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Early Iron Age Knossos: An overview from the Knossos Urban Landscape Project (KULP)

THE KNOSSOS Urban Landscape Project (KULP) is a *synergasia* conducted by the British School at Athens and the 23rd Ephoreia of Prehistoric and Classical Antiquities. The objectives of KULP are: a) to document systematically the visible archaeological record of occupation of the urban centre at Knossos and its associated cemeteries, from its initial Neolithic occupation ca. 7000 BC down to the early 20th century, b) to document the existing archaeological resources of the valley as an aid to their preservation and to inform future development in the area, and 3) to integrate previous investigations with the new survey data, to reconstruct the long-term developmental history of one of the most important centres in the Aegean.

The intensive surface survey, which was conducted between 2005 and 2008, covered the urban nucleus of ancient Knossos and its immediate surroundings in the Knossos valley. The material recovered includes some 355,000 sherds of all periods. According to the preliminary examination, approximately 1,800 of those sherds date to the Early Iron Age. While very large in relation to the amount of material of this period collected in other Aegean surveys, this represents only the highly diagnostic material and will increase as the detailed study of the material advances. The abundance of data promises a relatively strong basis for future detailed reconstruction of the development of the community.

1. Permits for fieldwork have been granted to the British School at Athens by the Hellenic Ministry of Culture and Tourism. Administrative support for the project is provided by the British School at Athens, the 23rd Ephoreia and the Institute of Archaeology, University College London. Principal funding has been provided by the Institute for Aegean Prehistory and the British Academy, with additional funds and support in kind from the British School at Athens, 23rd Ephoreia and the Institute of Archaeology, University College London. A. Kotsonas' study is further funded by the New Perspectives on Ancient Pottery project of the University of Amsterdam. The illustrations are the work of KULP. Preliminary publications on the project as a whole include: Grammatikaki et al. 2005-2006. Bredaki et al. 2006-2007. Whitelaw et al. 2006-2007. Bennet et al. 2007. Bredaki et al. 2007-2008. Bredaki et al. 2008-2009. Bredaki et al. 2009-2010. Μπρεδάκη et al. 2010.

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Αρχαιολόγος, ΚΓ΄ Εφορεία Προϊστορικών και Κλασικών Αρχαιοτήτων, zaxv73@yahoo.gr By integrating the results of the survey with a re-evaluation of the results of archaeological work in the valley over the past century, we seek to address research questions concerning the size of the settlement of Knossos, its history of development and the related social transformations over a period of more than half a millennium. For the Aegean, this time-span represents the transition from the Bronze Age palace-states to the emergence of the Iron Age city-states. As the largest palatial centre of the 2nd millennium BC and as one of the most powerful city-states of Crete in the 1st millennium BC, Knossos presents an excellent focus for the study of this complex phenomenon. The study of Knossos of this period is also of interest to scholars researching the notable increase in Mediterranean connectivity manifest during the Early Iron Age. This is because the city imported artefacts and commodities from many parts of the ancient world. In fact, there is no other site in the Early Iron Age Aegean with imports ranging from the Middle East to Sardinia<sup>2</sup>.

These major research questions cannot possibly be fully addressed at this early stage in our research, but are briefly mentioned here to outline the aims of our work on the Early Iron Age. Presently, emphasis is placed on the documentation and study of the pottery, as well as on determining the relation between this material and the activities represented in the areas where it was collected.

To establish the chronological range of the different ceramic fabrics recovered by KULP, period analysts have identified the principal fabrics in use during each phase, based on the rich material from earlier BSA excavations stored in the Stratigraphic Museum. This process enables the assignment of dates to many sherds which preserve no diagnostic characteristics of shape or decoration, the kind of material which is usually discarded and is systematically excluded from study and publication in most excavations and surveys. Obviously, the dating of this kind of material is mostly quite broad, but this is not necessarily a problem since survey is principally aimed at an understanding of long-term patterns and processes.

The study of the pottery focuses on morphology and technology. In the case of Knossian Early Iron Age pottery, these characteristics have received extensive treatment by several British scholars<sup>3</sup>, who have built a detailed chronological and typological sequence of the local ceramics. Moreover, the fabrics of local and imported wares have been studied through chemical<sup>4</sup> and petrographic<sup>5</sup> analyses. These major contributions form the essential base-line for the study

- 2. Kotsonas 2008, 295.
- 3. Payne 1927-1928. Brock 1957. Coldstream 1996, 2001.
- 4. Liddy 1996. Tomlinson and Kilikoglou 1998.
- 5. Boileau and Whitley 2010.

of the material recovered by KULP. This material, however, also offers the possibility for a re-consideration of past research, particularly when studied in conjunction with the retained pottery from other, published and unpublished Knossian contexts. This integrated approach is producing a more comprehensive understanding, which is outlined below.

Macroscopically, past research has identified two or three fabrics in Knossian ceramics of the Early Iron Age<sup>6</sup>. This impression is considerably expanded by the present study, on the basis of which eight clearly distinct fabrics have been identified in Knossian pottery from the period in question. The macroscopic fabrics were established in the study seasons of 2010 and were presented in the  $A\rho\chi\alpha\iota o\lambda o\gamma\iota\kappa \acute{o}$   $E\rho\gamma o$   $K\rho\acute{\eta}\tau\eta\varsigma$  II<sup>7</sup>. A few months later, the results of a project of petrographic analysis of Knossian pottery were published<sup>8</sup>. Regardless of some problems to be considered elsewhere, this project is of major significance for the study of Knossian pottery and our work in KULP. It was particularly useful that the fabrics previously identified macroscopically corresponded to a considerable extent (but admittedly did not completely match) the fabric groups proposed through petrography. This correspondence is illustrated in **figure 1**, which necessarily simplifies a more complex picture to be fully discussed elsewhere<sup>9</sup>.

Fabrics A, B and C are widely attested in the local pottery of the period. These fabrics are closely linked by colour, but the first group is without any visible inclusions, the second contains grey-bluish inclusions and the third combines grey-bluish inclusions with white ones. Fabric A is only used for fine wares, while fabrics B and C are found in fine to coarse wares. The fabrics in question occur at Knossos already in the Middle Minoan period and persist through the first millennium BC. Nonetheless, local vases made in these fabrics during the Early Iron Age often show a surface which fires to a dull brown-red colour and this provides a useful aid for dating even thoroughly abraded sherds.

Fabrics D and F mostly occur in pithoi and are therefore interesting for the local economy, particularly the storage of agricultural produce. Both groups appear mainly in the 7th century BC, at which time production of pithoi on the island underwent an increase in quantity and quality<sup>10</sup>. Fabric D is characterized

- 6. Coldstream 1996, 412-414; 2001, 61.
- 7. Κοτσώνας κ.ά., forthcoming.
- 8. Boileau and Whitley 2010.
- Petrographic fabric group 3 presents non-homogeneous macroscopic characteristics and is therefore excluded from figure 1. The non-distinctiveness of this group comes as no surprise since This group has close mineralogical affinities with the two main local fabric groups (Boileau and Whitley 2010, 232).
- 10. Simantoni-Bournia 2004, 21-47.

Basic macroscopic characteristics of fabrics commonly seen on Early Iron Age pottery from Knossos	Fabric codes used for KULP purposes	Corresponding fabric groups used in the petrographic analysis by Boileau & Whitley 2010
Light red, fine fabric	A	Fabric group 6
Light red, with grey-bluish inclusions	В	Fabric groups 2 and 5
Light red to pink, with grey-bluish and white inclusions	С	Fabric group 1
Light red to pink, with few grey-bluish and white inclusions and much organic tempering	D	Fabric group 1
Light red to red, with much silver mica, some dark grey and off-white inclusions, and few schist flakes of varied colour	E	Not sampled
Grey, fine fabric (fired in reducing conditions)	F	Loners nos 182-183
Light red to red, with much silver mica and dark, white and dark (red-)brown inclusions	G	Fabric group 4
Light red, with off-white, grey, dark grey and rarely red and white inclusions	Н	Not sampled
Light reddish brown, with white and dark inclusions and little silver mica	I	Fabric group 7

Fig. 1. Basic macroscopic characteristics of fabrics commonly seen in Early Iron Age pottery from Knossos, including the correspondence between the fabric codes used for KULP purposes and the fabric groups defined in the petrographic analysis by Boileau and Whitley (2010).

by the technological innovation of organic tempering, which is only rarely seen in earlier material. Fabric E, which is fairly fine for a pithos fabric and micaceous, is matched on pithos fragments collected from Lyktos and Afrati in 1959-1964 and kept in the Stratigraphic Museum at Knossos<sup>11</sup>. This fabric therefore probably represents vases imported from the district of Pediadha.

The cooking ware of Early Iron Age Knossos is made of fabrics H, I and G. Fabric H is very common in Minoan and Subminoan pithoi and cooking pots, but is abandoned before or early in the Protogeometric period. From this period onwards, the cooking pots from Knossos are regularly made in fabrics G and, to a lesser extent, I. These two fabrics are clearly distinguished from other Knossian fabrics in showing respectively high and low quantities of silver mica. The provenance of these fabrics, particularly of fabric G, remains unsettled<sup>12</sup>, but scholars agree that it is not produced with raw materials found

<sup>11.</sup> On Afrati pithoi, see Brisart 2007.

<sup>12.</sup> Coldstream 2000b. Kotsonas 2008, 65. Boileau and Whitley 2010, 233-234. Kotsonas 2012.

in the immediate vicinity of Knossos. Fabric G has in the past been given an East Cretan provenance<sup>13</sup>, not least because macroscopically similar fabrics occur in the area of Kavousi. Nonetheless, one project of chemical analysis did not lend support to the case for Kavousi<sup>14</sup> and another produced no concrete results on the question<sup>15</sup>. For this and other reasons, it has been argued that the suggestion of an East Cretan provenance is highly questionable<sup>16</sup>.

Very recently, it has been suggested on the basis of petrographic analysis that the fabric in question, and perhaps fabric I as well (which correspond to petrographic fabric groups 4 and 7 respectively) are unlikely to be Cretan and could well be Cycladic<sup>17</sup>. The case for an off-island provenance for the fabric(s) is hard to believe, not only because this would require that the Knossians depended on off-island sources for most of their cooking pots over several centuries, but also because the supposed Cycladic source has not been traced and no products made in this fabric are known from outside Crete. On the contrary, at least one very distinctive type of juglet made in fabric G is widely found in central Crete, including at sites which lie at some distance from the coast and are not renowned for their links overseas 18. The alternative possibility that clay was brought to Crete in bulk involves very convoluted scenarios and remains unconvincing<sup>19</sup>. Besides, fabric G is apparently very well-represented in one of the very few Knossian Early Iron Age contexts where much coarse ware has been retained, namely the Unexplored Mansion well 1220. On these grounds, Kotsonas has suggested that this fabric is local to central Crete and the relevant clay beds have simply been missed by geological prospection to date. He has tentatively argued that these clay beds lie in the vicinity of Lyktos<sup>21</sup> because a fabric which is macroscopically identical to the Knossian fabric in question, is very common in the Late Classical and Hellenistic pottery from Lyktos<sup>22</sup>. The argument which claims that the fabric of Lyktos and the Pediadha does not match at a macroscopic level the fabric from Knossos<sup>23</sup> is

Whitley and Boileau forthcoming.

- 13. Payne 1927-1928, 251-252: 88-99. Coldstream 2000b.
- 14. Τσιποπούλου 2005, 545-546.
- 15. Liddy 1996, 473, 478-479, sample P131.
- Boileau and Whitley 2010, 233. Kotsonas 2008, 65; 2011a, 139-141; 2012; forthcoming, 242-244. Whitley and Boileau forthcoming.
- 17. Boileau and Whitley 2010, 233-234, 241. Whitley and Boileau forthcoming.
- 18. Kotsonas 2012 provides the fullest review.
- 19. Boileau and Whitley 2010, 241. Kotsonas 2012. Whitley and Boileau forthcoming.
- 20. Coldstream and Sackett 1978, 49-60.
- 21. Kotsonas 2011a, 141; 2012; forthcoming, 243-244.
- 22. Erickson 2002, 47-48 fn. 21, 71 fn. 69; 2010, 34-35.
- 23. Boileau and Whitley 2010, 233. Whitley and Boileau forthcoming.

unsupported. There is a close correspondence between the two at the macroscopic level, seen in direct visual comparison among many examples of KULP fabric G and the petrographic group 4, with a 5th century vase which has previously been identified as an import from Lyktos to Knossos<sup>24</sup>. The case for a Lyktian origin, however, remains to be confirmed by future research.

The debate about provenance has obscured a very important fact about fabrics G and I, namely, that these fabrics appear early in the Protogeometric period<sup>25</sup>, not in the Protogeometric B period as some believe<sup>26</sup>. The newly introduced fabrics basically replaced those used in previous centuries, most notably fabric H. The shift in cooking pot fabrics seen at Knossos is particularly interesting because it may be related to changes in food preparation and the mobility of populations which are argued to have characterised the transition from the Bronze Age to the Early Iron Age in the Aegean and the Eastern Mediterranean<sup>27</sup>.

The distribution pattern of Early Iron Age pottery identified by the KULP in the Knossos valley has been recognized as surprising since the first years of the project<sup>28</sup>. Scatters of sherds from this period extend over a wide area (**fig. 2**), from the west bank of the Kairatos river to the west slopes of the acropolis hill, and from the north slopes of the Gypsades hill to roughly midway between the Minoan palace and the Kephala hill. This area is very extensive relative to the norm for Aegean sites of the Early Iron Age, but includes both domestic and burial contexts.

Distinguishing between domestic and burial contexts is essential for determining the size of the settlement and understanding the demographic, sociopolitical and economic development of the local community. The distinction between the two types of contexts is facilitated by the custom of the Cretans of this period to bury their dead outside settlements.<sup>29</sup> The distinction between

- 24. Erickson 2010, 35, fn. 59.
- 25. Coldstream 2000b. Kotsonas 2011a; 2012; forthcoming.
- Coldstream 1996, 346-347. Τσιποπούλου 2005, 59: ΗΔ2, 121: Η3694, 358. Ρεθεμιωτάκης και Εγγλέζου 2010, 135. Boileau and Whitley 2010, 238, 241. Whitley and Boileau forthcoming.
- 27. Karageorghis and Kouka 2011.
- Grammatikaki et al. 2005-2006, 108. Bredaki et al. 2006-2007, 108. Whitelaw et al. 2006-2007,
   Bennet et al. 2007, 106-107. Μπρεδάκη et al. 2010, 296. Κοτσώνας και άλλοι, forthcoming.
- 29. Coldstream 2000a, 260, 295-296. On the basis of some unspecified literary sources of the 4th century BC ( $\Sigma \tau \alpha \mu \pi \alpha \lambda i \delta \eta \gamma$  1994, 48) or Plato's Minos 315D ( $\Sigma \tau \alpha \mu \pi \alpha \lambda i \delta \eta \gamma$  2004, 116), Nikos Stampolidis has argued that the Cretans of the historical period buried their dead intra-muros. The passage of Minos, however, does not actually suggest this. In that passage a nameless companion of Socrates discusses the customs of the Greeks (not specifically the Cretans) compared with the customs of non-Greeks and mentions that at some unspecified time in the past, the Greeks buried the dead in the house. There is hardly any support for this practice in

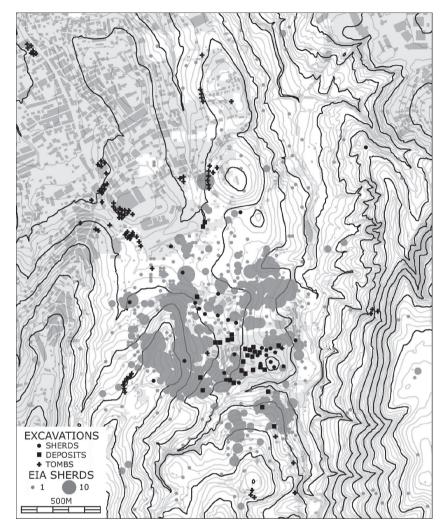


Fig. 2.
Map of the Knossos valley marking the location of excavated deposits and cemeteries of the Early Iron Age.
The scatters of Early Iron\Age pottery collected by KULP are shaded dark gray, unsurveyed areas in light gray.

settlement and cemeteries can be mapped on the basis of the pottery recovered by KULP, as well as on the rich, albeit fragmentary picture available for the Knossian topography from previous fieldwork.

A more subtle but variable indication distinguishing between settlement and burial areas is provided by the density of surface material. Generally, the settlement is represented by relatively uniform scatters covering broad areas (fig. 3); material brought to the surface through the intervening later occupation

the archaeological record of Early Iron Age to Classical Crete. On the contrary, there is ample evidence from many sites on the island which suggests the spatial separation between domestic and burial areas.

Fig. 3.
Early Iron Age pottery from the northwest part of the settlement of Knossos.



Fig. 4.
Early Iron Age pottery
from a 10m<sup>2</sup> collection
on the upper west slope
of the acropolis hill.



strata by pit-digging and stone robbing. In contrast, disturbed tombs can result in localized, high-density patches of material. Two cases in point are located on the west slopes of the acropolis hill, overlooking the Early Iron Age cemetery of Fortetsa<sup>30</sup>. In the first case (**fig. 4**), abundant material, along with the good state of preservation of the surface decoration of these ceramics, suggest a fairly recently disturbed burial context. Another nearby spot, located high on the west slopes of the acropolis hill (**fig. 5**), produced a comparable concentration of material. The provenance of this pottery from one or more burial contexts is suggested by the discovery of a fragment of a clay stand (**fig. 5**: top row, middle),



Fig. 5.
Early Iron Age pottery from a 10m<sup>2</sup> collection on the upper west slope of the acropolis hill.

a shape which is mostly found in burial contexts at Knossos<sup>31</sup>. The distributions of shapes which are typically connected with domestic contexts, such as cooking pots and pithoi, may not be of much help in distinguishing between settlement and tombs, because these shapes also occur in Knossian tombs in the Early Iron Age<sup>32</sup>. Possible tombs have also been identified elsewhere, for example to the south of the settlement. A case in point is a concentration of Protogeometric and Geometric pottery (**fig. 6**) south of the Vlychia stream, east of the sanctuary of Demeter and not far north of the location of a tomb excavated some decades ago<sup>33</sup>.

By this process, we can begin to define the nature and extent of the settlement of Knossos for the period in question. Even at this early stage in detailed analysis, it appears that this was a nucleated, rather densely occupied settlement extending

- 31. Coldstream 1996, 368.
- 32. Coldstream 2001, 61-63. For cooking ware in particular, see also Whitley and Boileau forthcoming.
- 33. Coldstream et al. 1981.

Fig. 6.
Early Iron Age pottery
from a 10m² collection
south of the Vlychia
stream and east
of the sanctuary
of Demeter.



from at least the east slopes of the acropolis hill to the Kairatos river, and from the Vlychia stream until roughly midway between the Minoan palace and the Kephala hill. The current degree of chronological resolution does not allow for a detailed assessment of the historical development of the settlement, but it can preliminarily be noted that conical feet, typical for Protogeometric pottery, occur over much of this area and suggest the rapid urban growth of Knossos already from the beginning of the first millennium BC<sup>34</sup>. The settlement was surrounded by cemeteries lying at a close distance, as well as others more distant, cut into the soft limestone of the low hills defining the valley.

The picture which emerges from KULP calls into question previous interpretations of the nature and extent of the settlement of Early Iron Age Knossos. Stylianos Alexiou, one of the honorees of the 11th Cretological Conference, was the first to consider the question<sup>35</sup>. He suggested that Knossos in this period was small in size and was surrounded by a number of villages, each with its own burial ground (for these cemeteries see **figs 2** and 7). As fieldwork at Knossos continued, a different view appeared to be more convincing. According to this, Knossos of the period in question was small but nucleated and was served by the surrounding cemeteries<sup>36</sup>; satellite settlements, including a coastal

<sup>34.</sup> Coldstream 1984, 317. Also Wallace 2010, 231-262 for the whole of Crete.

<sup>35.</sup> Αλεξίου 1950, 296-297.

<sup>36.</sup> Hood and Smyth 1981, 16-18. Coldstream 1984.

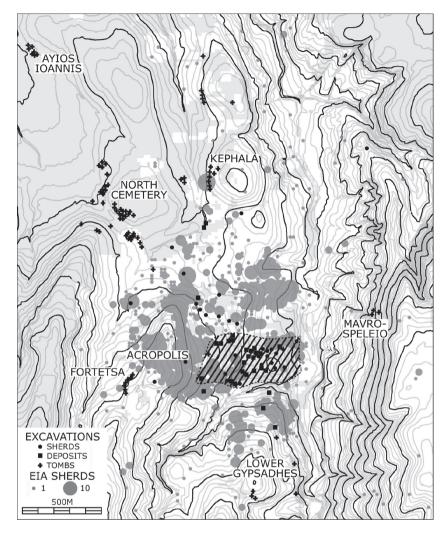


Fig. 7. Map of the Knossos valley marking the location of excavated deposits and cemeteries of the Early Iron Age. The scatters of Early Iron Age pottery collected by KULP are shaded dark gray, unsurveyed areas in light gray. The outlined, hatched area covers the extent of Early Iron Age Knossos, as proposed by N. Coldstream.

site under modern Herakleion, were located at a considerable distance. The principal proponent of this view, Nicolas Coldstream<sup>37</sup>, envisaged a nucleated settlement extending from the area of the Minoan palace to the east slopes of the acropolis hill (**fig. 7**). The population of a site of this size would have been around 1,500-2,000<sup>38</sup>.

The argument for a relatively small Knossos does not find support from recent fieldwork, including evidence for Protogeometric occupation in a small test under the central part of the Roman Villa Dionysus. This occupation is less

<sup>37.</sup> Coldstream 2000a.

<sup>38.</sup> Whitelaw 2000, table 1.

than 300m north from the north limit of Coldstream's Knossos and this short distance makes the proposed attribution of the occupation to a distinct hamlet<sup>39</sup> rather unconvincing. It can now be seen to lie well within the wide scatter of Early Iron Age material revealed by KULP. The argument for a large Knossos further fits the picture of the site as a major metropolis of Crete, which is indicated by the rich discoveries made in its cemeteries<sup>40</sup>. The Homeric epics further suggest that Knossos dominated much of central Crete<sup>41</sup> and the conception of this emerging city as a center with considerable economic and political influence, particularly over sites in north central Crete, pervades many recent archaeological interpretations<sup>42</sup>.

In short, the picture which emerges from KULP has the settlement of Knossos occupying a fairly extensive area of some 40 hectares during the Early Iron Age. This picture best explains the data available and ties in well with many current interpretations. This settlement is three times larger than Coldstream's Knossos and does not involve the surrounding villages assumed by Alexiou on the basis of the dispersed clusters of tombs. No evidence for an associated hamlet has been identified by KULP in the vicinity of the Fortetsa cemetery, nor has any such evidence been recognised south or east of the extensive North Cemetery. The areas to the north and west of this cemetery could not be surveyed, as they are now covered by continuous occupation, but scattered rescue excavations in these areas have revealed no traces of Early Iron Age occupation. More distant satellite sites were not identified in the area surveyed by KULP and any that exist must be located further away, beyond the limits of the area surveyed. It therefore appears that the location of Knossian cemeteries is not connected to the nature of habitation, but depended on landscape morphology and the availability of favourable locations for the cutting of chamber tombs into the soft limestone, in slopes usually similarly used in the later Bronze Age. At the same time, the creation and long-term use of distinct cemeteries surrounding the community seems likely to represent social divisions within the community, larger than the individual tomb-using group.

The proposed re-evaluation of the extent of Knossos in the Early Iron Age is particularly important for the diachronic study of the site, as well as the

<sup>39.</sup> Coldstream 2000a, 299. Coldstream and Hatzaki 2003, 299-300.

<sup>40.</sup> Brock 1957. Coldstream and Catling 1996.

<sup>41.</sup> Sherratt 1996.

<sup>42.</sup> Matthäus 2000a, 274; 2000b, 541-542. Rizza 2008, 302. Γκαλανάκη και Παπαδάκη 2009, 272. Ρεθεμιωτάκης και Εγγλέζου 2010, 197-200. Some skepticism is expressed in Stampolidis and Kotsonas 2006, 349 and Kotsonas 2010.

study of the settlement history of Crete in this period. Relevant research has to this date placed too much emphasis on refuge sites in high altitudes and has underestimated the evidence from urban sites in the lowlands of Crete<sup>43</sup>. Research on Knossos and other lowland sites like Phaistos in the Messara and Grivila in the Mylopotamos plain will eventually contribute to a more balanced view of regional settlement development<sup>44</sup>.

In conclusion, the results of the KULP surface survey, integrated with evidence from excavations conducted in the Knossos valley for over a century, can contribute significantly towards understanding the history of the site, the island and beyond. The integrated approach followed by our project is yielding important results concerning the topography, demography, economy, society and material culture of Knossos of all periods, including the Early Iron Age. This last period was clearly an exceptionally important one for the history of the site. The local community recovered rapidly from the upheavals of the late second millennium BC, grew rapidly in size and flourished as a cosmopolitan hub of the Aegean and the Mediterranean. These major developments obviously require further documentation and more detailed analysis; the present paper can only hint at the ways in which the study of the material from KULP, in conjunction with previously collected evidence, will contribute towards the study of a major metropolis of the Aegean and the Mediterranean.

<sup>43.</sup> E.g. Wallace 2010.

<sup>44.</sup> Kotsonas 2011b.

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# ΠΕΠΡΑΓΜΕΝΑ ΙΑ΄ ΔΙΕΘΝΟΥΣ ΚΡΗΤΟΛΟΓΙΚΟΥ ΣΥΝΕΔΡΙΟΥ

(Ρέθυμνο, 21-27 Οκτωβρίου 2011)

# ΤΟΜΟΣ Α2.1 **ΤΜΗΜΑ ΑΡΧΑΙΟΛΟΓΙΚΟ**

Επιφανειακές-γεωφυσικές έρευνες Τοπογραφία – Οικιστική οργάνωση – Αρχιτεκτονική Κρήτη – Αιγαίο – Ανατολική Μεσόγειος



ΙΣΤΟΡΙΚΗ ΚΑΙ ΛΑΟΓΡΑΦΙΚΗ ΕΤΑΙΡΕΙΑ ΡΕΘΥΜΝΗΣ

Ρέθυμνο 2018