made of an attractive variegated jasper, the other of a strange hard stone with glassy inclu- sions. A petschaft depicting a fine lion regardant from House Tomb 10 Room 1 is apparently made from spondylus shell. The new seals of MM II date from Petras also include six three-sided prisms. One made of a pale carnelian or chalcedony bears hieroglyphic inscriptions on two faces. It was found in House Tomb 10, Room 1, as were two prisms made of a rare soft stone, reddish in colour, sometimes dubbed 'pseudo-jasper'. Unusual stylistically, they are clearly from the same workshop, if not the same hand; one bears a short hi- eroglyphic inscription. More conventional is a prism of steatite from House Tomb 8, which clearly belongs to the large Malia–East Cretan Group. Two further prisms are related to this group in terms of motif, but

* I would like to express my continuing gratitude to the excavator, Metaxia Tsipopoulou, for affording me the opportunity to study and publish the seals from Petras. For financial assistance I am most grateful to the Institute for Aegean Prehistory (INSTAP) and the Institute of Classical Studies in London. I thank Tom Brogran and his staff for facilitating study at INSTAP-EC. For permission to study comparanda in the Herakleion Museum I am especially grateful to Directors past and present: Athanasia Kanta, Giorgios Rethemiotakis, and Stella Mandalaki. Members of the Museum staff, notably Katerina Athanasaki and Georgia Flouda, provided much valuable assistance. I also thank Lucilla Burn and Anastasia Christophilopoulou (both of the Fitzwilliam Museum, Cambridge), Doniert Evely, Eirine Galli, Erik Hallager, Artemis Karnava, Gavin McGuire, Kostas Paschalides (National Museum, Athens), Marielle Pic (Cabinet des Médailles, Paris) and Ingo Pini. Last but not least I cordially thank Maria Anastasiadou and Diamantis Panagiotopoulos for enabling me to make use of the unparalleled facilities in the CMS Archive in Heidelberg. All photographs of seals and impressions are by the author.
differ in material; one made of a soft whitish ‘paste’, the other conceivably bone. Two zoomorphic seals, both datable to MM II, are made of steatite and calcite. A rectangular seal of serpentine with centred circles on all six faces can be dated to LM III, and clearly belongs to a later use of the area.

Although the new seals from Petras cannot match the masterpieces found in the 2005 and 2006 seasons they nevertheless augment significantly the east Cretan glyptic repertoire. In motif, style and material all offer intriguing new insights into Prepalatial and Protopalatial seal engraving. However, while there is every possibility that some of these seals were made locally, in the absence of workshop material, the role of Petras as a production centre must still remain undefined.

Ten years of excavation in the cemetery at Petras have yielded unprecedented evidence for burial practices in eastern Crete, and an astonishing array of new finds, often wholly unparallelled. To date some 40 seals have been recovered from the cemetery, including 22 new pieces discovered since the first Petras symposium.1 Many are again multi-facial, augmenting the corpus by a further 40 seal faces. In terms of quantity, Petras is one of the most productive sites east of Malia. Although the new seals do not quite match the earlier finds in terms of quality, there is much of interest here, especially regarding materials. As at the first symposium, my aim here is simply to provide a broad overview of the new finds to encourage discussion and debate prior to final publication.

We may begin our overview with the earliest seals yet found on the site, namely two foot amulets, which came to light in summer 2014 in an EM IIA deposit underlying House Tomb 3, Room 4 (Structure 16). One, made of black steatite, bears a simple chevron motif on its face; the other is unengraved and made of spondylus shell (PTSK14.2302 and 2240; Fig. 1). Previously, in 2006, two small foot amulets had been discovered in House Tomb 4; neither is engraved. One is made of an attractive medium-hard stone, perhaps a beach pebble, charcoal grey with white veining; the second is again made of spondylus shell.2 It is impossible to say whether the unengraved examples were destined for incised decoration, but the hardness of the materials would have posed a significant obstacle. Published examples of engraved foot amulets made of chlorite, bone and steatite are known from Lenda, Krasi and Moni Odigitria, respectively; another occurs at Hagios Kosmas in Attica.3

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1 Krzyszowska 2012 for the 17 seals discovered between 2005 and 2009; three found in the 2010 and 2011 seasons were mentioned but neither described nor illustrated. Two of those pieces are presented below (PTSK10.944 and PTSK11.38); for the third (PTSK11.346, a six-sided rectangular block datable to LM III) see Rupp this volume. See also Postscript (below) for seals discovered during the summer 2015 excavations, which bring the total from the cemetery to over 40.

2 PTSK06.195 (stone) and PTSK06.122 (spondylus).
3 CMS IS no. 52 (Hagios Kosmas); II.1 nos. 212 (Lenda T. IIA), 407 (Krasi); also CMS X nos. 32 and 55 (unknown provenance). For further discussion, including unengraved examples, see: Branigan 1970; Pini 1972. For Lenda add now: Alexiou & Warren 2004, 34 no. I 68, fig. 8, pl. 9B (T. 1, context EM II, EM III–MM IA, unengraved); 52 no. Iβ 62, fig. 11 (T. Iβ, context EM IIA–MM IA, unengraved); 122 no. II 522, fig. 35, pl. 113E (T. II, context EM II or EM II–MM I, unengraved); 146 no. IIα 28, fig. 132C (T. IIα lower level, context EM II, engraved = CMS II.1 no. 212); 152 nos. IIα 66-67, fig. 41, pl. 136A (T. IIα upper level, context EM III–MM IA, both unengraved). For Krasi (CMS II.1 no. 407) add Galli 2014, 234, fig. 3. One stone example (engraved) from Moni Odigitria: Sbonias 2010, 204, 210, S27, pls. 60, 66). Two stone examples (unengraved) from Archanes Phourni: Sakellarakis & Sapouna-Sakellaraki 1997, 638, figs. 697, 699.
We have encountered spondylus before at Petras, specifically the unfinished bottle-shaped seal that I presented at the first symposium. At the time I remarked that no Cretan seals had been identified as spondylus, though I suspected that some could lurk amongst those published as stone, or even ivory. Indeed a seal from Poliochni, originally published by Bernabò Brea as spondylus, was wrongly designated “Marmor” in the CMS; I have since examined the piece and can confirm that the original identification is correct. Two seals from Mochlos now also proven to be made of spondylus, though originally published as ivory and steatite, respectively. Spondylus was occasionally used in the EBA for schematic figurines, which in Crete are known from Hagios 4 PTSK06.66. Krzyszczakowska 2012, 147-8, fig. 3.

Bernabò Brea 1964, 157, 602, 653, pl. 86g; CMS IS no. 67 (identification now corrected in Arachne).

CMS II.1 no. 478 and HM 2232 (Hughes-Brock 1995, 109-10, fig. 1a–b; the shape is a so-called “telephone receiver”). Unlike the Poliochni seal (above footnote 5) or the unfinished examples from Petras, the Mochlos examples present to the naked eye fewer diagnostic features, but both register c. Mohs 8, typical for spondylus (see below). CMS II.1 no. 478 is decorated with a simply incised X and drilled dots; HM 2232 has only “random scratching” on its two faces.

Charalambos, Malia and Trapeza. The main difficulty with spondylus is its hardness — when fresh the shell registers 6-7 on the Mohs scale, later effectively fossilizing to about Mohs 8, thus harder than semi-precious stones like agate or rock crystal. This helps to explain why the material was not used more frequently for Prepalatial seals. We will return to spondylus in due course.

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4 PTSK06.66. Krzyszczakowska 2012, 147-8, fig. 3.
5 Bernabò Brea 1964, 157, 602, 653, pl. 86g; CMS IS no. 67 (identification now corrected in Arachne).
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7 Ferrence 2008, 570-5, fig. 14. 59-60; Détournay et al. 1980, 100-102, figs. 136-38; Pelon 1970, 47-8, 139, nos. 91, 270, 271, pl. 14:3a (no. 271); Pendlebury et al. 1935-36, 122 nos. 6-7, pl. 18, fig. 25. For a duck and pestle from Hagia Irini, Kea: Krzyszczakowska 1999, 157, pl. 99; SF nos. 234-37. See also: Veropoulosidou 2011, 191-3 for brief summary (with references) of spondylus in Bronze Age Greece.
Next we turn to the bone and ivory seals found in recent excavations. Unfortunately like those previously found at Petras all are very badly preserved, hampering our ability to read the motifs. This is certainly true of a bone cube (PTSK14.1233) found in House Tomb 3, Room 4; although decorated on all six faces, only the faintest traces of engraving are now discernible. Of greater interest is a large bifacial cylinder with straight sides (PTSK12.950; fig. 2) from House Tomb 5, Room 10. The upper face (a) has a quatrefoil motif, quite legible. The second face, sadly, is badly decayed. This seems to depict a lion to the left, behind him a male figure and — with a bit of imagination — beneath the lion's belly a dog! If I am right, then this is a precociously early example of a hunting scene, a Bildthema that became popular in the LBA. Human figures occur on about a dozen Prepalatial ivory seals; possible hunt scenes appear on less than a handful.

As it happens a second bifacial cylinder from House Tomb 5, Room 10, this time with concave sides, also seems to bear a hunt scene (PTSK12.1051; fig. 2). Sadly face (b) is in particularly poor condition but appears to show a male figure with upraised arms, seemingly wearing a hat or helmet, and perhaps holding a club or other weapon. He is flanked by long-necked quadrupeds, regardant. Above the back of each seem to be human figures, in one case upside down, in the other on his side. One imagines there were further animals (and conceivably hunters) around the periphery. Insofar as one can judge, the style here seems completely different to that found on the straight-sided cylinder.

The remaining seals from House Tomb 5 are also poorly preserved. Not much can be said regarding PTSK12.913 (fig. 2), save to say it could be a part of a stamp cylinder, with a spiraliform motif on its face. Altogether more interesting is a little theriomorphic seal, which takes the form of a standing ram (PTSK12.2389; fig. 2). The shape is unique. Other theriomorphic seals in bone/ivory include heads of animals and birds, recumbent quadrupeds, and squatting monkeys. In total there are some 60 examples.

We may now turn to our main group of seals, all datable to MM II. The first two examples are again theriomorphic, and provide very welcome additions to the corpus in terms of material, shape and iconography. One represents a pair of recumbent lions, arranged tête-bêche on a flat rectangular base, the underside of which serves as the seal face (PTSK12.1390; Fig. 3). Made of black steatite, the bodies of the animals are very carefully carved; similar care extends to the engraving, where the milky-white colour indicates it is virtually workshop fresh. Depicted is a pair of bulls arranged tête-bêche. The finely-rendered details and smooth bodies are far removed from most contemporary output in steatite (e.g. among the prisms of the Malia-East Cretan Group). For that matter there

8 Cf. CMS II.1 no. 64 for a bone/ivory cube from Hagia Triada, with six round faces; the motifs belong to the so-called “Archanes Script Group”.
9 AS 139, 250-52; Krzyszkowska 2014.
10 Male figures are shown with animals, but without weapons on: CMS II.1 nos. 51 (quadrupeds), 222a (two lions or dog + lion), 311b (lions), 442b (lions), 469 (quadrupeds); II.6 no. 149 (lions). Other Prepalatial seals with human figures include: CMS II.1 nos. 55, 162, 300b, 385a; II.6 no. 150; VS1A no. 294. Also HM 2903a: Sakellarakis & Sapouna-Sakellaraki 1997, 682-3, fig. 773.
11 See above footnote 10 for possible Prepalatial hunting scenes. Face (a) of PTSK12.1051 bears an exuberant spiraliform design (fig. 2).
12 About 45 examples have appeared in the CMS, most conveniently accessed via Arachne searching under Seal form (Figürliches Siegel) and Material group (Bein = bone/ivory). Further examples occur at Archanes Phourni and Moni Odigitria, but none provides a convincing parallel for PTSK12.1241.
13 Closest parallels for the style are CMS III no. 177a and XI no. 143a (a pair of speared agrimia tête-bêche). See Anastasiadou 2011, 95-6 “Cluster of the Progressive Tendencies”. For Malia-East Cretan prisms see below and footnote 16.
are no parallels in the MM II repertoire for the shape of this seal.\textsuperscript{14} And the same applies to our second MM II theriomorphic seal, which takes the form of a recumbent animal, again possibly a lion (PTSK12.1624; Fig. 3). It is made of calcite, a milky-white translucent soft stone, sometimes mistaken for hard semi-precious rock crystal. The rectangular seal face is difficult to read: above a slender quadruped (perhaps a goat), head turned back runs to the right; beneath is a much stockier animal with swollen muzzle. I am inclined to see this as an outsized dog and the whole as an attack scene. Several calcite seals occur in MM II contexts at Malia; the material was also used in the LBA chiefly for seals bearing ornamental designs.\textsuperscript{15}

We now turn to three-sided prisms – the archetypal MM II seal shape, produced in soft and hard stones alike. We may begin with a prism of steatite, which can be readily assigned to the large Malia-East Cretan Group, comprising nearly 600 examples.\textsuperscript{16} In material, technique, and motif the new example from Petras is absolutely typical (PTSK14.2242; Fig. 4). On face (a) is a male figure with a pony tail seated next to a large pot or basket; on face (b) a running goat with splayed forelegs; and on face (c) a radiating motif.\textsuperscript{17} This is the second Malia-style prism to be found on the registers ca. 2.5-3 on the Mohs scale; fluorite ca. 4. Cleavage is diagnostic, though unfortunately not always visible: calcite (rhombohedral, 120-60°); fluorite (perfect cubic, 90-90° or octahedral). Following recent autopsy the following MM II seals can be identified as calcite: CMS II.2 nos. 65, 68, 128, 148, 246(?). See also Détournay et al. 1980, 176-7 nos. 246-247; cf. Poursat 1996, 103, pl. 47d, reporting calcite crystals across the site. Note also the theriomorphic seal CMS VIII no 36 (formerly Dawkins Collection, now in a private collection in Los Angeles) originally described as “gelber Kalzit”, “corrected” without autopsy in Arachne to fluorite.

\textsuperscript{14} Soft stone theriomorphic seals of MM I–II date number about one dozen, with hoofs predominating. Very few take the form of animals, e.g., CMS IV no. 29D (tête-bêche lions, very different in concept, from “Sitia”) and VS1A no. 40 (a frog? from Hagios Charalambos). See below footnote 15 for CMS VIII no. 36.

\textsuperscript{15} In older volumes of the CMS, seals made of soft to medium-hard translucent stones were wrongly identified as rock crystal. Following tests on several LH III ornamental seals, which proved to be fluorite, the CMS team “corrected” their earlier identifications retrospectively (but without autopsy or testing of individual pieces) and new finds were invariably designated “fluorite”. In fact many of the LM III “fluorite” seals at Armenoi are made of calcite; and there is considerable doubt as to whether fluorite actually occurs in Crete. See discussion in Krzyszkowska 2010, 255-6. Calcite

\textsuperscript{16} Anastasiadou 2011, 63-114; AS 92-5.

\textsuperscript{17} For seated male figures see Anastasiadou 2011, pls. 8-9 (e.g. no. 358a for pony tail; 548a for raised arm). For the goat with splayed forelegs, Anastasiadou 2011, pl. 15 no. 190a (though the head and horns differ), also CMS II.1 no. 418. For the whirl: Anastasiadou 2011, pls. 99-100.
site; the previously published example came to light in House Tomb 4.\textsuperscript{18}

Our next two prisms are perplexing to put it mildly. In shape and motif, they find good parallels among the Malia-East Cretan group, but they are not made of the steatite typically used for such three-sided prisms. An example from House Tomb 10, Room 2 (PTSK12.653; Fig. 4) shows (a) a bird; (b) three fish; and (c) a large jar.\textsuperscript{19} The material is decidedly strange. It is very soft; there is a sense of a thin outer layer, which in places shows a fine network of irregular cracking; within (or beneath) the material is chalky or powdery. Broadly similar characteristics are found in the so-called “white pieces” of the late Prepalatial period, where we seem to be dealing with a man-made composition.\textsuperscript{20} However, I am not convinced our prism is made of \textit{exactly} the same stuff. My best guess is that here we may be dealing with sepiolite, a clay mineral consisting of magnesium silicate and akin to Meerschaum.\textsuperscript{21}

Another three-sided prism is – if anything – even more puzzling (PTSK10.945; Fig. 4). The material is very light in weight and extremely friable. In places the surface is also covered with fine irregular cracks-

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\textsuperscript{18} PTSK09.1484: Krzyszowska 2012, 148-9, fig. 4.

\textsuperscript{19} For the motifs see Anastasiadou 2011, pl. 25 (CMS II.2 no. 264a from Zakros), pl. 29 (fish), pls. 48-50 (jug).

\textsuperscript{20} Pini 1990; AS 72-4; Müller in CMS III, p. 82. Hughes-Brock (in CMS VI nos. 8-11 and pp. 18-19) reports PIXE analyses pointing to a magnesium silicate com-

\textsuperscript{21} For sepiolite (Meerschaum) and Cretan sources see Hughes-Brock 2000, 110-11 (OAM 1941.88 now = CMS VI no. 83). I examined this piece in 2012, but the material does not resemble that of PTSK12.653 or PTSK10.945 (see below). Anastasiadou 2011, 34-5 suggests that two seals published as grey-white stone in CMS II.2 (nos. 133 and 164) may be sepiolite. Following recent autopsy I can confirm that CMS II.2 no. 133 and PTSK12.653 may well be made of the same (or very similar) material; slight variations could be attributed to depositional factors. CMS II.2 no. 164 is discernibly different.
ing, and at one point I wondered if the piece were made of bone. But the streak test excludes this option: when drawn across black card, this prism produces a white streak, characteristic of steatite and also sepiolite. Unlike the first prism, there is no real sense of a separate outer layer or powdery interior. Non-destructive testing of both could be advantageous, though I fear might not yield conclusive answers. In any case the motifs (though not the style) of PTSK10.945 also clearly belong with the Malia-East Cretan prisms. On face (a) a seated male figure with three vessels; on face (b) a pair dogs arranged antithetically; and on face (c) a quadruped being attacked by two small dogs.\textsuperscript{22}

\textsuperscript{22} For the motifs see: Anastasiadou 2011, pls. 8-9 (seated males; for the spiky hair see no. 498b); pl. 21 (crouching dogs); pl. 53 (“loop vessels” and “ball amphorae”). Attack scenes are rare on MM II (steatite) prisms: CMS II.2 no. 306b; III nos. 160b, 179a, 191a (similar treatment of the dogs); XII no. 14c. See also Anastasiadou 2011, 350-1.

Our next two prisms are of considerable interest, inasmuch as they are related in material, style and motif, and come from the same context — House Tomb 10, Room 2. The first (PTSK12.877; Fig. 5) shows a goat on face (a) with two elements in the field, conceivably goats’ heads, though possibly pots. Face (b) shows a large pithos with four handles, and in the field two spouted jugs, each with a circular handle. Finally face (c) has a pair of two-handled pots, and a pair of circular elements.
above. The second prism (PTSK13.1485; Fig. 5) has a pair of frontal rams’ heads on face (a); on face (b) four two-handled pots, similar to those on the first prism; face (c) bears a Hieroglyphic inscription. The reading is difficult. The first sign is undoubtedly 041, the second likely to be 025, yielding a previously unattested sign group. The third element is problematic, but might be 065. Although found twice on seals, this is classed as an explétif by CHIC, currently thought to have no lexical value.

The material of these prisms is exceptionally interesting. It is a relatively soft stone (Mohs 3–4), perhaps a fine-grained limestone, reddish-brown in colour. Its use for seals is infrequent, conceivably indicating that outcrops were rare, or only exploited infrequently. However, another MM II prism made of the same material, displaying the same style and similar motifs, has been found at Malia.

The CMS uses the term “pseudo-jasper” for certain soft and medium-hard stones, especially when red or reddish-brown in colour (similar to that of red jasper, a hard semi-precious stone). See Müller in CMS III p. 15 n. 30. However, recent autopsy by the present author reveals that not all seals listed under “Pseudojaspis” in Arachne actually meet this definition.

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Inextricably bound up with material are technique and style. On these two prisms we should note the extensive use of solid drill (for bodies, heads, noses and pots) and tubular drills (for the handles of the pots and horns of the rams), suggesting the use of rotary technology, normally associated with hard stone engraving (see also below). Only the face bearing Hieroglyphs is largely cut free-hand.

Two new prisms came to light during flotation in November 2014. The material of these prisms is very similar to the pair from House Tomb 10, Room 1, i.e. apparently a fine-grained limestone, but they display a wider colour range. The first (PTSK14.2603; Fig. 5) is pale buff to pinkish-orange in colour and bears purely figural motifs — a quadruped, a pair of jugs and a dog. The second prism (PTSK14.2604; Fig. 5) is pale buff to reddish-brown in colour, and has a creamy white vein running through the seal (visible as a slight indentation in the impressions). It bears a short inscription on face (b): an initial X, 044 (“trowel”), 036 (“throne”, on its side) and probably sign 018, producing a sign group attested on three other seals, including one from Petras. Here it is worth noting that the animal heads on face (a) resemble signs 011 and 016 known from the Hieroglyphic syllabary. In addition the seated males of face (c) may well be associated with sign 001, which CHIC classes as a non-lexical explétif when it occurs on seals.

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23 For the motifs see Anastasiadou 2011, pl. 12 (goats); pls. 48-50 (jugs); pl. 52 (pithos/jar); pl. 53 (“ball amphorae”).

24 For rams’ heads see Anastasiadou 2011, pls. 39-41.

25 I am most grateful to Erik Hallager and Artemis Kar-Ana for advice; any errors in interpreting the signs are my own.

26 CHIC pp. 13-14.

27 The CMS uses the term “pseudo-jasper” for certain soft and medium-hard stones, especially when red or reddish-brown in colour (similar to that of red jasper, a hard semi-precious stone). See Müller in CMS III p. 15 n. 30. However, recent autopsy by the present author reveals that not all seals listed under “Pseudojaspis” in Arachne actually meet this definition.

28 HM 2379 (a) antithetical rams’ heads and smaller antithetical animal heads; (b) a pair of running dogs one disposed above the other; (c) a four-handled amphora (?) and a pair of one-handled spouted jugs. Slightly paler in colour and differing somewhat in style is CMS II.2 no. 79 (cf. van Effenterre 1980, 566 fig. 836, where described as calcaire rose) from the street north of House Δ at Malia. CMS II.2 no. 24 (a Petschaft from Phaistos) displays a similar reddish-brown colour to the Petras prisms, while differing markedly in motif and style.

29 For #4-36-18 see: CHIC #255a (CMS VI no. 91a); CHIC #300c (CMS X no. 52, ex-Erlenmeyer now Basel); and PTSK12.1249 (see below and footnote 33). For sign 18 see CHIC p. 392. I cordially thank Erik Hallager for advice on the reading.

30 CHIC pp. 13-14. Sign 001 appears on a single clay document: a medallion from Knossos CHIC #041b reading X 085-011-001 quantity 32. On CMS I no. 425 “from Sitia” (= CMS #310b) sign 001 (not read) appears alongside 017-050 ><. On CMS III no. 230a also “from Sitia” (CHIC #240a), a seated male (not read) appears alongside the common sign group 044-005. On CMS II.8 no. 33 (not in CHIC) the seated male figure
Nevertheless, since the Hieroglyphic corpus is so limited, there is every chance that explétives (and other “non-readable” elements, like cat heads) will eventually join the ranks of script. At the very least they seem to indicate a certain “fluidity” between pictorial elements and script sensu stricto.

Our last prism (PTSK12.1249; Fig. 6) is made of a very pale but attractive carnelian, a hard semi-precious stone, registering 7 on the Mohs scale. To work hard stones cutting wheels and drills mounted on the lapidary lathe were needed; the technology is first attested in Crete during MM II, presumably acquired from the East. Two faces bear Hieroglyphic inscriptions. On face (a) we have the known sign group 044-036-018; the second face (b) seems to read 077-051, a combination not previously attested. The third face bears a pair of antithetical rams’ heads, resembling those seen on the red limestone prism PTSK13.1485a just mentioned. The undisguised use of solid and tubular drills features on certain hard stone seals in MM II, though whether it has any chronological significance is impossible to say. In any case in terms of quality this Hieroglyphic prism in no way matches the fine hard stone seals, mostly recovered in House Tomb 2, Room 3, which I presented at the first symposium.

Our next seal is an unusual loop signet or Petschaft made of a very hard white material (PTSK12.602; Fig. 6). Whereas most MM II hard stone petschafts are furnished with elaborately worked handles with torsional grooving, this is plain and, to be frank, rather crude-looking. An immediate clue comes from the hardness of the material (Mohs 8), and the series of tiny holes on the handle. In fact these are a sure giveaway that we are dealing with spondylus shell. I have already mentioned the use of this material in the EBA, including the unfinished Prepalatial seals from Petras (see above). But to my knowledge this is the first example of later date to be identified. Depicted is a lion regardant with dotted eye, open

![Fig. 6. MM II seals from House Tomb 10, Room 1. Above: three-sided prism of pale carnelian PTSK12.1249; impressions at ca. 2:1. Below: Petschaft of spondylus shell PTSK12.602, profiles, top of handle, seal face and impression; Photos O. Krzyszkowska.](image)

32 AS 83-5.
33 For 44-36-18 see above footnote 29. For face (b) alternative readings for the second sign might be 64 or 65. I am most grateful to Erik Hallager and Artemis Karnava for their advice; all errors remain my own.
34 Good examples are: CMS VI no. 96 (“Gournai”) and VII no. 45; also CMS II.2 no. 230 (“Malia”); XI no. 13. See also Krzyszkowska 2015a, 100-01 (for cat heads).
35 Krzyszkowska 2012, 149-56; figs. 4-8; Krzyszkowska forthcoming.
36 As is the example from House Tomb 4, PTSK06.145 (= Siteia Museum 13533): Krzyszkowska 2012, 149-50, fig. 4. See also: Yule 1980, 87-88; AS 83, 85, 91 nos. 143a, 144a.
mouth and protruding tongue. The mane is rendered by long diagonal grooves and a series of short “spikes” protruding from the outer contour; the body and hindquarters are carefully modelled; the tail is a graceful S-curve.37 Considering the hardness of the material, this is nothing short of a masterpiece.

A new seal shape that appears at the end of MM II is the so-called cushion, with a convex rectangular face. At least one example is known from the Phaistos sealing deposit, and the shape was popular for the MM II–III “architectural” group, comprising complex linear designs.38 Two examples figure among the new seals from Petras. One is made of an unusual hard stone consisting of a greyish-white matrix and black glassy inclusions (PTSK12.379; Fig. 7).39 The motif is a kind of lattice pattern, with short irregular strokes filling the lozenges.40 The second cushion is decorated with a chevron design, simple enough, though otherwise unparalleled in MM II glyptic (PTSK11.38; Fig. 7).41 The material is an exceptionally attractive variegated jasper — yellow or yellowish/orange and claret red or burgundy in colour.

Autopsy confirms that several more seals of MM II–III date were made from the same (or very similar) variegated jasper. A remarkably close parallel to the Petras cushion in shape, material and motif is a seal now in the Fitzwilliam Museum; it was found at Palaikastro in 1901, apparently with a larnax burial.42 This cushion bears a lattice pattern created by broad diagonal cuts. A similar, if more complex treatment, occurs on a magnificent amygdaloid of variegated

37 For a mane rendered as long vertical grooves (though lacking the “spikes” along the contour), cf. the lion regardant with hind-quarters terminating in a spiral on the three-sided prism of blue chalcedony from House Tomb 3, Room 2: Krzyszkowska 2012, 150, fig. 5 (PTSK05.499a = Siteia Museum 13515). Manes similar in concept, though simpler in detail, occur on the four-sided prism of carnelian from the same room: Krzyszkowska 2012, 150-1, fig. 6 (PTSK05.322a = Siteia Museum 13514). See also: CMS VIII no. 104; XI no. 82 (though in both cases the style differs).

38 For the Phaistos cushion: CMS II.5 no. 25. For “architectural” or “architectonic” motifs see Pini 2007; also Krzyszkowska 2015b. Several are attested at Phaistos: CMS II.5 nos. 242-244.

39 A similar but not necessarily identical material was used for the discoid with “architectural” motif, CMS III no. 123 (“Lasithi”) (autopsy September 2015). Another possible parallel for the material is CMS XII no. 126, a cushion decorated with an “architectural” motif, described by Kenna as “white marble with black specks”; also perhaps XII nos. 125 and 128 “black and white marble”. Autopsy is needed to confirm the identification and to verify whether these genuinely match the material of PTSK12.379.

40 Cf. CMS II.2 no. 75; also possibly an indistinct impression from Phaistos (CMS II.5 no. 11). In glyptic lattice patterns go back to EM II and persist into MM II, when they are attested in both soft and hard stone engraving, e.g., CMS II.1 no. 103; II.2 nos. 5, 42, 55c, 68, 75; II.5 nos. 1-14; III no. 118; VII nos. 213, 221. Lattice patterns are also used as subsidiary ornamentation in “architectural” motifs.

41 I know of no examples in MM II glyptic where chevrons serve as the principal motif; only rarely do they appear as subsidiary ornamentation in “architectural” motifs: CMS II.2 no. 9; VIII no. 105b.

42 CMS VII no. 221. There is some confusion in the museum records as to whether this was given by Bosanquet or Marshall (who investigated the burial and may have removed finds without authorization). Other items recovered were gold leaf and sundry beads. See also Gill 2000, 523.
Further seals from the cemetery at Petras

Also related in motif and material is a plump discoid bearing an ornamental design now in Paris, sadly without provenance. Another is a rather battered three-sided prism (said to come from Elounda) decorated with cat heads and ornamental motifs. A rectangular bar now in the Getty Museum bears an ornamental motif on one face and a pair of standing monkeys on the other. Last, but certainly not least, is an exceptionally fine four-sided prism from House Tomb 2, Room 3, which I presented at the first symposium. Other possible examples of this material exist among seals of MM II–III date, but autopsy will be needed to confirm the identifications. It may be that the material came from a single source, conceivably in eastern Crete.

Our final seal is a star, both literally and metaphorically. This is a signet ring with round bezel made of silver (PTSK12.199; Fig. 8). Extant round-bezelled signet rings are very few in number; the only contemporary examples come from the Hagios Charalambos Cave (one of bronze with an “architectural” motif, the other of silver decorated with naturalistic papyri) and a silver ring with ornamental motif from the vicinity of Mochlos Tomb III. A further example is attested on a sealing at Phaistos, so confirmed by the tell-tale imprint of the hoop abutting the round face. The bezel of our ring is decorated with an elaborate eight-pointed star motif with dotted tridents disposed between the apexes around the periphery, and in the centre a circle and dot. Radiating motifs, including star patterns, are very common in MM II glyptic and occur in soft and

43 CMS II.2 no. 75 from a LM III chamber tomb. Cf. also CMS II.2 no. 11 an amydaloid with similar motif from Kamilari (context MM IIB–IIIa, LM III), made from a different kind of variegated jasper. We have no absolutely secure context dates for the first appearance of amydaloïds; though several other examples in hard stone are decorated with MM II–III “architectural” motifs, e.g., CMS III no. 139, 141; X no. 246; XII no. 134.

44 CMS IX no. 33. According to the “N” register of the Cabinet des Médailles it was acquired in 1915 from MM. Dosseur et Cie, 5 rue de Lilles, Paris, acting on behalf of «M. Elie Geladakis, sujet grec». The latter seems to have been a dealer, who sold numerous antiquities to European and American museums.

45 CMS IV no. 132; Krzyszkowska 2015a, 201-02, fig. 2a.

46 CMS X no. 50 (ex-Erlenmeyer, now Getty 2001.14.32). Originally described as “agate” by Betts in CMS X, later “corrected” by him (in Christie’s London 1989, 29 no. 48) to “banded tufa (calcite)”. However, the engraving indicates a hard stone, while the colour image available through Getty Open Access makes the identification as variegated jasper virtually certain, as previously suggested in Krzyszkowska 2012, 152 n. 29. For the shape (readily datable to MM II) Krzyszkowska 2012, 153-4, fig. 8 (PTSK05.261 = Siteia Museum 13513).

47 PTSK05.291 (= Siteia Museum 13888): Krzyszkowska 2012, 153-4, fig. 7.

48 See also Giumlia-Mair et al. this volume.

49 For analyses and technical details see Giumlia-Mair et al. this volume.

50 Hagios Charalambos: CMS VS1A nos. 45-46 (dated MM III–LM I at p. XXXVI). See now Betancourt 2007, 594-96, Muhly 2008, also AS 126-7 n. 27, no. 212. The Mochlos ring (HM Edelmetal 376) bears a cruciform motif: Seager 1912, 39, IIIh, fig. 36. Further round-bezelled rings are datable stylistically to MM III–LM I or LM I: CMS I no. 410 (bone/ivory); II.3 nos. 38 (gold), 239 (lead); III no. 365 (stone); VII no. 68 (gold); additional examples are known from sealings (CMS II.6 nos. 123, 140-141; II.8 nos. 151, 154-156).

51 On HMs 739; see photos at CMS II.5 no. 182. See also Pini in CMS II.6 p. XXXIII n. 15.
hard stones as well as metal, but no close parallels for this particular treatment exist.\textsuperscript{52}

Although the new MM II seals from Petras fit well enough with the extant corpus, they are not simply more of the same. They offer important insights into the motifs and especially into the materials current during this seminal phase of glyptic development. In the absence of actual workshop material, “clusters” of seals made of unusual materials, displaying distinctive decorative motifs and possessing a known or presumed provenance may offer a first step in localizing possible production centres.\textsuperscript{53} That said, seals were small and easily portable, likely to travel far and wide before their final deposition; and materials too could travel — so we must not leap to the conclusion that seals found in the cemetery at Petras were necessarily made in the nearby palace or settlement.\textsuperscript{54} Further detail on this question will hopefully emerge as still more seals are recovered in future excavations at Petras.

\textbf{Postscript}

Five additional seals, and two further items not certainly seals, were recovered in excavations carried out under the direction of Metaxia Tsipopoulou in the cemetery of Petras during summer 2015. Since excavations are due to continue, it has been decided to defer discussion and illustration of these finds to a future article.

\begin{itemize}
\item \begin{enumerate}
\item A conoid made of hippopotamus ivory, poorly preserved. A radiating motif of five leaves (?) decorates the circular face (PTSK15.2129).
\item A three-sided prism of brownish-yellow steatite. The motifs are: (a) an animal head in profile juxtaposed with a smaller but similar animal head; (b) a whirl pattern; (c) a bucranium (PTSK15.1897).
\item A foliate back seal with flat oval face made of vibrant orange-red carnelian. The face is divided in two halves by three horizontal lines; above is the Hieroglyphic sign group 047-070 $>$ (previously attested once on CHIC \#286$\beta = \text{CMS III no. 235a}$); beneath the parallel lines is a radiating pattern (PTSK15.2079).
\item A Petschaft of rock crystal with finely grooved torus. The motif comprises a double S-spiral flanked by J-spirals terminating in leaves (PTSK15.1692). The Petschaft CMS III no. 110 “from Knossos” provides a close parallel for both shape and motif.
\item A signet ring with oval bezel, apparently made of a copper alloy (to be confirmed in testing). The motif is set vertically and depicts a water bird with outstretched wings flying upwards amid reeds and perhaps papyrus; the engraving is exceptionally fine (PTSK15.2088).
\item A flat disc of bone, pierced centrally, with deeply incised decoration arranged in a grid pattern on the upper surface only. Evidently to be attached to another element, now missing; not certainly part of a seal (PTSK15.1967).
\item A hollow cylinder made of soft white stone, perhaps marble. A series of grooves radiates outwards on both “faces”; although capable of making an impression, not certainly a seal (PTSK15.1348).
\end{enumerate}
\end{itemize}

\textsuperscript{52} Eight-pointed stars include: CMS II.2 no. 205; III no. 91; VI no. 159.

\textsuperscript{53} On the distribution of hard stone seals of MM II date: Krzyszowska forthcoming.

\textsuperscript{54} See Tsipopoulou & Hallager 2010 for the Hieroglyphic archive in the palace at Petras, securely datable to the end of MM IIIB. Seals used in the archive, attested through impressions, are estimated to number between 25 and 40 or 50; at most six bore Hieroglyphs (Tsipopoulou & Hallager 2010, 166–8, 195). To date there are no matches between seals used in the archive and seals recovered from the cemetery.
Discussion

MacGillivray: Do you have any idea about the sources of the variegated jasper? Are these seals local productions or imports?

Krzyszkowska: I do not know where the sources are, but it looks to me like there is a single source, because this material is so rare. I cannot prove that it even occurs on Crete, but jaspers do occur on Crete, and red jasper is also found on Crete. So it is perfectly possible that the source of this variegated jasper could be east Cretan. But seals can travel, and even the material from which seals are made obviously can travel, because we have imported materials. So, it is quite difficult, unless you have workshop material, unfinished seals and the lumps of the material, to pinpoint production centers. In default of that, using seals with known provenances you can try to find clusters that link both material and motif and that is what I have been trying to do here, and also with the so-called pseudo-jasper. We have two seals made of that material from Petras and one from Malia; I do not yet know of other MM examples.

Drakaki: I was wondering if you have thought of the possibility of an eastern prototype, or source of inspiration, for the star-shaped motif on the silver signer-ring?

Krzyszkowska: We have the star patterns from a number of eastern seals – there is a silver Petschaft from Mochlos with a radiating motif, not quite a star.

Drakaki: Yes, and I also think it is found on gold jewellery from the Near East.

Krzyszkowska: Oh, I see now, you mean the Near East, I thought you were talking about eastern Crete. Yes, it is possible.

Sotirakopoulou: The motif is well known in the Aegean in the EBA, for example there are stars on the frying pans. We need not look to the East for the inspiration.

Krzyszkowska: Yes and it is present also in the Early Helladic glyptic.

Macdonald: You mentioned that a drilling technique was introduced from the East. Could you please, for the sake of somebody who does not know, list whatever might be from the Near East in MM glyptic? Not in the terms of motifs, I am talking about techniques.

Krzyszkowska: There is the introduction of rotary technology which one has to use to engrave hard stones. One cannot engrave hard semi-precious stones of 7 on the Mohs scale without it.

MacGillivray: So you think that all these seals were engraved using techniques introduced from the East?
Krzyszkowska:

Either one is going to engrave using rotary technology or you are going to use techniques that were used in Crete since forever. I have forgotten exactly what the percentages are, but I think that it is about 20% of MM seals that are made with the rotary technique on semi-precious stones. This comes in right at the very end of MM II, we think, rather than earlier in MM II, and pretty much contemporaneously you have the first instances of this technology used in the East.

Greek abstract

Νέες σφραγίδες από το νεκροταφείο του Πετρά Σητείας

Οι ανασκαφές του νεκροταφείου του Πετρά μεταξύ του 2010 και του 2014 προσέθεσαν 20 νέες σφραγίδες, επιπλέον του συνόλου που είχε αποκαλυφθεί στις ανασκαφικές περιόδους του 2005 και του 2006 και είχαν παρουσιασθεί στο πρώτο Συμπόσιο του Πετρά. Χρονολογικά οι νέες σφραγίδες κυμαίνονται από την ΠΙΜ ΙΙ/ΙΙΙ μέχρι την ΥΜ III, με πολλές χρονολογούμενες με στυλιστικά κριτήρια στη ΜΜ ΙΙ. Τα πρωινότερα παραδείγματα είναι δύο περίπτα σε σχήμα ποδιών — ένα ενσφραγιστό και ένα ημιτελές — τα οποία προήλθαν από μια απόθεση κάτω από το Ταφικό Κτίριο 3. Άλλες προανακτορικές σφραγίδες περιλαμβάνουν ένα κύβο και μια ζωομορφική από οστό, αλλά και τρεις κυλινδρικές σφραγίδες από χαυλιόδοντα ιπποπόταμου. Η ακόμη πιο συνηθισμένη είναι ένα θαυμάσιο ασημένιο δακτυλίδι κυκλική σφενδόνη το οποίο φέρει διακοσμητικό θέμα αστεριών, συγκρινόμενο με σφραγίσματα του Χώρου 25 της Φαιστού. Διακοσμητικά θέματα υπάρχουν επίσης σε δύο σφραγίδες σχήματος προσκεφάλου. Η μια είναι κατασκευασμένη από όμορφο φλεβωτό ιασπί, η άλλη από ένα πέριεργο σκληρό λίθο ύπαξει. Ένα Petschaft με θαυμάσια παράσταση λέοντα προερχόταν από το Ταφικό Κτίριο 10, Δωμάτιο 1, μαζί με άλλα δύο πρίσματα κατασκευασμένα από ένα κέλυφος μαλακού λίθου, κοκκινοπορτί ντεκόρ, ο οποίος ήταν κατασκευασμένος από ανοικότομο χαλκηδόνι εντός ένας στεγεψαμένος κύκλος. Άλλες έτσι κατασκευασμένες σφραγίδες, ένα από τα οποία είναι κατασκευασμένος από χαλκηδόνι εντός ένας κύκλος, φέρει ιερογλυφική επιγραφή στην επιφάνεια της ιππείδας. Αν και οι νέες σφραγίδες του Πετρά δεν μπορούν να συγκριθούν με τα αριστουργήματα που βρέθηκαν στην ανασκαφή το 2005 και 2006, εν τούτοις αυξάνουν σημαντικά τη γνώση μας για το περπατόριο της...
μικρογλυπτικής της Ανατολικής Κρήτης. Ως προς τα διακοσμητικά θέματα, το στιλ και το υλικό, όλες οι σφραγίδες ενδιαφέρουν ενδιαφέρουσες νέες απόψεις για την Προ- και Παλαιο-ανακτορική σφραγιδογλυφία. Όμως, αν και είναι πάρα πολύ πιθανό ορισμένες από τις σφραγίδες αυτές να έχουν παραχθεί τοπικά, η απουσία υλικού εργαστηρίου σφραγιστικής σφραγίδων αφήνει ακόμα ανοικτό το θέμα του Πετρά ως κέντρο παραγωγής.

* * *

Olga Krzyszkowska  •  Further seals from the cemetery at Petras