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The long-term dynamics of Knossos in context

Abstract

In this concluding paper of this series devoted to reporting on the Knossos Urban Landscape Project (KULP), we emphasise what we are learning from the project about specific transformations in the history of the site, and highlight various challenges to previous understandings that are emerging from our data, considered in conjunction with information from previous explorations at the site, which we are still exploring as study and analysis continues.

Building on and complementing over a century of intensive excavation at the site, the Knossos Urban Landscape Project is enabling us to fill in and refine our understanding of the developmental history of a major Aegean centre. Because the ceramics of Knossos across all periods of its occupation have been analysed and documented in detail, this provides an opportunity to develop a fine-grained analysis of long-term urban history, spanning nearly eight millennia and two cycles of urbanisation and state formation and collapse. We have linked the analysis of our new survey data with restudy of the retained material from the rescue excavations conducted by the British School in the valley, and the published results of major excavations, for an integrated synthesis of the history of the site.

This project has produced surprising and indeed challenging information affecting every period of occupation of what has been considered to be a very well-understood site. These challenges are touched on here, and are considered in more detail in the specialist papers presented in this conference session and also published in this volume.

Keywords: Knossos, Crete, Aegean, Greece, urbanism, urbanisation, surface survey, urban survey

In this concluding paper of this series devoted to reporting on the Knossos Urban Landscape Project (KULP), we want to emphasise what we are learning from the project about specific

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transformations in the history of the community, and highlight various challenges to previous understandings that are emerging from our data, considered in conjunction with that from previous explorations at the site, and which we are still exploring as study and analysis continues. The objectives and methods of the project are outlined in our introductory paper in this volume (Whitelaw *et al.* 2018), and details emerging from our research are presented in the five period-specific papers by our colleagues, also included in this volume (Legarra Herrero 2018; Shapland 2018; Cutler and Whitelaw 2018; Kotsonas 2018a; Trainor 2018).

Because even low-fired Neolithic sherds survived on the surface immediately north of the palace, and at the known site of Katsambas at the far north of the survey area, we can have considerable confidence that the absence of any significant concentrations of sherds in the valley indicates that occupation was strongly nucleated on the low tell underlying the Bronze Age palace, for the first four millennia of occupation in the valley (see Legarra Herrero 2018, Fig. 1, this volume).

The extremely slow expansion of the community through the four millennia of the Neolithic is fairly well documented by excavations under and around the palace (Fig. 1). But the definition of the full extent of the community, particularly during the final phases of the Neolithic, relies on only limited tests outside the footprint of the palace and West Court. Early tests, particularly north and west of the Theatral Area and along the east end of the Royal Road, are not well documented, and while producing numerous Neolithic sherds, most tests did not reach stratified levels, or when they did, no documentation survives to indicate the nature of the deposits. So it remains unclear whether this sherd material is *in situ* contamination from lower levels or was introduced as fill from original deposits closer to the core of the site. Similarly, extensive Neolithic deposits reported in early tests on the east and south slopes of the Kephala were not documented in detail, nor has material been retained, inhibiting interpretation. Even if broadly *in situ*, without good excavated contexts, it will not be clear whether these peripheral finds represent occupation areas, or working areas or refuse dumps on the fringe of the community. Therefore, there remains considerable scope for alternative interpretations (e.g. Tomkins 2008; 2012; Whitelaw 2012), particularly while what data exists remains incompletely published. Our work adds slightly to the maximum size of the community in the latest phases

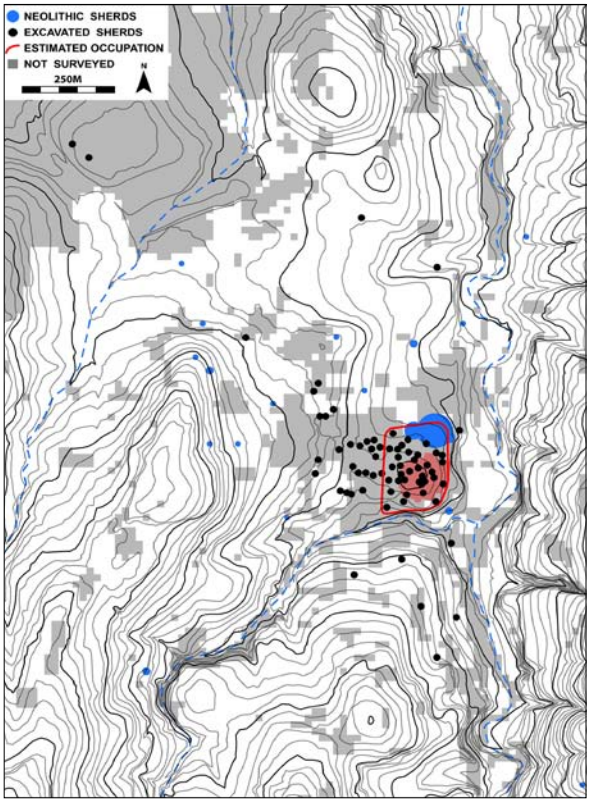

Fig. 1. City area, Neolithic sherds and excavations with Neolithic material.

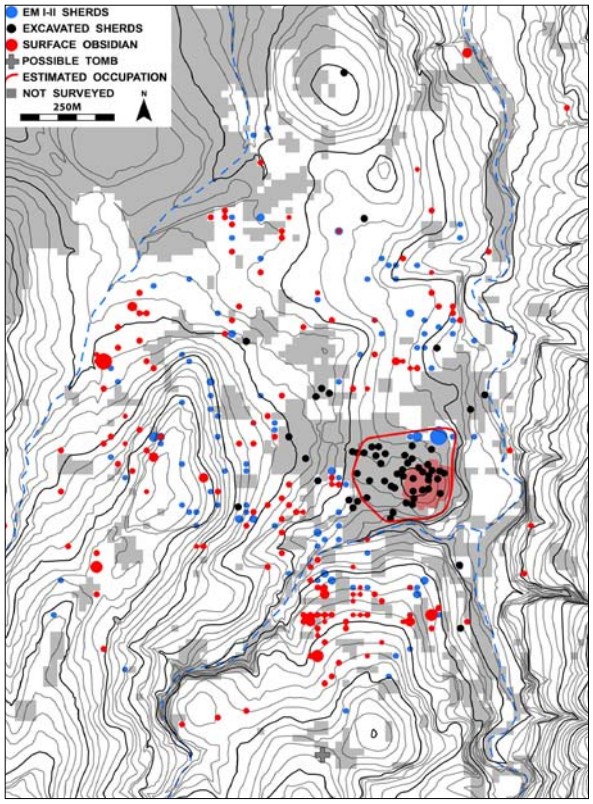

Fig. 2. City area, EM I-II sherds and excavations with EM I-II material, and surface obsidian.

of the Neolithic on the north. At least in its later phases, when the community may have reached 4.5ha., this will have been a substantial and socially relatively complex community, with a population of perhaps 400-700 people, at or exceeding the normal cross-cultural limits for egalitarian societies.

As Borja Legarra Herrero explains in his paper in this volume (2018), more material, rather better fired, was recovered from the Early Minoan (EM) I-II periods, spanning most of the 3rd millennium BCE. Actual occupation, again defined mostly by excavations under and near the palace, expanded westward, along the low ridge connecting the tell to the Acropolis hill to the west. We have again documented a slight extension of the community on the north. Along with the absence of material indicating occupation in the numerous rescue excavations west of the modern road, we can define the site limits quite well (Fig. 2).

Where the survey data is particularly interesting is beyond the community, with a low density scatter (also represented by the odd sherd in some rescue excavations) across the core of the valley. This is densest in the area occupied during later phases of the city, probably because pit-digging and stone robbing has brought deep material to the surface. This extended area of very low density sherds also corresponds with the distribution of obsidian, which will have largely gone out of use during the earlier EM period. Together, the distributions of pottery and obsidian are likely to define an area of intense horticulture involving manuring with household rubbish, within about a 500-800m radius of the settlement.

This period of continuing slow growth at Knossos corresponds to the “proto-urban” phase in the Aegean, as defined by Colin Renfrew in 1972, when the social trajectory leading to the emergence of the Minoan states was argued to have taken off (Renfrew 1972). This has become a foundational assumption of most studies of the Aegean Bronze Age for the past 45 years.

At 6.5 ha. Knossos is large by Aegean Early Bronze Age (EBA) standards, when most local centres might be 1-2 ha., but is not truly exceptional. The limited expansion continues the pattern established in the Neolithic, and does not obviously document a significant shift in local

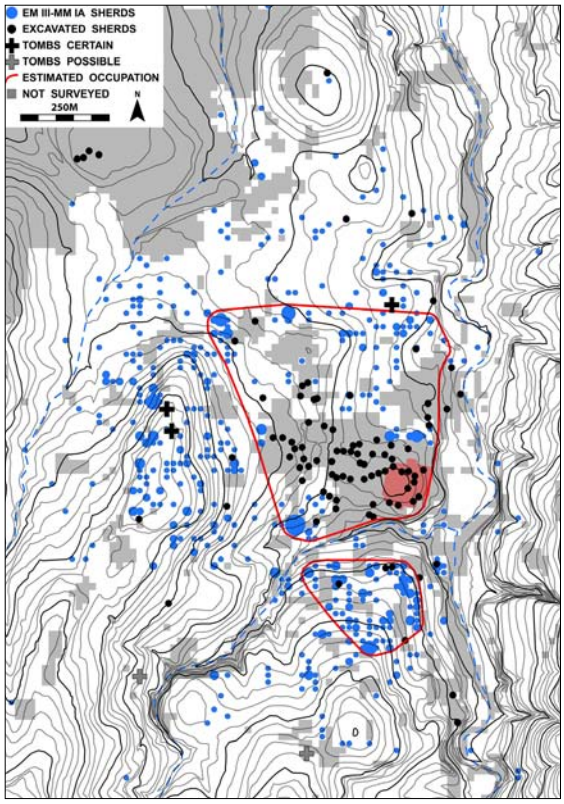

Fig. 3. City area, EM III-MM IA sherds and excavations with EM III-MM IA material.

development, though a probable increase in occupation density may mean this expansion is more significant in population terms than site area alone indicates (Whitelaw 2012), probably reaching a population of c. 900-1,300 individuals.

Considerably more material can be identified from the Late Prepalatial period, spanning several centuries at the end of the EBA and start of the Middle Bronze Age (MBA) on Crete. At most locations at the core of the site where rescue excavations have gone down to natural, substantial quantities of occupation material of this date have been recovered, indicating dense and continuous occupation, arguably over a minimum of 40 and potentially as much as 65 ha. (Fig. 3; Whitelaw 2012).

Unfortunately, beyond the rescue tests under the upper and lower villages, there is a largely untested zone, so it is unclear whether substantial collections of this date under the BSA Taverna, Villa Dionysus, or on the lower slopes of Lower Gypsadhes, represent dense but patchy activity, or are occasional windows on continuous occupation. However, with all significant excavations producing such material, the balance is weighted in favour of dense and continuous occupation. The fairly continuous spread of surface material would tend to support this interpretation, but not unequivocally. The low density patches within the overall sherd distribution, particularly north of the palace, are seen in all phases, so most likely relate to sherd survival and surface visibility, rather than necessarily to gaps in occupation in any individual period. The extensive occupation area also blends directly into known cemetery areas, on the Acropolis, on the flat landscape north of the lower village (Makryteikhos), and very likely also on Lower Gypsadhes, as considered by Legarra Herrero in his paper in this volume (2018).

Representing a maximum of 200-250 years, this documents an exceptional phase of expansion, immediately prior to the period conventionally defined as the beginning of the palatial phase of Minoan civilisation. This must represent the period of both urbanisation, with 40-65 ha. of occupation probably representing a population on the order of 4-10,000 people, and state formation – an explosive social and demographic transformation.

In 1972, Renfrew argued that state formation in the Aegean had a millennium – long lead – in during the EBA, with slow gradual change, picking up pace during the EB II period. A decade later, Cherry (1983) argued that evolutionary change might alternatively be conceived as punctuated, with

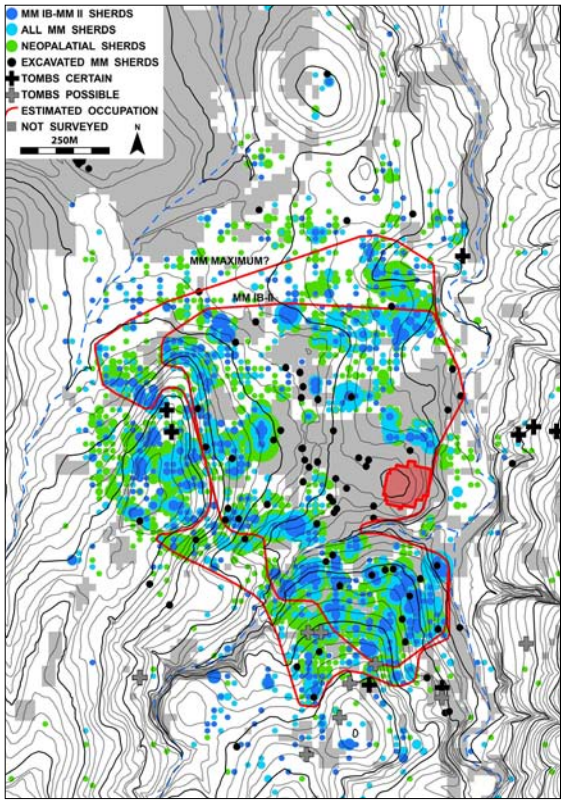

Fig. 4. City area, MM IB-II sherds on all MM sherds on all prehistoric sherds, MM tombs.

periods of relative stability interrupted by short periods of rapid growth or change. Both models are debated in studies of state formation elsewhere. But with a lack of good evidence, anywhere in the Aegean, for the transitional EB III period – by default, the gradualist perspective has remained dominant.

While the evidence is nowhere near as comprehensive, nor the changes that can be documented quite as dramatic as at Knossos, the other two palatial sites, Phaistos and Mallia, witnessed a similar Late Prepalatial demographic transformation (Whitelaw 2012). Together, these observations appear to resolve the 35-year controversy: urbanisation and state formation in prehistoric Crete appear to have been rapid and dramatic, regardless of any long-developing patterns of behaviour during the 3rd millennium.

As Andrew Shapland has outlined in his paper in this volume (2018), exceptional expansion continued through the Protopalatial period, and the site by the end of the period probably extended over some 60-75 ha., with perhaps 12-15.000 occupants (Fig. 4). While sherds are spread over the same areas as in the Late Prepalatial period, the larger sample produces clearer edges to the distribution. More material is found on the north and east slopes of the Acropolis, and on Lower Gypsadhes, suggesting expansion or increasing density of occupation in these areas. The status of the Acropolis summit is unclear, but the Monastiriako Kephali Tomb and Deposit suggest the northern summit at least was a cemetery, while a higher density of pithos sherds, particularly at the southeast corner of the Acropolis (Shapland 2018, Fig. 13), could represent burials in that area as well.

It has long been argued that urban centres, on the scale documented in the Bronze Age civilisations of the East Mediterranean and Near East, did not exist in the Aegean, and we have to down-scale our concept of urbanisation for the Aegean region considerably (Renfrew 1972, 240-244). While substantial urban communities were always rare in the Bronze Age Aegean (Whitelaw 2017), Knossos in the Protopalatial period certainly qualifies as urban by contemporary East Mediterranean standards (Whitelaw 2001), now clearly corroborated by the KULP evidence. Interestingly, the other two major urban centres, at Mallia and Phaistos, seem to have plateaued at 50-60 ha. in MM II (Whitelaw 2012; 2017), whereas Knossos expanded well beyond them through the MM period, probably reaching 75-85 ha., and a potential population of 15-17,000

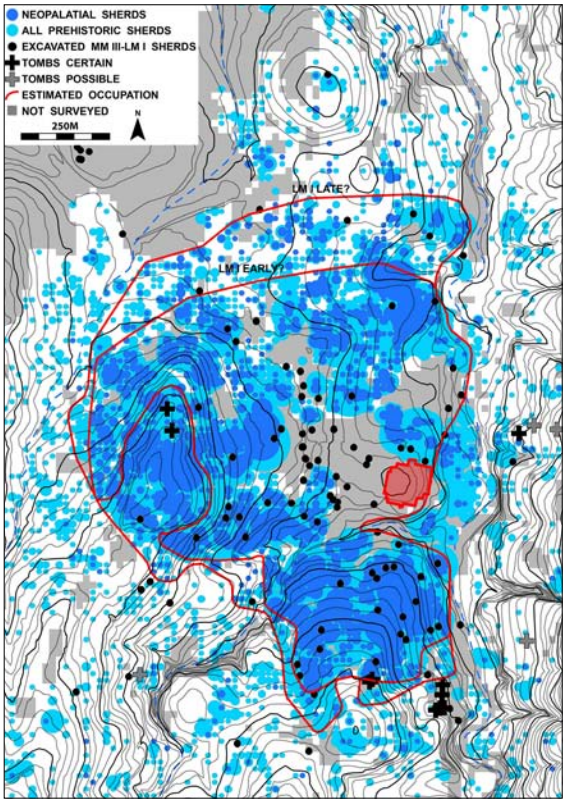

Fig. 5. City area, Neopalatial sherds on all prehistoric sherds and excavations with Neopalatial material.

by the end of MM III (see Shapland 2018 and Cutler and Whitelaw 2018, this volume).

In fact, the community continued to expand through the Neopalatial period – that best known through extensive excavations at Knossos and other sites, and considered to be the high point of Minoan civilisation. As Joanne Cutler and Todd Whitelaw outline in their paper in this volume (2018), we can now document that Knossos probably covered more than a square km (Fig. 5) and potentially nearly twice previous estimates (Whitelaw 2004), probably representing a population on the order of 25.000 people. This exceptional size raises new possibilities for considering the collapse of palatial control in Neopalatial Crete at the end of the LM IB period. The population of Knossos, more than double that of any other prehistoric Aegean urban centre, would have created exceptional logistical demands simply for provisioning its population (Whitelaw in press). These were unique problems in an Aegean context, probably not faced again for nearly another millennium.

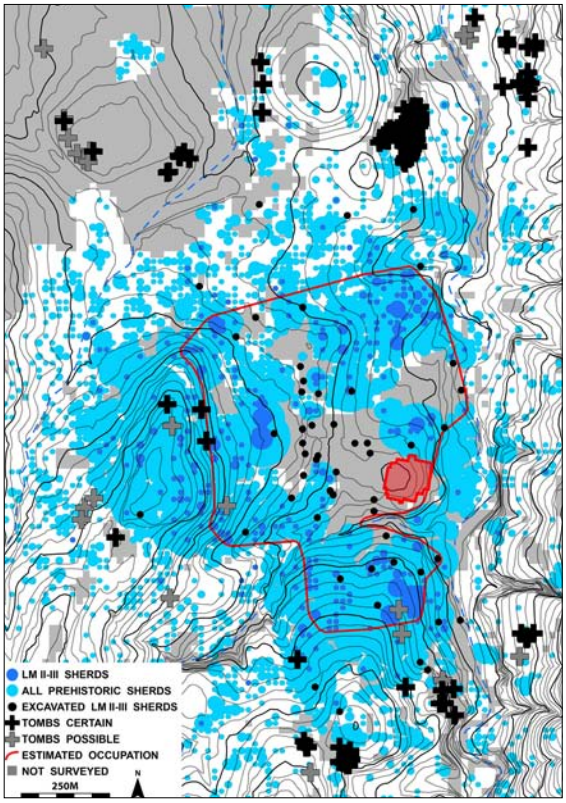

Fig. 6. City area, LM II-III sherds on all prehistoric sherds, excavations with LM II-III material and certain and possible LM II-III tombs.

While Knossos, unlike the other palatial centres, survived the Neopalatial collapse, we can suggest, based on both the surface data and earlier excavation evidence, that it was significantly affected, with considerable contraction, perhaps back to c. 60 ha., representing a significant loss of population and probably administrative power (Fig. 6). Here, however, we have to admit that so far, the

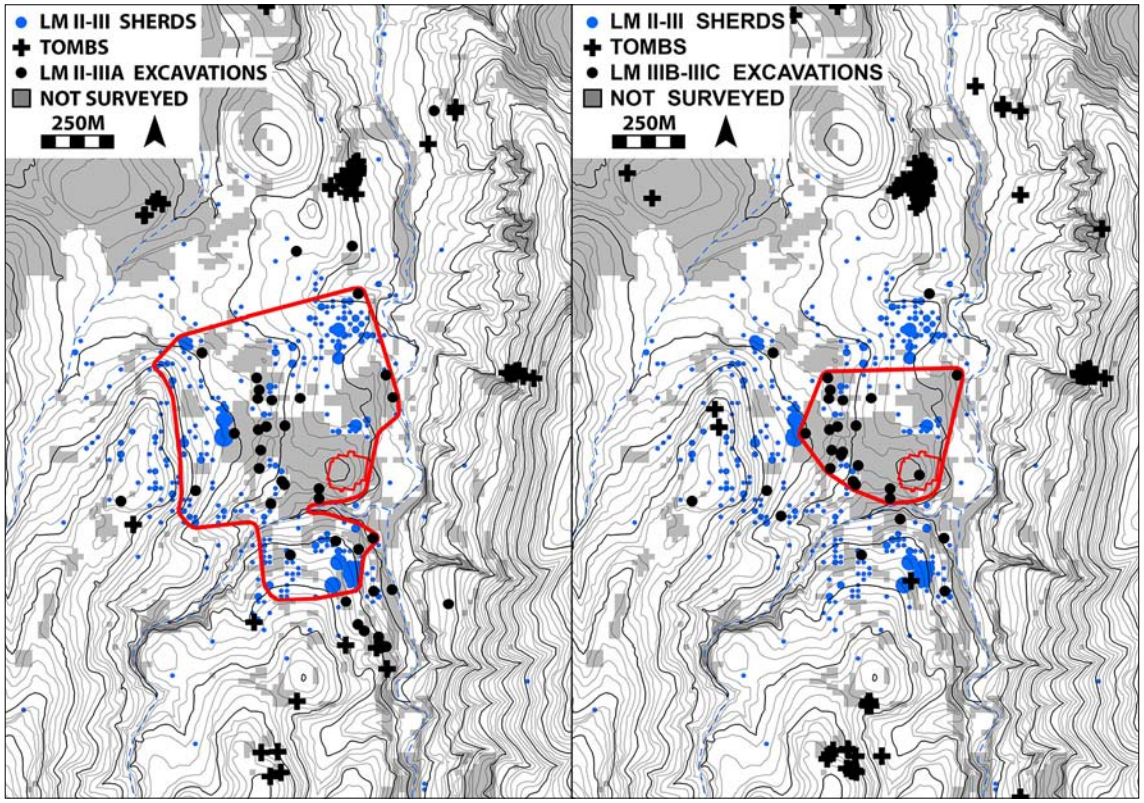

Fig. 7. Left: LM II-III sherds, excavations with LM II-IIIA material and LM II-IIIA tombs; Right: LM II-III sherds, excavations with LM IIIB-IIIC material and LM IIIB-IIIC tombs.

survey has added relatively little new information, since the material representing this period has yet to be studied in detail.

A significant contraction may seem counter-intuitive, since the Third Palace or Mycenaean period is the phase when, from the Linear B archive, we have the clearest understanding of the political role of Knossos, which dominated the centre and west of the island (Bennet 2011). However, even reduced in extent, Knossos was the largest Mycenaean palatial centre in the Aegean (Whitelaw 2017). But its reduced scale, while still administering a major kingdom, suggests, along with the differing types and distributions of administrative documents, different organisations of administration in the Neopalatial and Mycenaean periods.

While our LM II-III survey material awaits detailed study, we can suggest, on the basis of our recent re-study of material from many unpublished rescue excavations, that there was a two-stage transformation, initially with a significant reduction in occupation area in LM II-IIIA, followed by a further reduction in LM IIIB-IIIC, after the destruction of the palace and the disintegration of the major Knossian polity (Fig. 7). Our present understanding of the extent of the community rests on relatively limited diagnostic fine sherds, so it is hoped that expanding our understanding of the coarse wares of the period will allow the survey data to add detail and weight to this picture. But relying on the limited data from rescue excavations alone, even after the destruction of the palace, Knossos was still the largest community we know of on the island, and probably remained

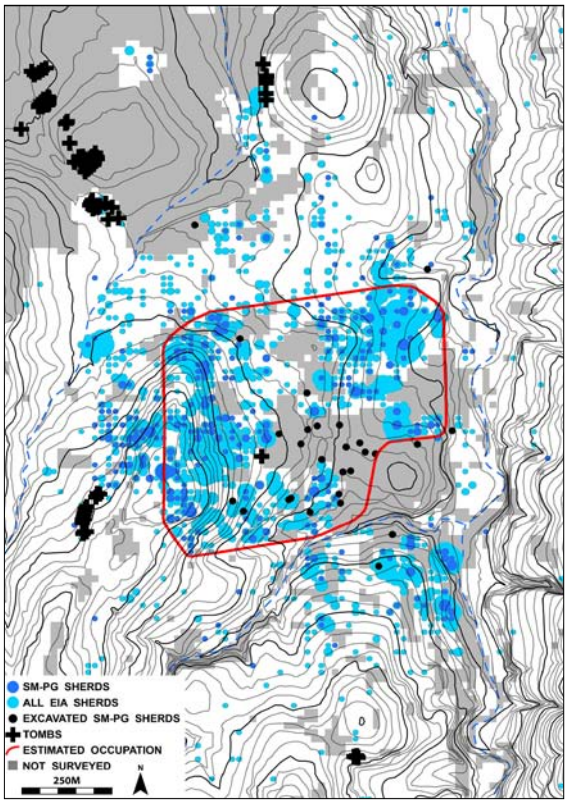

Fig. 8. City area, SM-PG sherds on all EIA sherds, excavations with SM-PG material and SM-PG tombs.

a significant local centre for north-central Crete. Along with other lowland communities such as Phaistos, Prinias, Sybritos, and Khania now being documented for the Postpalatial periods, it will be possible to consider a more integrated history for Postpalatial Crete than that traditionally written principally from the perspective of the better-known upland sites (e.g. Wallace 2010).

One of the most dramatic challenges to our previous understanding of the site concerns the Early Iron Age (EIA) – Sub-Minoan to Orientalising periods – which sees the rapid re-establishment of Knossos as a major centre, c. 50-60 ha. in extent, very soon after the Postpalatial collapse (Fig. 8). From the perspective of processes, this demonstrates the re-establishment of an urban centre on the same rapid time-scale as the Late Prepalatial population explosion. It also conclusively resolves several long-standing questions, as explained by Antonis Kotsonas in his paper in this volume (Kotsonas 2018a). In contrast with either Alexiou's "dispersed villages" model, or Coldstream's "nucleated core" model, Knossos grew rapidly into a major centre within the Protogeometric period (Fig. 9). As with the similarly

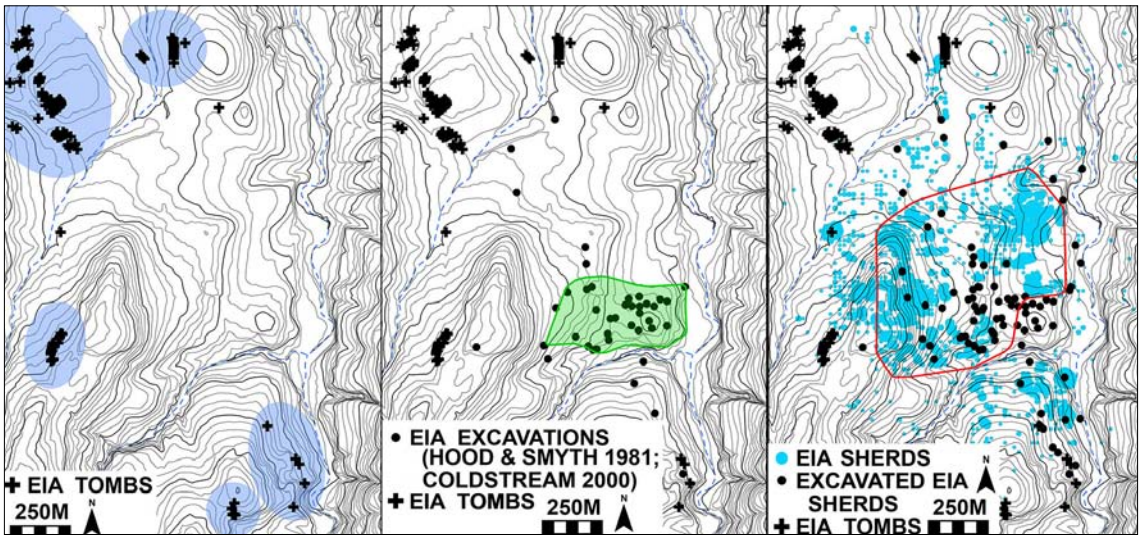

Fig. 9. Left: Alexiou's "dispersed villages" model; Centre: Coldstream's "nucleated core" model; Right: KULP evidence and excavated EIA tombs.

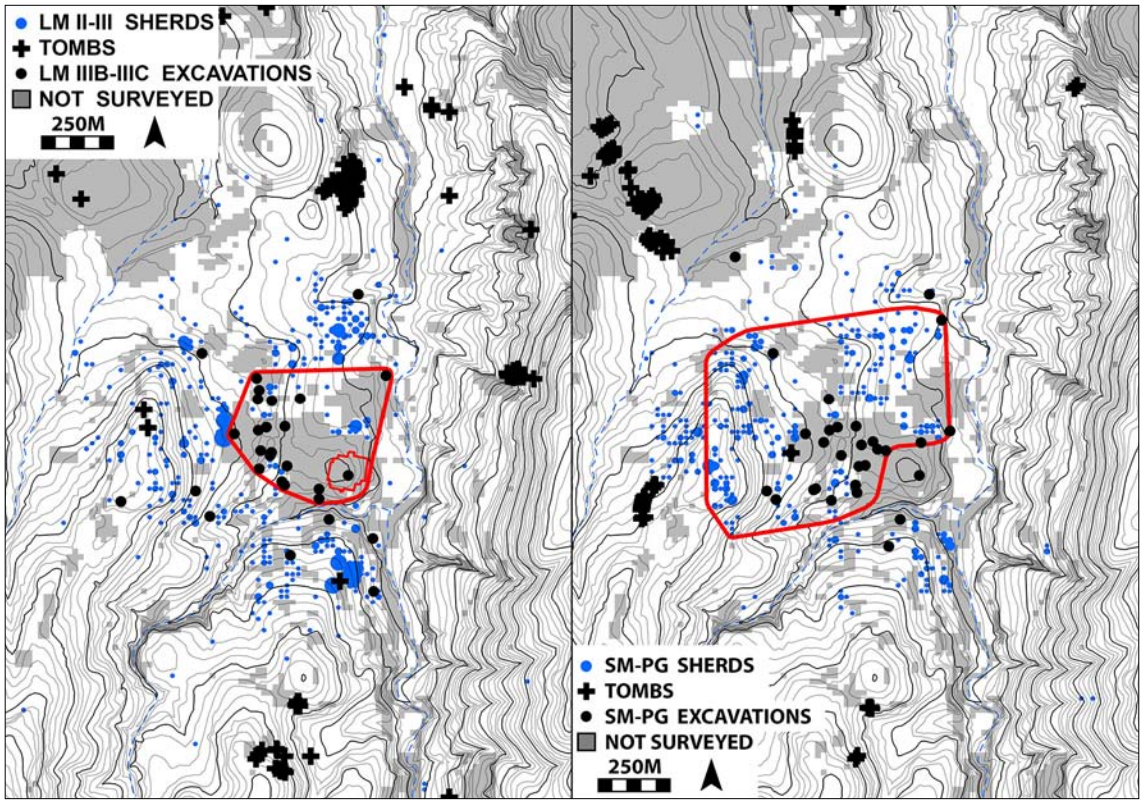

Fig. 10. Left: LM II-III sherds, excavations with LM IIIB-IIIC material and LM IIIB-IIIC tombs; Right: SM-PG sherds, excavations with SM-PG material and SM-PG tombs.

dramatic Late Prepalatial period, our surface collections document dense occupation over some 50-60 ha., making Knossos one of a few emerging urban centres at this time in the Aegean. This also resolves another problem, reconciling the limited excavated settlement evidence with the exceptional wealth and international connections documented in the contemporary tombs.

The scale of the community in the Protogeometric period also raises a further question, which we are not yet able to address effectively. If we have a substantially larger Postpalatial centre than has previously been recognised, and a much larger Protogeometric centre, was there actually a complete "collapse" between these phases (Fig. 10)? If so, it will have been relatively short, perhaps helping to account for the strong memories attached to the site which were sustained and selectively drawn upon from the Sub-Minoan period onwards (Kotsonas 2018b).

While sherds are distributed across the same overall area in the early and late phases that we can most readily distinguish, there is a tendency for Sub-Minoan to Protogeometric sherds to be concentrated on the Acropolis, raising the question whether this might have been a focus for the earliest post-prehistoric community. In the later phase there is denser material in the north of the site, but this area is also interrupted by built-over areas not available for survey, as well as the low density patches probably representing poor surface preservation or visibility of sherds. With relatively small samples in each dated group, it is not yet clear that there was any significant shift from the Acropolis toward the low-lying northern half of the site, but this needs

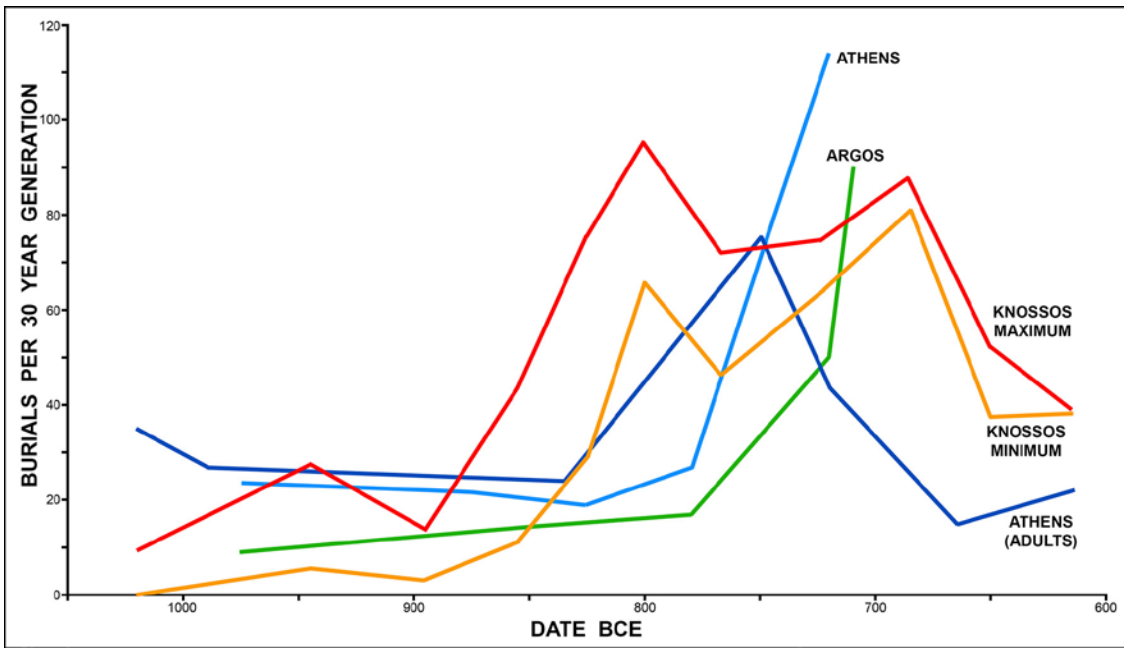

Fig. 11. Changing rates of EIA burial: Athens and Argos burials (Snodgrass 1980, Fig. 4); Athens adults (Morris 1987, Fig. 22); Knossos burials (Cavanagh 1996).

further consideration. There are parallels at sites such as Gortyn and Phaistos for expansion off acropoleis to lower slopes and flatter land in the 8th-7th centuries, as a variant of the more extreme shifts from high to lower sites, as at Vrokastro and Kavousi.

The EIA survey data also provides a new perspective on the debates over EIA demographic growth, and to what extent Aegean tomb records monitor population growth or changing burial customs, or some balance of both (Snodgrass 1980; Morris 1987). The patterns in Knossian tomb use broadly parallel, though slightly precede, those in other regions (Fig. 11), but our settlement evidence (a more direct indicator of population), now indicates that the explosion of population, at least at Knossos, significantly predates this, in the 10th and 9th centuries, rather than the late 9th and 8thcenturies, as the tomb evidence alone might suggest (Cavanagh 1996).

That rapid Protogeometric population expansion was the start of a second growth cycle, taking the city, by the Classical to Early Hellenistic period, back to at least a square km in extent, and possibly somewhat more, as discussed in detail by Conor Trainor in his paper in this volume (2018). This phase of expansion includes the elusive 6th century BCE, defined as the “Archaic gap” at Knossos (Coldstream, Huxley and Webb 1999), though now recognised at many Cretan sites (Erickson 2010). There is material from this period at Knossos, but it is difficult to recognise because the excellent preservation contexts provided by chamber tombs went out of use, pottery forms changed relatively slowly over that century, and well-dated imports into Crete declined. Our study of the post-EIA survey material started later than for the earlier periods, so our picture of the final millennium and a half of the site’s occupation is still somewhat sketchy, compounded by the relatively limited attention it has received in previous research (*cf.* Callaghan 1994; Huxley 1994; Paton 1994).

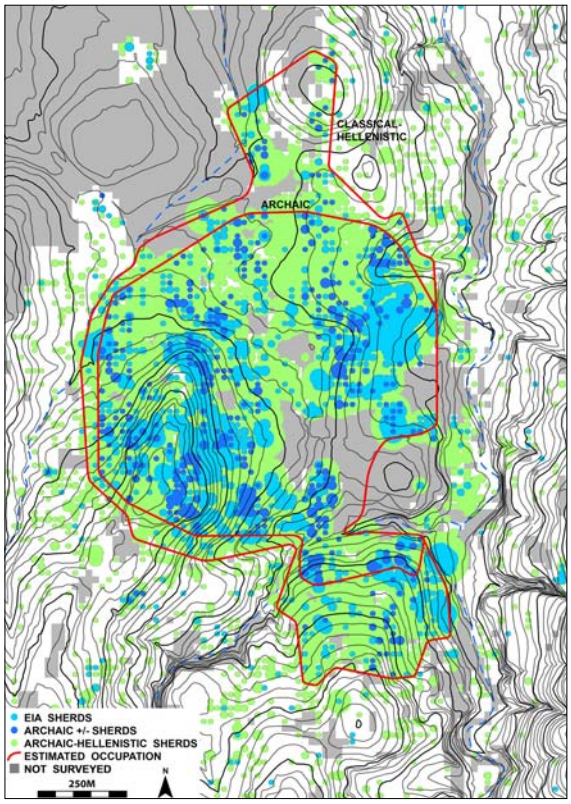

Fig. 12. City area, broadly Archaic sherds, on EIA sherds and preliminary identifications of Archaic to Hellenistic sherds.

This second cycle of sustained growth corresponds to the gradual expansion of Knossian political power, until it was one of six major Late Hellenistic power centres on Crete. Given that historical records are limited for Archaic to Early Hellenistic Crete, when fully studied, our data should provide a new opportunity to track this significant political development through the 1st millennium BCE.

The highest densities of sherds which we consider broadly Archaic are in the same areas as the EIA occupation, but there is also a lower density spread northwards, and potentially also some spread southwards, upslope on Lower Gypsadhes (Fig. 12). This requires substantiation as study continues, but suggests that there was a significant expansion in the city from the late Orientalising through the Archaic period, indeed accounting for much of the post-EIA expansion toward the maximum extent of the city. This distribution expands slightly and is strongly consolidated by the more readily recognisable Classical and earlier Hellenistic sherds, which define the greatest extent of the historical city, up to 95-118 ha. At likely occupation densities of 100-150/ha., this would represent a population of 10-18,000 individuals.

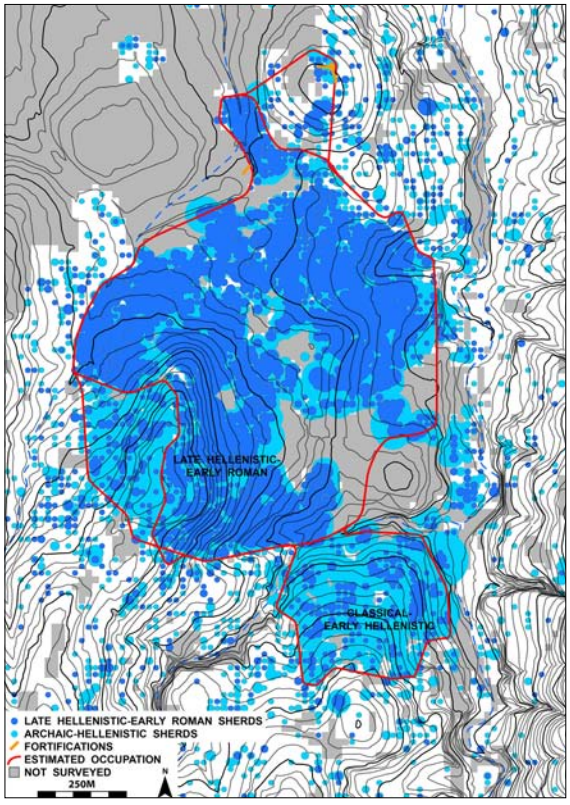

Fig. 13. City area, Late Hellenistic-Early Roman on Classical-Earlier Hellenistic sherds.

Interestingly, our data appears to document a contraction of the city off Lower Gypsadhes, to the north of the Vlychia ravine in the later Hellenistic period (Fig. 13). This may correspond to a phase of fortification of the city, represented most clearly by the construction of a fort, or corner of a more extensive fortification,

on the Kephala hill, beyond the northern extent of our dense pottery distribution (Hood and Boardman 1957; Hood and Smyth 1981, KS2.37-38). Other possible indications of fortification are reviewed by Trainor in his paper in this volume (2018). While somewhat counter-intuitive, since this is the period of Knossos' greatest historically documented political power in the post-prehistoric period, this contraction may represent consolidation of occupation in a more defensible configuration, behind the steep bank of the Vlychia stream, particularly if the hints of a fortification circuit in the late Classical-Hellenistic periods can be confirmed.

Crete was conquered by Rome early in the first century BCE, and Knossos was one of the losers, having been prominent in resisting Rome. Its antagonism to Rome was penalised by taking away some of its territory. But the picture from our surface data, complemented by excavated evidence, reviewed by Trainor in this volume (2018), suggests continuity in the city across the political transition and indeed economic prosperity through at least the 2nd century CE. The variety of our non-ceramic surface material promises a new understanding of the re-establishment of prosperity during the Roman period, based on local production, and manifest in fine consumer goods and imports.

While not well dated, what we know of the major public monuments of the city supports this reconstruction (Fig. 14). The date of construction of the theatre is uncertain with no well-documented excavations, but 1st-2nd century sherds have been recovered near its foundations. Early tests in the basilica suggested a 2nd-3rd century date, and of several possible baths, the only one tested may be late 2nd-3rd century in date. The mosaics from private houses probably mostly date to the 2nd century. No evidence dates the construction of the aqueduct, but recent examination of its mortar suggests maintenance into the Late Antique period. The Acropolis seems to have been abandoned for occupation or public architecture in this period, and consistent with this change in use, Hogarth excavated an Early Roman cemetery on the upper northeast slope in 1900 (1899-1900).

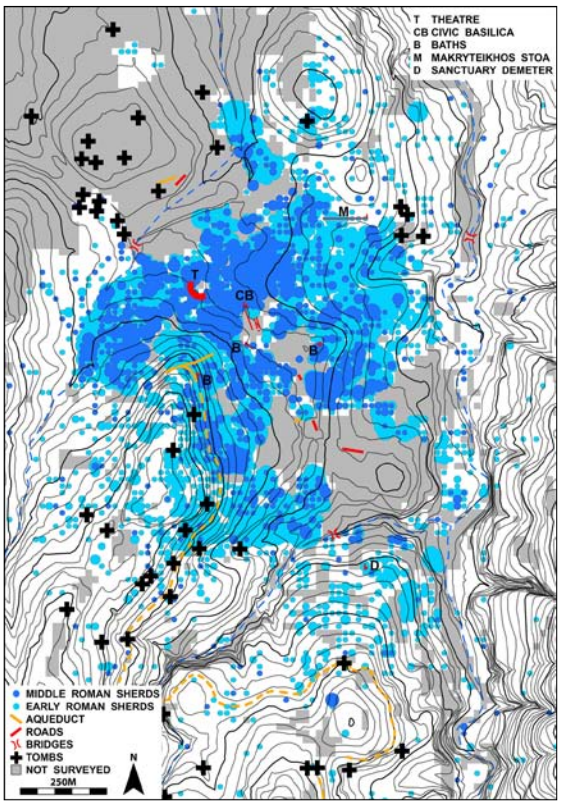

Fig. 14. Roman Knossos, Early and Middle Roman sherds, and known public monuments.

Even at this relatively early stage in our study of the late material from the survey, we can track the long-term, gradual northward contraction in the occupied area of the city through the Roman and Early Byzantine / Late Antique periods. We can outline this transformation, but will be able to firm up the picture as more collection

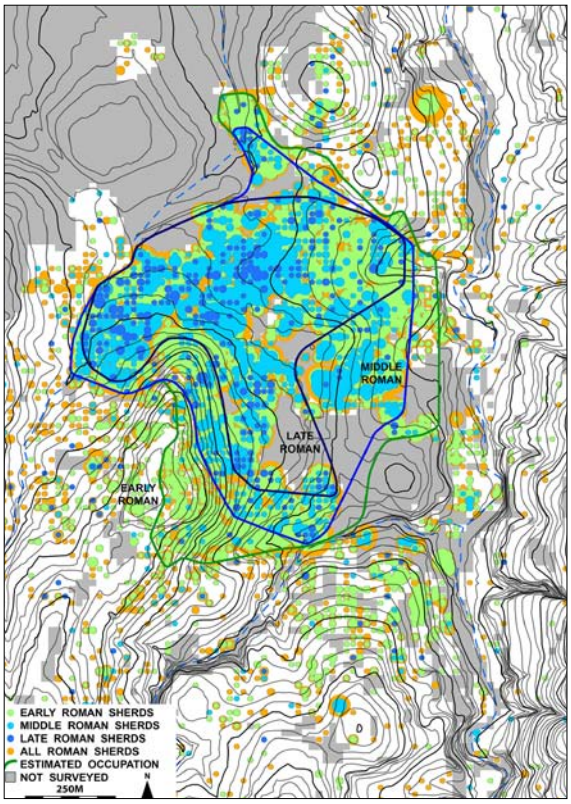

Fig. 15. City area, contraction of occupation through the Roman period.

units within the Roman city are studied in detail (Fig. 15).

Another very satisfying outcome from the survey has been locating Late Antique (Late Roman to Early Byzantine) Knossos (Fig. 16). A substantial cemetery with elaborate mortuary basilica in the North Cemetery, in use in the 5th to 7th centuries CE, could not be matched with excavation evidence for continued substantial occupation in the city (Sweetman 2004a), though some 5th-6th century CE deposits have been identified in the Stratigraphic Museum Extension (Warren 1987-88) and Knossos 2000 (Forster 2009) excavations. While analysis is still at a preliminary stage, by plotting well-dated pottery from the survey we can define the area with late occupation as concentrated in the northwest quarter of the city, closest to the North Cemetery. Graves appear to have encroached northward on former occupation areas as the city contracted. The Late Roman to Late Antique community was previously almost completely unrecognised due to the concentration of major excavations in the south of the city, near the Minoan palace, the prehistoric focus of study and publication, and the relatively poor preservation of late levels.

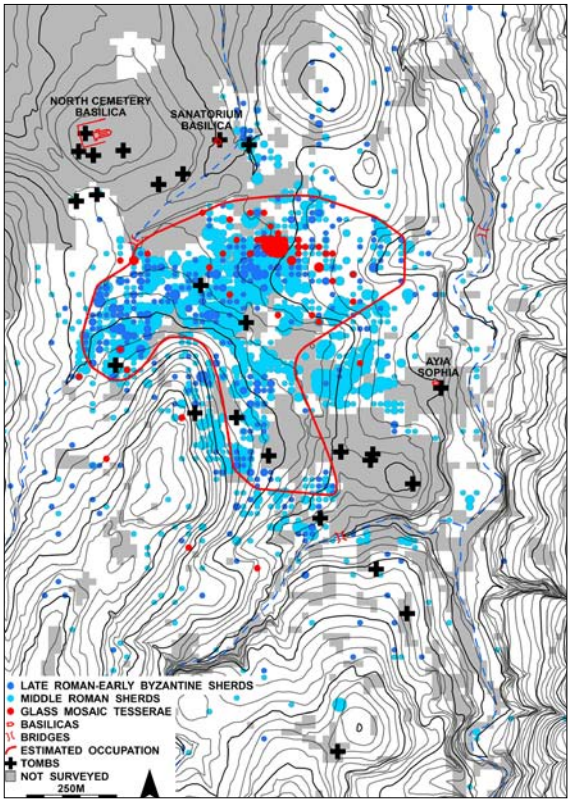

Fig. 16. Late Roman-Early Byzantine (Late Antique) sherds on all Roman sherds, certain and possible Late Roman-Early Byzantine tombs.

This final phase of the city was bounded on the north and east by mortuary basilicas, but other fragments of standing architecture suggest major public architecture continued to be constructed or remodelled in this final phase of occupation. A significant concentration of glass mosaic

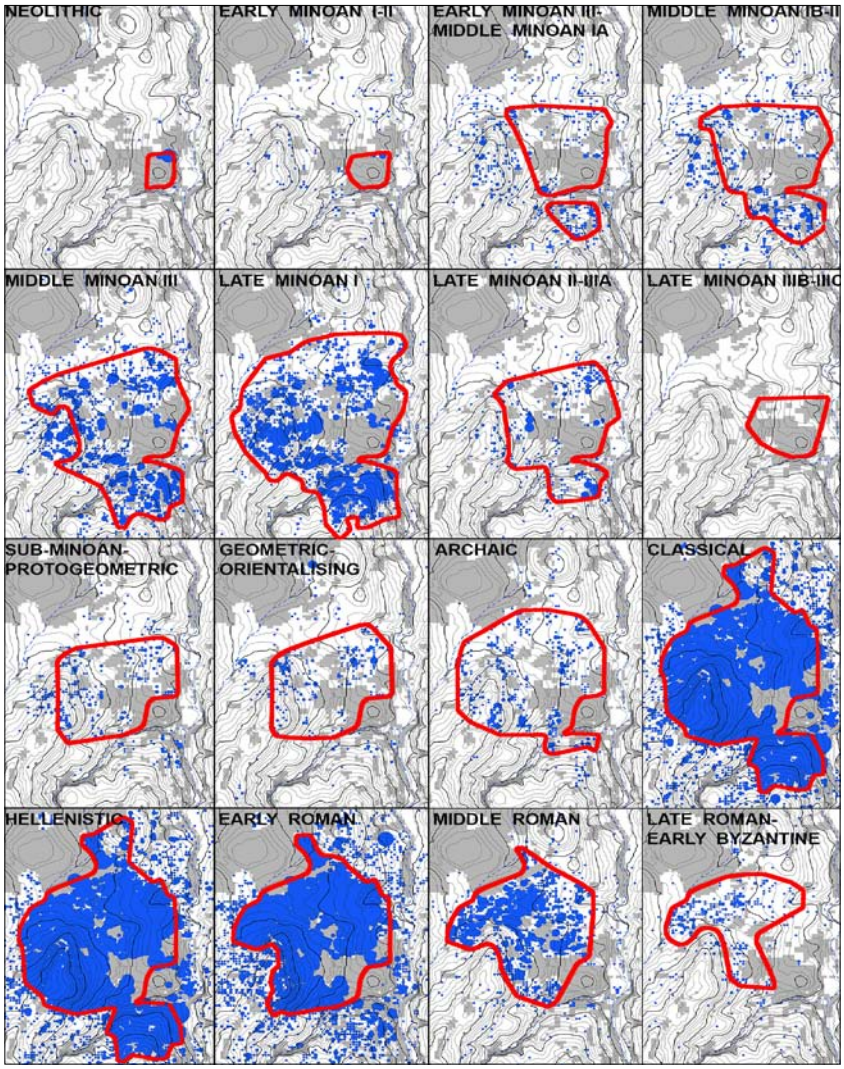

Fig. 17. Knossos: site extent by period.

tesserae is likely to represent wall mosaics from a major monument of Late Antique date near the core of the late town (Fig. 16). We have identified only a few sherds dating after the 7th century, bringing the settlement evidence into line with that from the North Cemetery basilicas and burials (Frend and Johnston 1962; Hayes 2001; Sweetman 2004b; Sweetman and Becker 2005).

Coastal Herakleion developed significantly in the Late Classical to Hellenistic periods, with trade opportunities potentially drawing population away from inland Knossos from the 2nd century CE onwards. Herakleion took over from Knossos as the major centre for north-central Crete in the Byzantine, Saracen, Late Byzantine, Venetian, Ottoman and modern periods.

Complementing over a century of intensive excavation at the site, the Knossos Urban Landscape Project is enabling us to fill in and refine our understanding of the developmental history of a major Aegean centre for nearly 8 millennia (Figs. 17-19). This has produced surprising and indeed challenging information affecting every period of occupation of what has been considered to be a well-understood site. These challenges have been touched on here, and are considered in more detail in the specialist papers presented in this conference session and

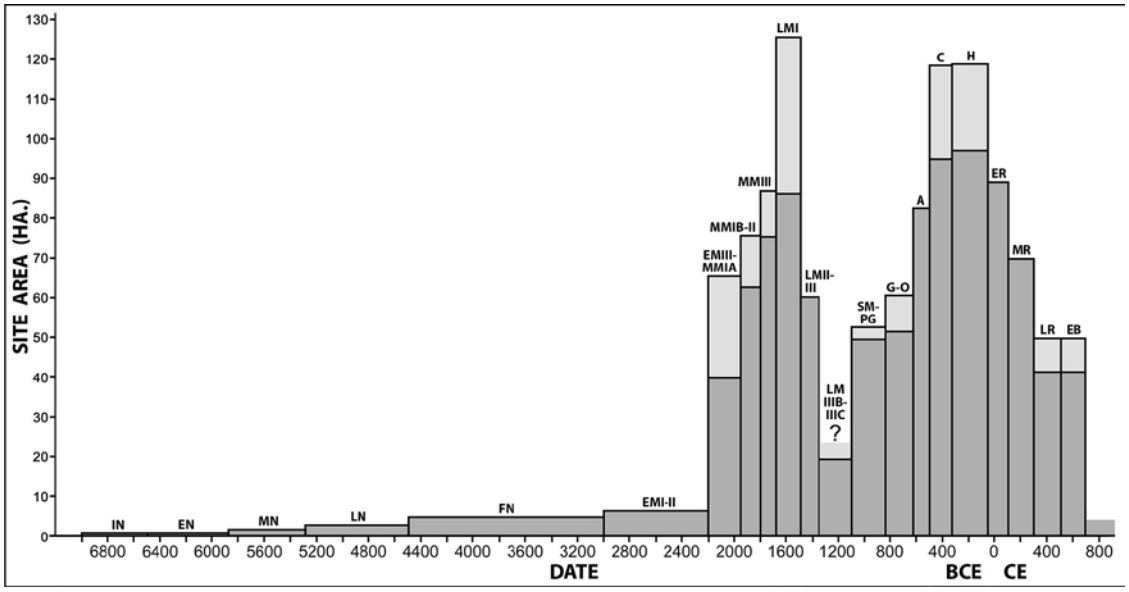

Fig. 18. Knossos: minimum and maximum estimates of site extent through time.

published in this volume. The fortunes of the city are clearly embedded in local dynamics, but also at various times and to varying degrees, tied into wider regional and extra-regional dynamics, with the city in turn playing its role within those. As we define the development of the city in greater detail, we will be able to explore further the broader implications for our understanding of Crete within the southern Aegean.

Phase	Extent	Area (ha.)	50/ha.	100/ha.	150/ha.	200/ha.
Neolithic		4.5	223	446	669	892
EM I-II		6.5	323	645	968	1291
EM III-MM IA	Min.	39.8	1988	3975	5963	7950
EM III-MM IA	Max.	65.4	3270	6540	9810	13080
MM IB-II	Min.	62.7	3136	6271	9407	12542
MM IB-II	Max.	75.7	3785	7569	11354	15138
MM III	Min.	75.3	3764	7527	11291	15055
MM III	Max.	86.8	4340	8679	13019	17358
LM I	Min.	86.2	4309	8618	12927	17235
LM I	Max.	125.4	6269	12539	18808	25078
LM II-IIIA	Min.	60.2	3011	6021	9032	12043
LM IIIB-IIIC	Min.	19.4	968	1936	2904	3872
SM-PG	Min.	49.5	2476	4952	7429	9905
SM-PG	Max.	52.6	2630	5259	7889	10519
PGB-O	Min.	51.5	2577	5154	7731	10308
PGB-O	Max.	60.6	3032	6063	9095	12126
Archaic	Max.	82.6	4129	8258	12387	16515
Classical	Min.	94.9	4743	9486	14229	18972
Classical	Max.	118.4	5919	11838	17756	23675
Hellenistic	Min.	97	4852	9705	14557	19410
Hellenistic	Max.	118.7	5936	11871	17807	23743
Early Roman		89	4448	8896	13345	17793
Middle Roman		69.8	3488	6975	10463	13950
Late Roman	Min.	41.3	2066	4131	6197	8262
Late Roman	Max.	49.7	2484	4968	7452	9935

Fig. 19. Knossos: site size and population estimates; most probable estimates shaded.

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