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Prehistoric Knossos: Tracing its Long-term History through its Surface Record

The Knossos Urban Landscape Project[1], a collaboration between the 23rd Ephoreia of the Hellenic Archaeological Service and the British School at Athens, is an intensive surface survey of the ancient city of Knossos and its associated cemeteries.

Over a century of research by both institutions has made Knossos one of the most thoroughly investigated sites in the Eastern Mediterranean. This has produced a wealth of information, documenting nearly eight millennia of occupation. Despite this intensive investigation, much of the site has never been tested, and there was a clear need for a systematic and intensive survey of the entire site, to put our understanding of its development on a more substantial and secure footing. It was considered essential that it be conducted as a collaboration between the British School and the Herakleion Ephoreia, since the two institutions had shared responsibility for the archaeology of the Knossos valley during that first century of intensive investigation.

The objectives of the project are:

1. KULP is a collaboration between the British School at Athens (BSA) and the 23rd Ephoreia of Prehistoric and Classical Antiquities. Permits for fieldwork have been granted to the BSA by the Hellenic Ministry of Culture and Tourism. Administrative support for the project is provided by the BSA, 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 BSA, 23rd Ephoreia and the Institute of Archaeology, UCL. We thank all of these institutions for their support. Harriet Blitzer, Camilla Briault, Peter Callaghan, Joanne Cutler, Eleni Hatzaki, Antonios Kotsonas, Borja Legarra Herrero, Andrew Shapland and Peter Tomkins have all provided advice on pottery, contributing to the on-going study, for which we are also grateful. Finally, we would like to thank the residents of the Knossos valley who allowed us to survey their properties, and over 140 participants in the project to date who have assisted with the fieldwork and processing of material.

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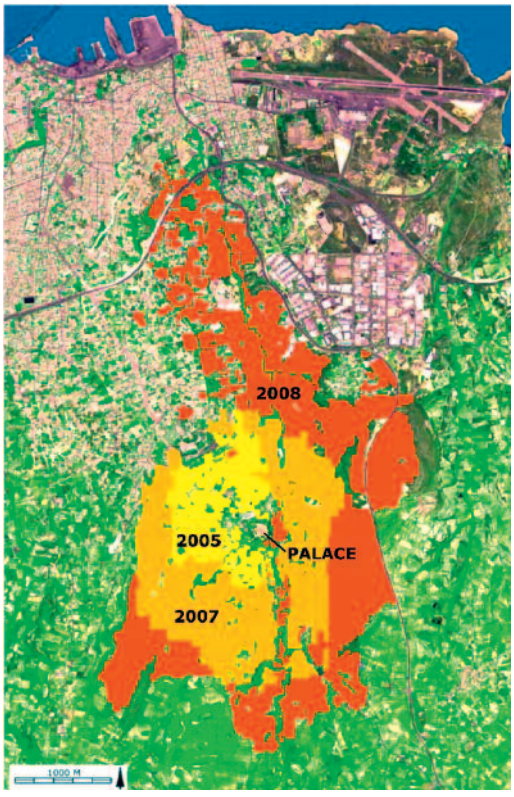
1. To record the archaeological resources to aid their protection and to help manage development in the valley
2. To document systematically the surface archaeological record, allowing us to contextualise and re-assess a century of previous investigations
3. To integrate the new surface data with all existing data, to reconstruct the long-term urban development of the community at Knossos, which will also establish a broad base-line to facilitate the development of new research at this exceptional site.

Fieldwork began in 2005 on the city site, and moved outwards in later years into the cemeteries. 2006 was devoted to preliminary documentation of the 330,000 artefacts collected in 2005, with survey resuming in 2007 and 2008. Through study seasons since 2009, we have now completed initial documentation of all recovered material, and specialist studies have begun.

Over three six-week field seasons, we surveyed all available fields in the study area, on a 20m grid, providing dense and high-resolution coverage (**fig. 1**). Collectors picked-up all surface materials in a 10 square metre area, to provide a tightly-defined standard sample. They then examined the full square for features, and collected any additional exceptional artefacts. Outside the city, to ensure that we would cover the entire study area, we searched faster transects (40m^2), again within 20m grids. This enabled us to complete the fieldwork as originally planned, on schedule.

Fig. 1. The survey area.



Overall, we collected some 355,000 sherds, about 50,000 fragments of tile, and another 20,000 or so non-ceramic artefacts, in 21,000 squares, spread over 11 square kilometres. As a result, we now have much more extensive and continuous documentation of the archaeological record of the valley. The good preservation of much of the recovered material was surprising, with some 22% of sherds preserving some trace of shape or decoration. This is 2-3 times more than in most surface survey assemblages. In part this reflects the decision to collect all material for washing and examination, rather than the standard survey strategy whereby only sherds seen to preserve features or decoration

are collected. This required washing and processing ten times the quantity of material normally collected, but the costs of collection outweigh those of processing, and we doubled or tripled the sample of diagnostic material, for the same collection costs.

The relatively good sherd preservation probably also reflects the relatively recent disruption of deeper sub-surface deposits through intensive cultivation in the past few decades, and the regular cycling of material in the topsoil to the surface, with intensive cultivation continuing over much of the city site. Because the pottery of Knossos has been so well documented with well-preserved examples from excavations[2], we can do a lot more with our material than most surveys - nearly all of even the plain body sherds can be assigned to at least broad periods on the basis of fabric alone.

An over-riding question for every surface survey is what the surface material can tell us about the preserved sub-surface sample of material, and the original depositional patterns of interest, particularly on a deeply-stratified site. Obviously such material will have much lower spatial, temporal and behavioural resolution than can be provided by *in situ* material from an excavation, but on a largely level site like Knossos, most surface materials are unlikely to have been displaced very far from their original place of deposition. As well, while the Prehistoric levels may be up to 6m below the surface, and therefore well protected from plough damage, later occupants of the site often dug pits as bedding trenches for walls or to bury rubbish, bringing earlier material to the surface. At Knossos, as is well documented by the Unexplored Mansion excavation[3], this disturbance was particularly severe, as later occupants dug down to Minoan levels to recover dressed ashlar blocks for re-use. This also accounts for the often limited preservation of *in situ* deposits of Early Iron Age to Hellenistic date in most excavations.

The preliminary summary which follows is based on our initial assessment of the ceramic material; specialist studies will increase both the quantity of material which can be assigned to specific dates, and the precision with which material can be identified, filling out and refining this picture considerably, though probably not changing the broad outlines sketched here.

In the far north, we extended the survey area just north of the motorway, to include the excavated LMIII cemetery and Neolithic site at Katsambas. While the site itself had been seriously damaged by construction in 2006, the Neolithic site

2. e.g. Momigliano 2007. Coldstream et al. 2001.
3. Popham 1984. Sackett 1992.

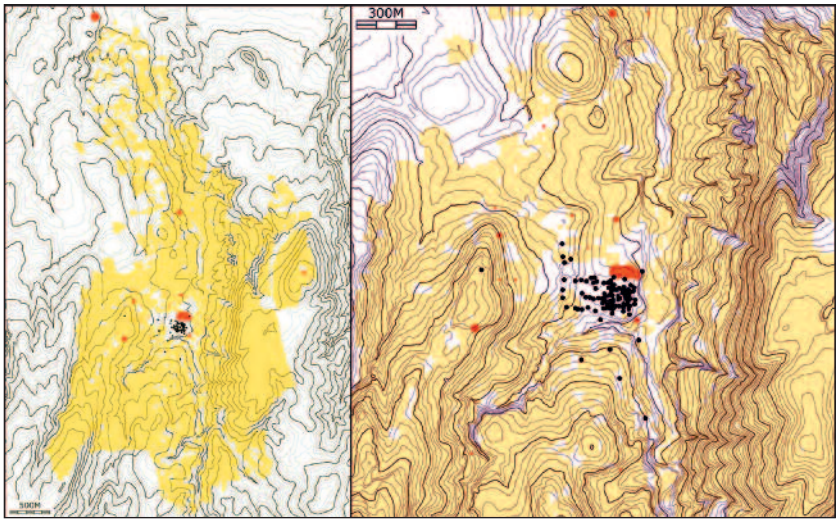


Fig. 2.
Distribution of Neolithic surface ceramics, and excavated traces.

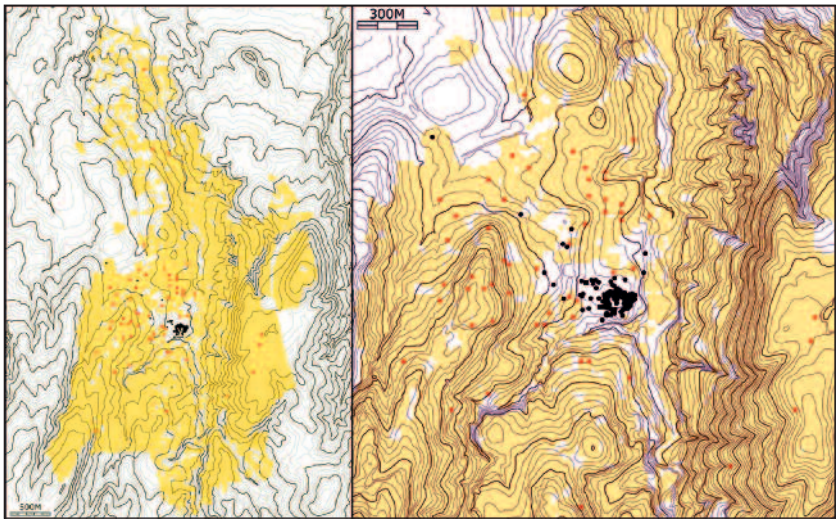


Fig. 3.
Distribution of EM I-II surface ceramics, and excavated traces.

was recognisable through the recovery of sherds beneath the few surviving olive trees. Elsewhere, the only significant quantity of Neolithic material occurs immediately north of the Palace, an area not previously investigated (**fig. 2**). This material was recovered far enough beyond the fence to be unlikely to simply be material washed from Evans' spoil tips. This extends our understanding of the early site down this gradual slope, currently visually cut off from the palace hill by the site fence and pines, but originally, like the west, providing relatively easy access to the hill on which the Neolithic community was established. Both collections usefully confirm that even low-fired and relatively fragile Neolithic sherds can survive on the surface, indicating that the absence of such material elsewhere

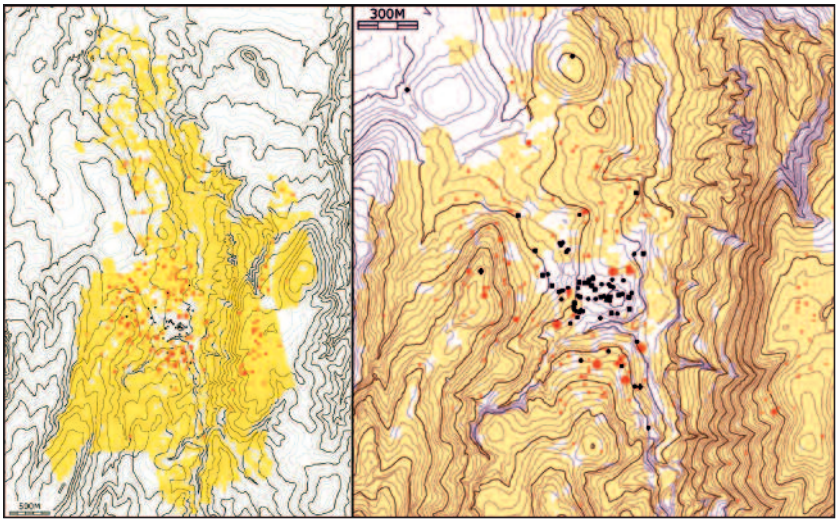


Fig. 4. Distribution of EM III-MM IA surface ceramics, and excavated traces.

in the survey area, should indicate that occupation throughout the Neolithic was highly nucleated on the original hill under the later Palace.

For Early Minoan I and II (**fig. 3**), again, the absence of any dense sherd concentrations away from the Palace hill, confirms the nucleated nature of settlement. Excavated deposits indicate only a limited expansion of occupation, westwards to the modern road. The absence of deposits of EM I-II material in rescue tests in the upper village, confirms the limits of expansion on the west. Deposits under the Palace, and in the area immediately to the west, indicate that occupation extended over some 6.5ha., probably fairly densely occupied[4], making it one of the larger communities in the Early Bronze Age Aegean. Evidence for large scale construction and terracing at the core of the site going back at least to EM IIA, is increasingly being recognised through the re-study of past excavations[5].

Early Minoan III to Middle Minoan IA witnessed a rapid lead-up to the emergence of the Minoan palatial states. At Knossos, this saw the construction of the massive North-west terrace, underlying the later Palace. Rescue excavations under the villages and modern road reveal ceramics of EM III-MM IA as the earliest material on natural soil, over some 20ha, documenting dense and rapid expansion of the community during this relatively short phase (**fig. 4**). Sherds recovered in a few outlying excavations (Evans' soundings in the North Quarter

4. Whitelaw 2012.
5. Tomkins 2012.

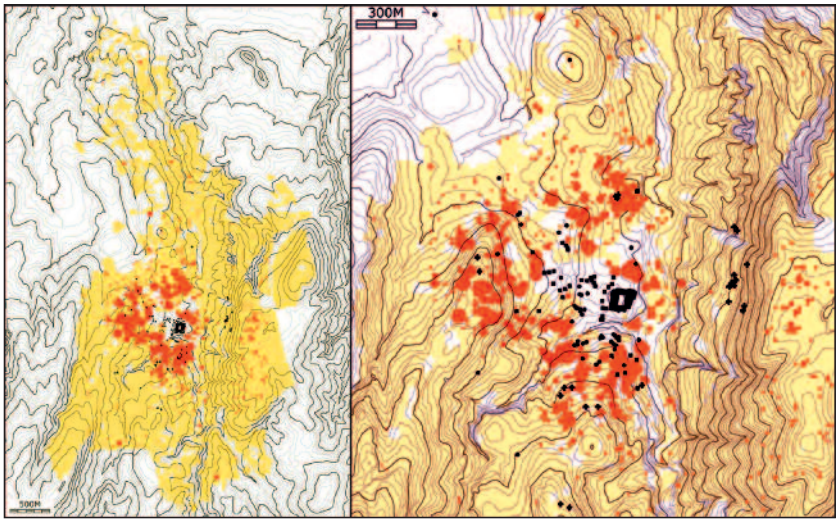


Fig. 5. Distribution of MM IB-MM IIIB surface ceramics, and excavated traces.

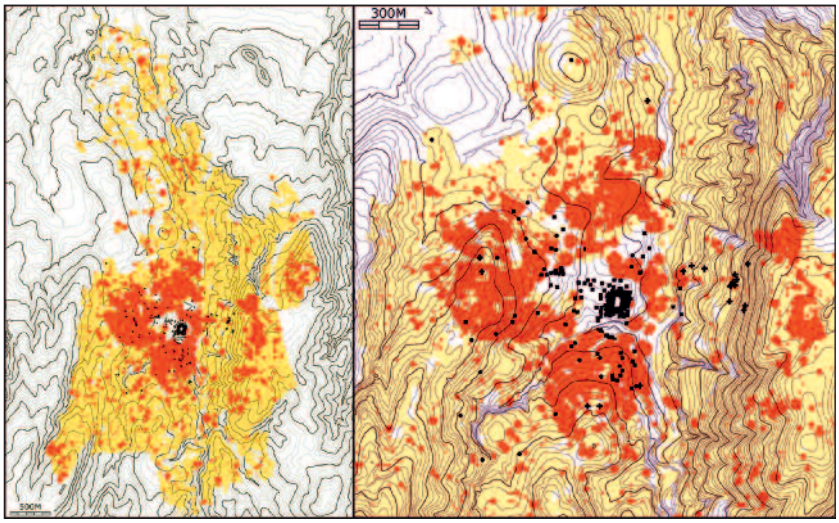


Fig. 6. Distribution of Neopalatial surface ceramics, and excavated traces.

of the City, soundings beneath the Villa Dionysus) raise the possibility that the settlement may have expanded to as much as 40ha[6], and our surface material suggests some degree of occupation throughout this larger area, including an expansion onto Lower Gypsadhes to the south, where a few sherds of this date have also been recovered in the limited excavations on the lower north and east slopes (Caravanserai, House of the High Priest).

While large-scale construction began at each of the three main palaces in the

6. Whitelaw 2012.

later Prepalatial phase, MM IB saw the monumentalisation of the palaces, which at Knossos was elaborated continuously over the subsequent six centuries[7]. Considerable quantities of material can be ascribed to the Middle Minoan periods, documenting a doubling of the occupied area to 3/4 of a square kilometre by the end of MM III (**fig. 5**). The surface material plotted in Figure 5 includes diagnostic MM Ib-MM IIIb material, plus less diagnostic dark-painted sherds, the majority of which will also be of MM date. This was the period in which Cretan polities established sustained contacts with the Bronze Age states of the eastern Mediterranean. While out on the fringe of the known world, Knossos was as large and significant a centre as most of the Levantine urban centres it interacted with.

Expansion continued into the later Neopalatial period, when occupation probably covered about a square kilometre, nearly doubling previous estimates for the extent of the site, based on the excavated evidence alone (**fig. 6**). Judging by documented residential densities[8], this should represent a population on the order of 25,000 inhabitants. This is urbanism on a scale comparable to all but the largest imperial capital cities of the Bronze Age eastern Mediterranean.

Graphing site area by phase gives a good indication of this sustained period of exceptional growth (**fig. 9**). This appears to represent continuous exponential growth from the late Prepalatial into the Neopalatial period, which has been questioned at the other major palace sites, and a fairly static situation from the Protopalatial to Neopalatial periods also seems to be documented by regional surveys on Crete[9]. This exceptional pattern for Knossos could have been met by internal growth in favourable circumstances, but we would need an intensive survey of the local region to see whether any component of this might result from nucleation of a formerly more dispersed population. The development of significant second-order centres at sites such as Poros, Amnisos, Archanes and Tylissos within the broader territory of Knossos, suggest growth and prosperity more generally within north-central Crete. Exceptional growth at Knossos would be consistent with it achieving wide administrative dominance, within at least central Crete, during the Neopalatial period[10].

Models of community organisation at Knossos have been based on the excavated evidence for the character of the structures excavated at various points

7. Macdonald 2012.
8. Whitelaw 2004.
9. Driessen 2001.
10. Warren 2004.

at the core of the city[11]. Excavated evidence can provide detailed evidence that surface evidence alone can rarely provide. However, with nearly continuous surface coverage across the city, we can hope eventually to be able to explore a range of distinctions across the entire community, for example in the kinds of activities undertaken, the nature and quality of the ceramics consumed and differential access to imports.

Based on limited excavated tomb evidence, and analogy with the distribution of the better represented Late Minoan II-III tombs, the city was ringed by cemeteries on the east, south and north (**fig. 7**). We did not expect to recover much evidence for cemeteries on the surface, since the rock-cut chamber tombs in use in the MM and LM periods will normally collapse and protect their contents, providing little opportunity for material to be brought to the surface. Consistent with this, we recovered little surface material at several known cemeteries (e.g. Sellopoulo, Katsambas). To the west, on the summit of the Acropolis, at least two earlier tombs stopped being used in LM IA[12], possibly when occupation expanded over the summit and down the west slope. It is just possible that some of this newly recognised extended sherd distribution on the west, north and south, might represent ploughed-out pithos cemeteries ringing the city, but the high densities of material make this unlikely, and our collections in these areas do not contain exceptional quantities of pithos or larnax fragments.

We can also suggest numerous outlying cemeteries, defined by extensive but low density scatters of Late Minoan material. Those to the north cluster in the areas of the previously known LM II-III tombs at Kephala and Isopata, but suggest much more extensive cemeteries than have yet been documented through excavation. On the slope of southern Ailias, a regular but low density distribution of sherds is likely to represent material eroded from chamber tombs cut in this rocky slope; there is no evidence that it has eroded from occupation on the summit above. Other small cemeteries may be suggested on the slopes surrounding the city on all sides. Key for confirming these will be developing a ceramic 'signature' allowing us to recognise burial assemblages. This can be defined from excavated assemblages, as well as the surface data from areas of known cemeteries, such as the upper slopes of Lower Gypsadhes. This will allow us to distinguish outlying cemeteries from small-scale hamlets or limited activity areas.

On the summit of Ailias to the east, we can now better define two distinct

11. Whitelaw 2004. Adams 2004. Hatzaki 2011.
12. Preston 2013.

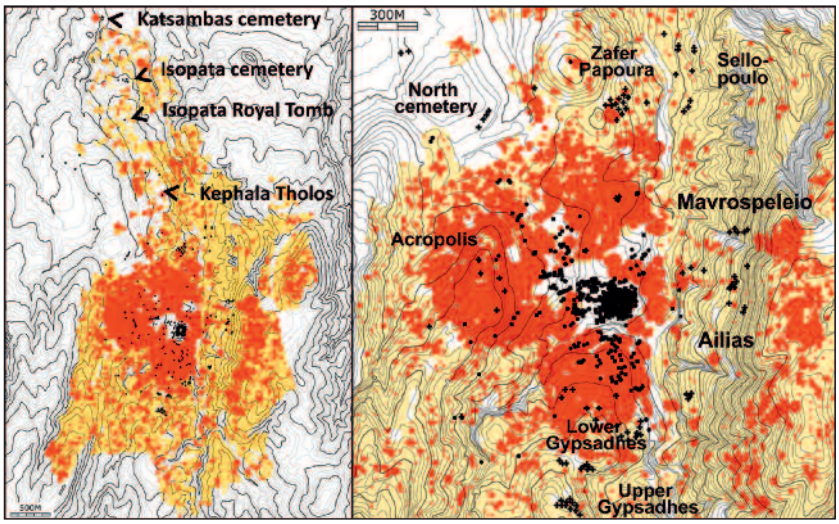


Fig. 7.
Distribution of known and probable cemeteries.

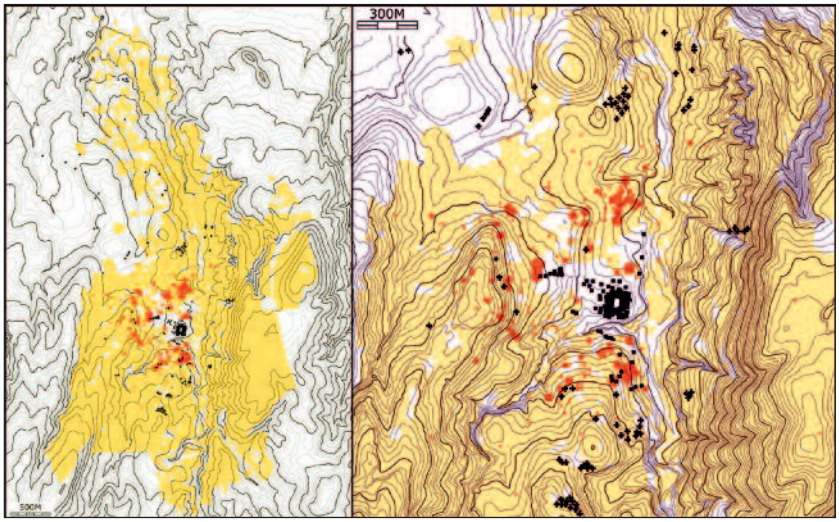


Fig. 8.
Distribution of LM II-III surface ceramics, and excavated traces.

small suburbs, one originally established in the MM period, but the northern essentially LM. To the north-east, an extensive but low density scatter covers the slopes and summit of the tall conical hill of Prophitis Ilias, which has excellent views along the north coast. In the far south-west, a large but very low density scatter may indicate contemporary occupation distinct from the city itself.

For the LM II-III periods, we have not so far attempted to sub-divide our material (**fig. 8**). Because of the relatively small sample, it is at present difficult to determine whether what we are seeing is a significant reduction in the size of the community, or simply much more limited representation or recognition of material over a broadly comparable area. This phase spans the collapse of palatial

Minoan society, with the destruction, partial reoccupation, and eventual abandonment of the Palace. Settlement evidence documenting how its demography related to the changing political status of the centre would provide a welcome new source of information on the scale, pace and significance of this transformation. As with other phases, through re-examining dated excavated deposits, we are trying to define a wider range of diagnostic characteristics that we can rely on for dating our material, rather than just the highly decorated fine wares principally studied to date. However, realistically speaking, we have so few examples of the most highly diagnostic fine painted wares, that even with expert assessment, the material may be too limited for confident phase by phase mapping of the extent of occupation through this dramatic collapse. From the limited documentation provided by rescue excavations, we expect that occupation contracted very dramatically in LM IIIB-C. While the community was considerably smaller than at any point in the previous millennium, it probably remained larger than any contemporary site on the island.

With the revival in prominent burial from LM II, much of the excavated evidence from Knossos comes from its extensive cemeteries; the survey evidence for cemeteries has been noted above. One surprise which emerged from plotting earlier rescue excavations, is that most of the LM burials excavated from the 1950s-70s during the development of Ayios Ioannis, east of the main road between Knossos and Herakleion, were cut into the slope of a ridge just about as imposing as that on which the Kephala Tholos and Isopata Royal Tomb were erected in LMII. This suggests there may originally have been two parallel ridges of major cemeteries, running from Knossos to the port at Poros-Katsambas. The western has now been completely built-over by the development of Ayios Ioannis.

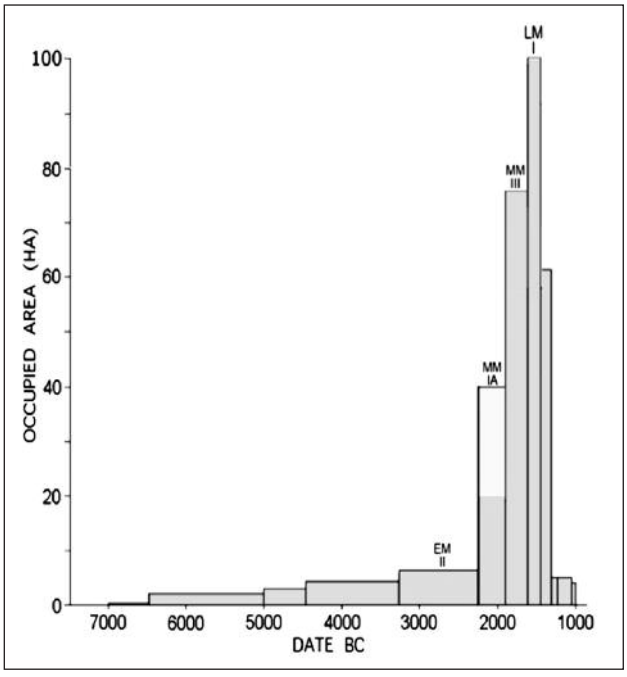


Fig. 9. Estimated occupation area by phase, Prehistoric periods.

Viewed over the long term, we can now document very rapid urbanisation in the Late Prepalatial period, with continuing dramatic expansion through the Protopalatial and Neopalatial periods (**fig. 9**). This gives a dynamic and novel perspective on both the origin, and continuing development of a Minoan urban

centre and its associated state. In addition, Knossos in the late Neopalatial period can now be documented to be twice the size of any other palatial centre, providing new support for the argument that it politically dominated at least central Crete.

This sketch is very much our first assessment of the survey data; specialist studies have just begun, and with such a large collection of material spanning nine millennia, will continue for some years. But this brief summary provides an outline of what the project is trying to do, and what it has accomplished to date in terms of developing our understanding of Prehistoric Knossos. It is obvious how much it builds on the previous century of research by both the British School and the Ephoreia. But it is also aiming to do something new – to provide a more comprehensive framework of site development, within which past research can be more fully contextualised and interpreted, working at the scale of the city as a whole, not just individual excavations.

Where does the project go from here? As noted, specialist study of the most diagnostic materials has just begun and will continue for a number of years, to allow us to add detail to the outline presented here. We are also working with the extensive retained material from past excavations, to improve our ability to extract useful information from the less diagnostic, plain body sherds, which constitute nearly 80% of our collections. This material is usually simply discarded on Mediterranean surveys, if even collected in the first place. But with such an intensively studied and well-documented ceramic sequence[13], we can do considerably more with battered body sherds, even simply on the basis of fabric, than most other projects. This is a major benefit from long-term, intensive engagement at the site.

We also need to analyse and assess the preservation, recovery and analytical biases in our collections, to ascertain what inferences we can and cannot base on the data, and with what degrees of confidence. 355,000 sherds might seem more than enough for interpretation, but once it is broken down by collection unit, and by broad phase, or shorter, more behaviourally relevant slices of time, the samples from each collection location become quite limited. So we need to work out strategies for effective and convincing analysis and interpretation based on the samples available.

This will also require developing an understanding of the effects of recent land-use to understand the formation and transformations of the surface archaeological

13. Momigliano 2007.

record. Away from the fairly level core of the city, we will also need to understand localised geomorphological change, to determine which surface materials are in situ, which are derived from upslope, and which parts of the landscape have been masked by colluvium eroded from upslope.

While not yet employed extensively at Knossos, limited geophysical investigations have indicated that these techniques can be applied productively[14], potentially across the whole city as well as to document known and suspected cemeteries. Because intensive occupation shifted northwards through time, distinct areas of the site should be particularly amenable to revealing period-specific details of urban planning and occupation density, as well as any exceptional structures. Ground-penetrating radar has developed rapidly in recent years, and tests suggest it may be able to map down to Minoan levels, even in the deeply stratified core of the city, otherwise essentially inaccessible.

Many visible ancient features have been noted over the past century[15], and many additional walls, probable tombs and quarries identified by the survey need to be examined in detail, and many will deserve further documentation.

With the broad coverage of the survey, considerably more sense can be made of the abundant small, otherwise isolated, rescue excavations undertaken throughout the past century. With our contextual information, many could be informatively considered together to understand local areas within the site, and the documentation and study of these excavations is a further area for collaboration between the British School and the Ephoreia.

With these follow-up investigations, aimed at helping us to understand better the existing excavation and surface evidence, as well as the full study, documentation and analysis of the surface material we have collected, we will be busy for some time to come. While our primary obligation is studying and publishing our own fieldwork, the project aimed from the start at broader goals: to document and thereby help protect the archaeological resources; to synthesise existing research and encourage more integrated study of previously collected data; and to provide a baseline for developing new research at the site.

What was obvious in preparing for this project, and we draw upon constantly as we try to make sense of our new material, are the tremendous resources available for the study of the long-term development of Knossos. Through the exceptional nature of the site, this research also provides a cross-section of most

14. Shell 1997.
15. Hood and Smyth 1981.

of the history of human occupation on Crete, and indeed the wider southern Aegean. As well as bringing together the varied evidence for the long history of the site, and its changing character and importance in different periods, the Knossos Urban Landscape Project will lay a solid foundation for the next century of productive collaboration between the British School and the Archaeological Service at Knossos.

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ΠΕΠΡΑΓΜΕΝΑ
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(Ρέθυμνο, 21-27 Οκτωβρίου 2011)

ΤΟΜΟΣ Α1.1

ΤΜΗΜΑ ΑΡΧΑΙΟΛΟΓΙΚΟ

Μεσόγειος – Αιγαιακός Κόσμος – Κρήτη
Πολιτισμικοί Ορίζοντες – Οικιστική – Αρχιτεκτονική

ΙΣΤΟΡΙΚΗ ΚΑΙ ΛΑΟΓΡΑΦΙΚΗ ΕΤΑΙΡΕΙΑ ΡΕΘΥΜΝΗΣ

Ρέθυμνο 2018