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Urbanism in the Aegean Bronze Age

Edited by
Keith Branigan

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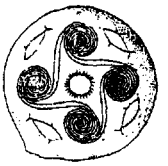

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edited by
Keith Branigan

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Contents

Abbreviations vi
Preface Keith Branigan vii
List of Contributors x

Settlement Nucleation

1. Christopher Mee
Nucleation and Dispersal in Neolithic and Early Helladic Laconia 1

Urbanism in Minoan Crete

2. Todd Whitelaw
From Sites to Communities: Defining the Human Dimensions of Minoan Urbanism 15

3. Keith Branigan
Aspects of Minoan Urbanism 38

4. Jan Driessen
History and Hierarchy. Preliminary Observations on the Settlement Pattern in Minoan Crete 51

5. Tim Cunningham
Variations on a Theme: Divergence in Settlement Patterns and Spatial Organization in the Far East of Crete during the Proto- and Neopalatial Periods 72

6. Ilse Schoep
Managing the Hinterland: The Rural Concerns of Urban Administration 87

Urbanism in Mycenaean Greece

7. Anastasia Dakouri-Hild
Plotting Fragments: A Preliminary Assessment of the Middle Helladic Settlement in Boeotian Thebes 103

8. William Cavanagh
Empty Space? Courts and Squares in Mycenaean Towns 119

9. John Bennet and Cynthia Shelmerdine
Not the Palace of Nestor: The Development of the 'Lower Town' and Other Non-Palatial Settlements in LBA Messenia 135

10. John Cherry and Jack Davis
'Under the Sceptre of Agamemnon': The View from the Hinterlands of Mycenae 141

11. Stelios Andreou
Exploring the Patterns of Power in the Bronze Age Settlements of Northern Greece 160

Appendices

1. Todd Whitelaw
The Floor Area of 207 Minoan Houses 174

2. William Cavanagh
Recent References to Bronze Age Roads in the Aegean 180

Abbreviations

AAA	*Athens Annals of Archaeology*
ADelt	*Arkhaiologiko Deltion*
AE	*Arkhaiologiki Efimeris*
AEMTh	*To Arkhaiologiko Ergo sti Makedonia kai Thraki*
AJA	*American Journal of Archaeology*
AM	*Mitteilungen des Deutschen Archäologischen Instituts, Athenische Abteilung*
AR	*Archaeological Reports*
ASA	*Annuario della Scuola Archeologica di Atene*
BAM	*Beiträge zur Ur- und Frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes*
BAR	*British Archaeological Reports*
BCH	*Bulletin de Correspondance Hellénique*
BICS	*Bulletin of the Institute of Classical Studies of the University of London*
BSA	*Annual of the British School at Athens*
CAJ	*Cambridge Archaeological Journal*
CMS	*Corpus der minoischen und mykenischen Siegeln*
CP	*Classical Philology*
CQ	*Classical Quarterly*
Ergon	*To Ergon tis Arkhaiologikis Etairias*
G&R	*Greece and Rome*
JAS	*Journal of Archaeological Science*
JHS	*Journal of Hellenic Studies*
JMA	*Journal of Mediterranean Archaeology*
Kr Chron	*Kritika Chronika*
OJA	*Oxford Journal of Archaeology*
PAE	*Praktika tis en Athinais Arkhaiologikis Etairias*
PBA	*Proceedings of the British Academy*
PCPS	*Proceedings of the Cambridge Philological Society*
SIMA	Studies in Mediterranean Archaeology
SMEA	*Studi Micenei ed Egeo-Anatolici*

Preface

Keith Branigan

The papers found in this volume were first presented at the fifth Round Table on Aegean Archaeology, held at Sheffield in January 2000. They were subsequently re-written, in the light of the intensive discussion and debate which they generated, for publication in this volume. Two contributors to the Round Table were unable, for various reasons, to contribute a chapter to the book, but they contributed fully to the discussions which informed the papers published here. We would like to acknowledge the contributions of Cyprian Broodbank and Vance Watrous, as well as the full part played by our principal discussant, Anthony Snodgrass.

Our Round Table was about urbanism, and so is this volume; it is not concerned with urbanisation. That is, we focus not on the process but rather on its end-product. This is partly because we did not want the discussion to drift from urbanisation to state-formation or the emergence of civilisation. Important and interesting as they are, these topics have been the centre of much debate in Aegean prehistory over the past thirty years, and they will be so again. The nature and character of Bronze Age towns, however, has seen much less discussion, particularly at a generalised level. Papers on prehistoric Aegean towns have largely focussed on their architecture, and particularly their elite or public architecture, and are often restricted to a single town or even a single building. The purpose of the Round Table was to direct attention and thought not only to urban settlements as a whole but to their social and economic roles, their demographic significance, and ultimately to their character or personality. These are, after all, what makes a town different to a village, and urban different to rural. They underpin the definition of a town which I offered the Round Table, and which I unashamedly admit is taken from the combined words of Louis Wirth (in 1938) and Bruce Trigger (in 1972): 'a relatively large, dense and permanent settlement of socially heterogeneous individuals, which performs specialist functions, of a non-agricultural type, in relationship to a broader hinterland'.

Whilst that definition can be seen to embrace a number of both Minoan and Mycenaean nucleated settlements, most Aegean prehistorians have long recognised that Minoan towns were in some respects quite different to those of contemporary mainland Greece. This was something that was brought out by our discussions, and indeed the differences were seen to be perhaps more wide-ranging than we had previously realised.

Minoan Urbanism

Todd Whitelaw rightly says that to understand Minoan urbanism we must first attempt to establish its scale in human terms, which means getting to grips with the difficult topic of population estimates. He presents probably the most carefully argued and thoughtful paper yet published on this topic (and an appendix provides some of the raw data for others to use in further research). Keith Branigan compares urban and rural populations and concludes that urbanism was a way of life for a very significant part of

the Minoan population, and that it was structured in a three-tier hierarchy. Jan Driessen, whilst accepting a similar hierarchical structure, uses the evidence provided by more than twenty regional surveys to argue that both settlement history and hierarchy varies from region to region. Tim Cunningham takes the arguement a stage further, with a detailed examination of urban settlements and their hinterlands in east Crete. He identifies local variability both in centre-periphery relations, and in the spatial organisation of towns. The same theme of temporal and regional variability is taken up by Ilse Schoep in her discussion of the urban-hinterland relationship as revealed in the archival evidence. She suggests that in Protopalatial Crete administrative documents are restricted to urban centres and 'public' buildings, whilst in the Neopalatial they are more widely distributed in town and country and appear in private as well as 'public' contexts. Her case studies suggest that urban-rural relationships may have been managed in different ways for different purposes in different times and places.

Overall, the papers on Minoan urbanism suggest that towns were a very significant part of Minoan life, demographically and socially as well as economically, but that the ways in which the urban-rural dialogue was articulated varied considerably from region to region, as well as from Protopalatial to Neopalatial.

Mycenaean Urbanism

The early stages of mainland urbanism have received little attention and Anastasia Dakouri-Hild's paper on Middle Helladic Thebes is therefore a particularly welcome contribution. She demonstrates that variability in both the density and architecture of domestic housing is a feature of this early town, and that changing social structures may be reflected in the development of the town through the Middle Helladic. One of the most obvious points of difference between Minoan and Mycenaean towns, the size of public spaces and courts, is taken up and explored from the Mycenaean viewpoint by William Cavanagh. Open spaces and courtyards in Mycenean towns have their own distinctive character and functions. They have little to do with public meeting places, but much to do with public ceremonial processions and progress. The ceremonial roads which lead from the courts, lead also beyond the urban centres to their rural hinterlands. John Cherry and Jack Davis explore the settlement of those hinterlands in an attempt to understand better what sustained the central places. Their case study of the Nemea valley reveals only a handful of other potential towns in the region of Mycenae, forming a second tier in the urban hierarchy. Below this there appear to be only villages, hamlets and farmsteads. John Bennett and Cynthia Shelmerdine, examining the case of Pylos and its nearest neighbours, are able to outline the growth of the nucleated settlements, and by relating the archaeological to the textual data, to suggest the way in which relationships between first and second rank centres may have developed. Stelios Andreou examines a very different region, in central Macedonia, where small-scale societies endured for millennia. In the Late Bronze Age a small number of significant nucleated settlements with features like perimeter walls, spatial organization, and acquisition of long-distance trade objects, were clearly the focus for social activity and the exercise of power. This is the sort of complexity we might associate with towns but should that term be applied to these Macedonian mounds?

Certainly, as we noted earlier, size is not everything when it comes to defining urbanism, the provision of social and economic services and amenities are essential features of towns. It is appropriate therefore that the volume begins with Christopher Mee's discussion of nucleation and dispersal in Neolithic and Early Bronze Age Laconia. He demonstrates that the growth of nucleated settlements alone neither announces the arrival of urbanism nor does it always necessarily prepare the way for it. But to explore how and why towns develop is not only a long and difficult task, it is also a different one to that which the fifth Round Table set itself.

Acknowledgment

We are pleased to acknowledge the financial support of INSTAP for this Round Table.

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1

Nucleation and Dispersal in Neolithic and Early Helladic Laconia

Christopher Mee

Introduction

Urbanism does not simply reflect the size of the community under consideration but presupposes a certain level of organizational complexity as well—political, social and economic (Konsola 1986: 9–11; 1990: 463–71). The difficulty we face as archaeologists, and more particularly as survey archaeologists, is that size is often the only basis on which we can make inferences about the settlement hierarchy in a region. So it should be acknowledged that urbanism, *sensu stricto*, is not the theme of this paper. However, I will examine the issue of complexity in the Neolithic and Early Helladic periods. This is one of the principal objectives of the project which has recently been initiated at Kouphovouno, just south of Sparta. I intend to set the results of the first field season in the wider context of the Laconia Survey and the Laconia Rural Sites Project and to see whether the situation is comparable elsewhere in Laconia and the rest of the Peloponnese.

Kouphovouno

Kouphovouno (Figure 1.1) has been described by Waterhouse and Hope Simpson (1960: 74) as 'the most important Neolithic site in Laconia'. Von Vacano excavated here for two weeks in 1941. Most of his finds subsequently disappeared but those stored in Sparta Museum have been published by Josette Renard (1989). In 1999 we undertook an intensive survey of the site as the first stage of the project. Our approach was based on the techniques which had been developed for the Laconia Rural Sites Project (Cavanagh and Mee 1999).

A 250 by 250 m grid was laid out from the dry river-bed which forms the northern boundary of the site, and centred on the summit of the mound (Figure 1.2). The total area to be sampled was just over 6 ha, although 0.48 ha in the south-west and 0.9 ha in the north-west could not be treated because they were under cultivation. The size of the site and the quantity and quality of the finds led us to devise two methods for artefact collection. In the centre of the site 592 five metre squares, were sampled intensively. The team members were instructed to collect every artefact which they could see and to cut or brush aside the vegetation if necessary. As some of the squares were covered by tall grass or dense scrub, this was quite laborious and often painful. Around the periphery of the site the squares were combined into 20 m by 5 m units. The team swept across each of these units in close order but no attempt was made to cope with dense vegetation cover and so proportionately fewer artefacts were picked up. 214 units were recorded in this way.

Figure 1. 1 Kouphovouno

Neil Brodie supervised a gradiometer survey of the site. The variation in magnetic intensity was greatest around the centre of the mound, the core of the prehistoric settlement. Four areas of burnt earth, probably mudbrick or daub were identified but it is not yet clear whether the rectilinear outlines of these features relate to buried structures. Resistivity survey was also tried but proved less effective.

Nine 7.5 cm cores were drilled in a series of transects across the site. Eight of the cores went 5 m deep and one was taken down to 10 m. They were examined by Peter James and Alison Jones in the field and samples have been taken for analysis of fossil biogenic material, especially pollen and diatoms. The cores revealed an anthropogenic horizon which varies in depth from 55–400 cm and contains sherds, 'brick earth' and stone. Below this there is a layer of clay with sand and gravel beds or lenses. It would appear that the site was built on the floor of a drained lake, although a floodplain environment cannot as yet be ruled out. If there was a lake in the Holocene, it may well have stretched across the present Eurotas valley. Is this the origin of the story in Pausanias (3.1), that Eurotas, one of the first kings of Sparta, 'channelled the stagnant water from the plain down to the sea, and when it had drained away he called the river which was left there the Eurotas'?

Now that the pottery has been systematically studied, we know that Kouphovouno was occupied in the Middle Neolithic,

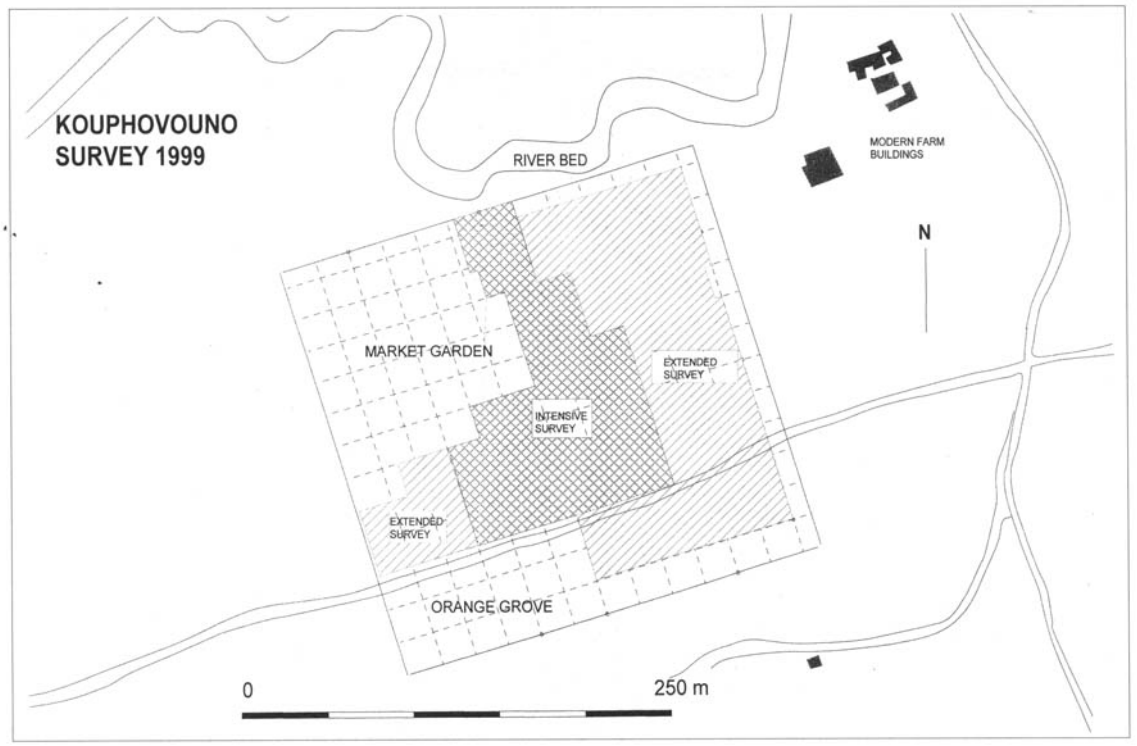


Figure 1.2 Kouphovouno: plan of site

Late–Final Neolithic and Early Helladic periods. There is also Middle Helladic and Mycenaean pottery, as well as Classical and Roman. The chipped stone artefacts have been examined by Anna Karabatsoli and Catherine Perlès. The date range indicated is Middle Neolithic–Early Helladic. We also found 147 polished stone tools—axes, adzes, hammers, querns, pounders, polishers and grinders. Obviously the extent of the site will have varied but our impression is that it covered at least 4 ha in the Neolithic and Early Helladic periods (Figures 1.3 and 1.4). It is of course possible that occupation was dispersed and shifted over time, as in the case of the enormous flat-extended Neolithic settlements in northern Greece (Kotsakis 1999: 67–9), although at the moment we do not think that this is likely because of the stratification revealed by the cores.

Neolithic Laconia

The evidence for the Neolithic period in Laconia is decidedly limited (Figure 1.5). Apart from Kouphovouno, the only other excavated sites are Diros (Shipley 1996: site 164), where the Alepotrypa cave was occupied in the Late Neolithic period, if not earlier (Papathanassopoulos 1996: 80–84) and the Kouveleiki caves at Alepochori near Geraki which have Late Neolithic and Final Neolithic deposits (Kontaxi 1994: 837–39; Kontaxi *et al.* 1989; Koumouzeli 1989; Stravopodi 1994: 835–37).

Neolithic is also reported from the Papayannakos caves at Goritsa-Laina (Hope-Simpson and Dickinson 1979: site C11/ Shipley 1996: site 97), at Asteri – Karaousi (C24/142), Ayios Stratigos – Glykovrisi (Papathanassopoulos 1996: 206), Apidia

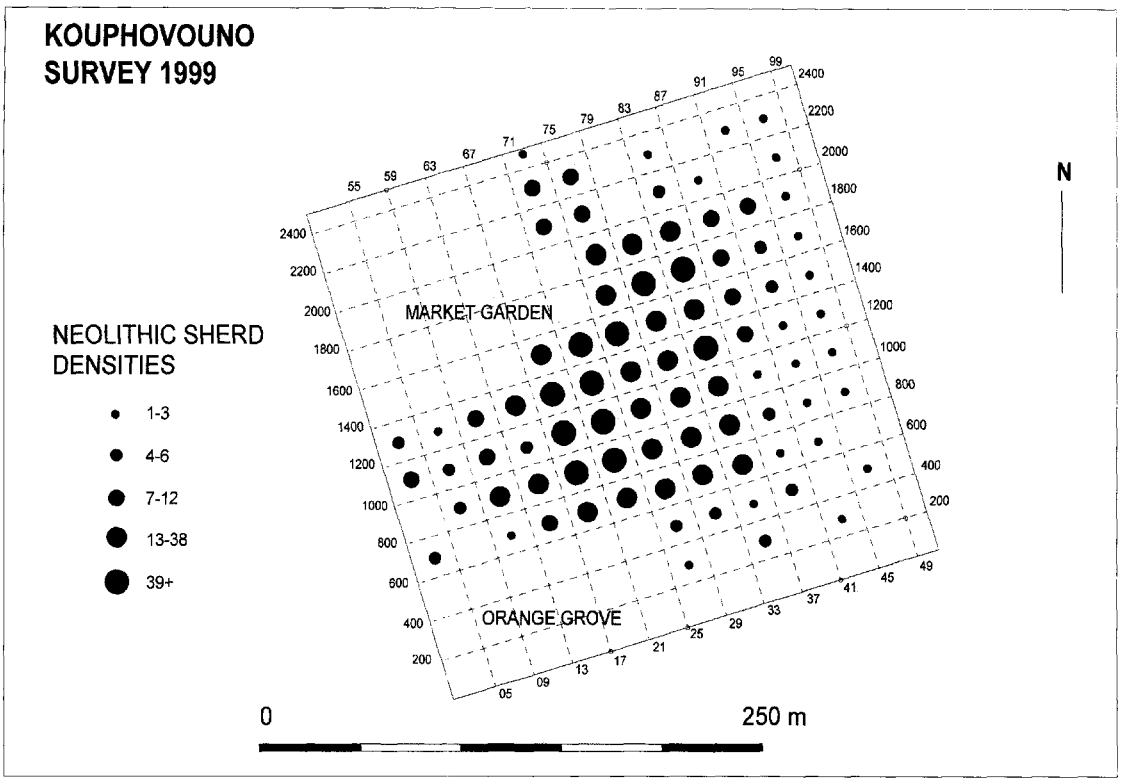


Figure 1.3 Kouphovouno: distribution of Neolithic pottery

(C29/216), Plitra – Goulas/Kastelli (C32/228), Kotronas – Skopas (C46/203) and a number of the sites identified by the Laconia Survey (Figure 1.6 and Table 1.1). In a recent paper, Cavanagh (1999: 34–7) lists twelve locations which have Final Neolithic finds but there is nothing earlier. Only E48 is an obvious settlement site with pottery, chipped stone artefacts and polished stone tools. At most of the other locations there were just chipped stone artefacts. The distribution of the sites is of interest, in that they are situated on some of the poorest soils in the region, in particular limestone outcrops which now have just a thin cover of *terra rossa*. Cavanagh (1999: 31) notes that elsewhere in the Peloponnese many Late and Final Neolithic sites are also in agriculturally marginal locations and there is an increase in the use of caves. He argues that this reflects a greater emphasis on pastoralism but not extended transhumance. To offset the risks inherent in this specialized strategy, there would have been exchange with communities which

Table 1.1 Laconia Survey: Neolithic Sites (bold indicates that Neolithic is the sole or main period of use). 10496 is a 'non-site'.

Site Number	Size (ha)	*LS* ii Reference
B111	6.00	325–8
B116	0.01	328
E48	0.6	339–40
E77	0.12	339
E81		340
L401	0.13	379–80
R429	0.41	408–9
T480	<0.01	421
T481	0.03	421
U487	0.1	424–5
U489	0.03	425–6
10496		1

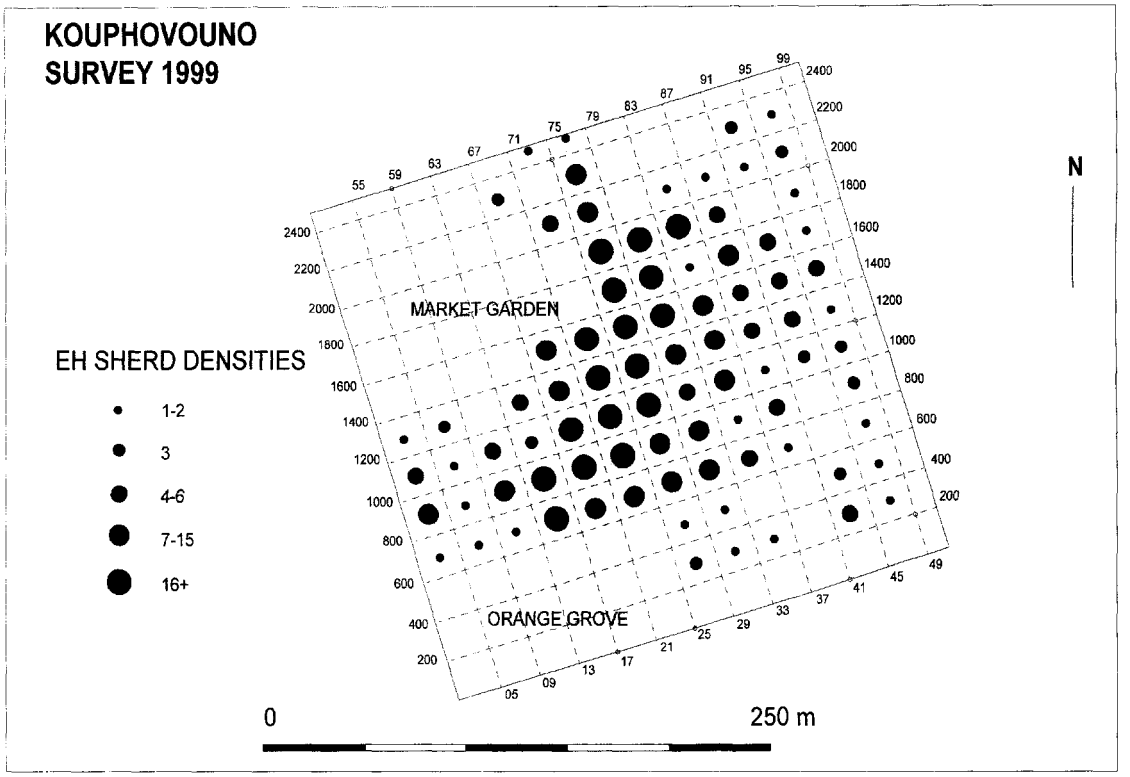


Figure 1.4 Kouphovouno: distribution of Early Helladic pottery

concentrated on crop cultivation (Cavanagh 1999: 52–8 and see also Perlès 1999a: 23–4).

It would appear that, for much of the Neolithic period, Kouphovouno was the only substantial settlement in central Laconia. Of course we must take into account the possible effects of erosion and alluviation, although the postglacial rise in sea-level is not a factor here (Jameson *et al.* 1994: 228–46; Zangger 1993: 65–67). Bintliff (1985: 212–15) has suggested that we might expect to find no more than 20% of the Neolithic sites which once existed. The assumption that there has been progressive site loss must be correct but how accurately this can be calculated is open to question. Moreover, it should be noted that there is a dramatic increase in the number of sites in the Early Helladic period, a development which I will discuss in due course. This disparity cannot easily be explained in terms of post-depositional processes. Why would so many Early Helladic sites have survived and so few Neolithic? Bintliff *et al.* (1999) believe that surveys may have overlooked prehistoric sites because much of the pottery is coarse and has not survived or has been missed. This may be true but it seems that a high proportion of the pottery produced in the Middle Neolithic period was in fact fine ware (Vitelli 1989; Perlès and Vitelli 1999: 98) which is more resilient and also quite distinctive.

The Neolithic Peloponnese

Across the Peloponnese Early and Middle Neolithic sites have proved remarkably elusive but an expansion in settlement is reported in the Late and/or Final Neolithic periods by the Pylos Regional Archaeological

Project, the Asea Valley Survey, the Berbati-Limnes Archaeological Survey and the Southern Argolid Exploration Project, although not in the case of the Nemea Valley Archaeological Project where there were fewer Late/Final Neolithic sites (Table 1.2). Nucleated Middle Neolithic settlements, like Kouphovouno, include Asea (Forsén 1996), Asea Valley site S16 (Forsén *et al.* 1996: 85), Ayioryitika (Petrakis 1992: 341), Lerna (Johnson 1996a: 276–77), Berbati-Limnes site FS400 (Johnson 1996b: 44–57), Tsoungiza (Wright *et al.* 1990: 624–25), and Corinth (Alram-Stern 1996: 222–29). Franchthi may have had a similar role (Alram-Stern 1996: 244–61) but it is difficult to estimate the original size of the site because of the rise in sea-level (Johnson 1996a: 280).

Johnson (1996a) has claimed that it was the need for a reliable water supply which determined site location in the north-east Peloponnese in the Early and Middle Neolithic periods. Early farmers, who were dependent on the use of the hoe until the introduction of the ard in the Final Neolithic or Early Helladic period, favoured 'well-watered alluvial soils of high potential for arable agriculture' which 'have a strictly limited distribution in southern Greece' (Johnson 1996a: 282–83). Van Andel and Runnels (1987: 70–73) have also stressed the importance of spring-fed agriculture at this time. If these communities were in fact environmentally circumscribed or constrained because of their reliance on restricted water resources and consequently could not split into smaller units, this would surely have led to the institution of some form of centralized organization to regulate access to resources.

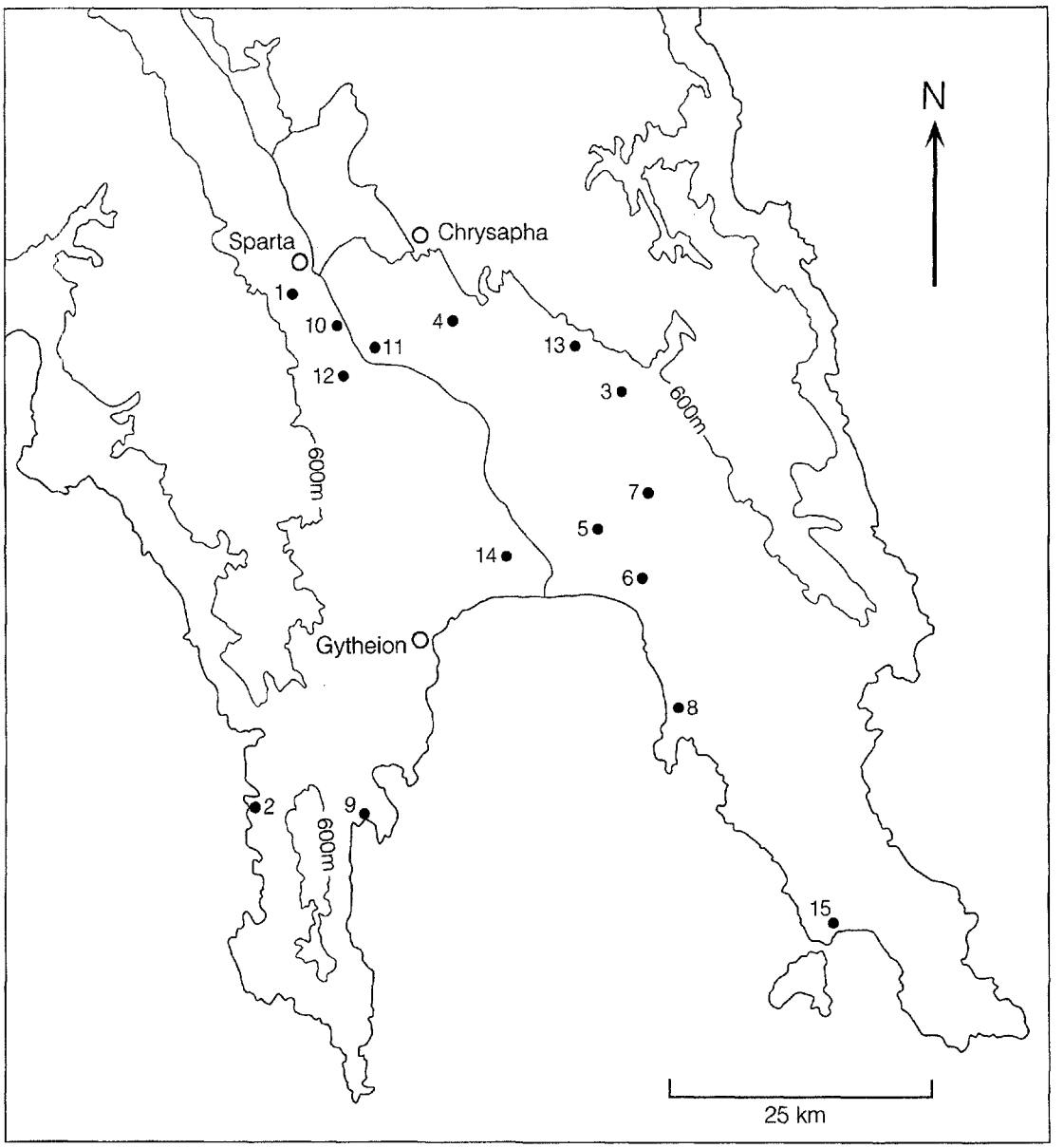
It is not in fact necessary to invoke environmental circumscription as an explanation for the Early and Middle Neolithic settlement pattern in the Peloponnese. Perlès (1999b) has analyzed the distribution of EN2 sites in eastern Thessaly and finds that 'no positive relationship can be established between settlement choice or settlement density and natural features'. She concludes that the 'main factor in settlement foundation was socio-economic' (Perlès 1999b: 53). However, Thessaly is rather different in that the settlements are typically just 1–4 km apart (Halstead 1995: 13–14)—Perlès (1999b: 46) reckons that the mean distance is 2.3 km. At least in the Early Neolithic period, villages may have periodically split up when the population reached a critical level (Perlès 1999b: 53–54), although there were no doubt integrative mechanisms to control this tendency towards fission (Halstead 1999: 89).

The size of the communities in the Peloponnese presumably ensured their demographic viability and generated a pool of labour and surplus agricultural resources

Table 1.2 Neolithic and Early Helladic sites in the Peloponnese identified by surface survey. Some of the figures are approximate.

Survey Project	EN Sites	MN Sites	LN/FN Sites	EH Sites	Reference
Asea Valley		1	3	1	Forsén *et al.*1996
Berbati-Limnes	1	1	19	13	Wells 1996
Laconia			12	33	Cavanagh *et al.* 1996
Methana		1		21	Mee & Forbes 1997
Nemea Valley	2	2	1	21	Cherry *et al.* 1988 Wright *et al.* 1990
Pylos*				6	Davis *et al.* 1997
Southern Argolid		2	7	37	Jameson *et al.* 1994

* four sites have pottery which may be Late Neolithic or Middle Helladic



1 = Kouphovouno
2 = Diros
3 = Alepochori
4 = Goritsa
5 = Asteri
6 = A. Stratigos
7 = Apidia
8 = Plitra
9 = Kotronas
10 = Palaiopyrgi
11 = Skoura
12 = A.Vasileios
13 = Geraki
14 = A. Stephanos
15 = Pavlopetri

area covered by Laconia Survey

Figure 1.5 Laconia: location of major Neolithic and Early Helladic sites and of the area covered by the Laconia Survey

Table 1.3 Laconia Survey: Early Helladic Sites (bold indicates that Early Helladic is the sole or main period of use). R3012, U3001, U3005 and U3006 are 'out-of-area' sites.

Site Number	Size (ha)	*LS* ii Reference
C126	0.01	331
C128	0.01	331
C131	0.01	331
G154	0.04	350
K414	0.03	374
L400	0.03	379
M357	0.03	383
N191	0.07	397
N333	0.29	394
P262	0.05	399
P263	0.01	398
P267	0.31	400
P269	0.10	400
P284	1.00	399
P285	0.20	397
Q360	25	403–5
R280	0.05	411
R287	0.18	409
R289	0.19	407
R428	0.47	410
R462	<0.01	414
R529	<0.01	410
R3012	0.71	409
S448	<0.01	416
S459	0.05	417
S478	0.02	418
U490	0.20	428–9
U500	0.70	435–6
U504	0.05	437
U520	0.11	436–7
U3001	0.71	432–4
U3005	0.13	438
U3006	0.56	438

which could be mobilized in the event of a crisis. Nucleated settlement would clearly have had major benefits but would also have created a complex web of affiliations and alliances which may have been exploited by some households. The distribution of Urfirnis pottery indicates that, as expected, there were also supra-regional contacts (Cullen 1985; Perlès 1999a: 20–21) and consequently access to raw materials such as obsidian and exotic flints. The various exchange networks (Perlès 1992: 148–55) will have operated in tandem with social compacts which provided a further safeguard against the risk of crop failure and consequently the threat of starvation (Talalay 1987: 167–69).

Crete apparently presents us with an even more extreme example of nucleation. It seems that Knossos was the only major Neolithic settlement (although doubts were expressed about this by Peter Tomkins at the Round Table) and possibly covered more than 5 ha in the LN period (Evans 1994: 19 but Whitelaw 1992: 226–27 is not so sure). There has of course been some debate about what this implies (Broodbank 1992; Whitelaw 1992; Manning 1999). Nevertheless, it is assumed that Knossos had exceeded the size threshold for a simple family-based community.

A higher level of social organization, marked by institutionalized inequality, will have been almost inevitable once the population of these settlements exceeded 500 (Halstead 1995: 13–14; Manning 1999: 470–71). It is of course notoriously difficult to estimate population size but, in a typically rigorous analysis of the evidence from the prehistoric Aegean, Whitelaw (this volume) proposes a figure of 200–225 per hectare, so we may need to revise our perception of Middle Neolithic society as relatively egalitarian.

Early Helladic Laconia

After the initial phase of colonization in the Final Neolithic period, settlement expanded across much of the hinterland of Laconia. There is an Early Helladic component on 33 of the sites identified by the Laconia Survey (Figure 1.7 and Table 1.3) and 26 more have some EH pottery (Cavanagh 1996: 6). The densest concentration is around Chrysapha, quite a distance away from the Eurotas. Two of these sites were surveyed in the course of

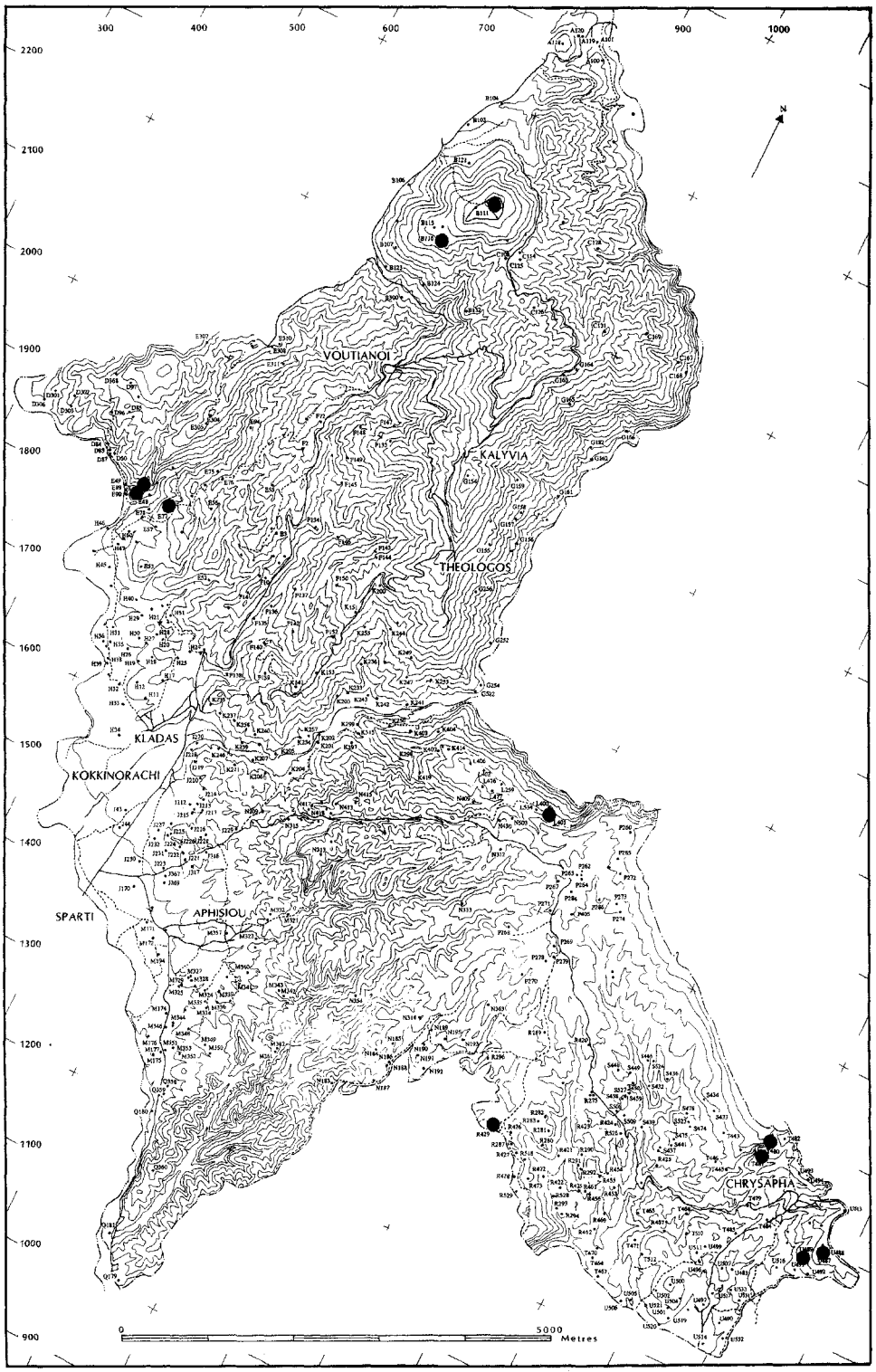


Figure 1.6 Laconia Survey: Neolithic sites

the Laconia Rural Sites Project – LP7 = R3012 and LP8 = R287. On the basis of the artefact distribution, geophysical data and soil analyses, our impression is that they were small settlements, a cluster of houses. Some of the other sites may have been farmsteads occupied by just one family. Cavanagh and Crouwel (in press) believe that there may have been a two-tier settlement hierarchy in EHII. The largest of the sites, P284, covers *c.* 1 ha.

Down in the Eurotas Valley there are several major EHII settlements (Figure 1.5) – Kouphovouno, Palaiopyrgi (C4/93), Skoura – Vouno Panagias (Banou 1999: 65–66) and Ayios Vasileios (C7/101 – Banou 1999: 65–67) but no network of subsidiary sites, or at least not on the east side of the river which has been intensively surveyed. So we appear to have two different settlement patterns: nucleated in the lowland and dispersed in the hinterland. This is not a temporal phenomenon—of dispersal and then nucleation—as Wiencke (1989: 498–99) has suggested for the Argolid (Cavanagh and Crouwel in press) but may be a reflection of two different agricultural regimes. The situation in Late Neolithic Thessaly is quite similar. Halstead (1995: 15) observes that 'villages are clearly concentrated in the areas of early agricultural settlement and hamlets in the areas colonized later. Villages and hamlets thus represent alternative settlement strategies in agriculturally core and marginal areas rather than the centres and satellites of local site hierarchies'. Although it would appear that there was less of an emphasis on pastoralism in Early Helladic Laconia, the type of economic pluralism which Cavanagh (1999: 56–58) has proposed for the Late and Final Neolithic periods may still have been in operation.

How did the sites in central Laconia interact? Were they dependent or interdependent? Should we envisage a settlement hierarchy with Kouphovouno, for example, at the apex? Or was the relationship more symbiotic? If Kouphovouno did have an administrative role, this should become apparent when the site is excavated and it may then be possible to speak of a proto-urban centre. At the moment the evidence is inconclusive.

Elsewhere in Laconia a number of clay sealings have recently been discovered in an EHII context at Geraki (C12/103) next to a pithos which contained carbonized grain (Weingarten *et al.* 1999). Crouwel (1999: 150) believes that the sealings must be administrative documents. In the Helos Plain there is a cluster of EHII sites (C15/145, C16/125, C18/139, C19/136, C20/137, C22/132, C23/133, C24/142, C26/142, C27/146, C29/216) around Ayios Stephanos (C17/141), which may well have been the dominant settlement in southern Laconia. The top of the hill covers approximately 4.5 ha and Early Helladic occupation was apparently widespread (Taylour 1972). It is a pity that Lord William Taylour did not discover a corridor house. Dickinson (1992: 109–10) draws attention to the size of the underwater site at Pavlopetri (C39/250) but wonders how much of this is Early Helladic.

The stark contrast between the Neolithic and Early Helladic settlement pattern in Laconia is not unexpected, particularly if we take into account the enormous time span. However, I had not anticipated that there would be so much variation in EHII. The situation in central and southern Laconia seems quite different. It is consequently difficult to discern a regional trajectory, although we can clearly see advances in organizational complexity which parallel developments elsewhere.

Early Helladic Peloponnese

Particularly in the Argolid there is a comparable increase in the number of sites, although not in Arcadia or Messenia (Table 2). A two or

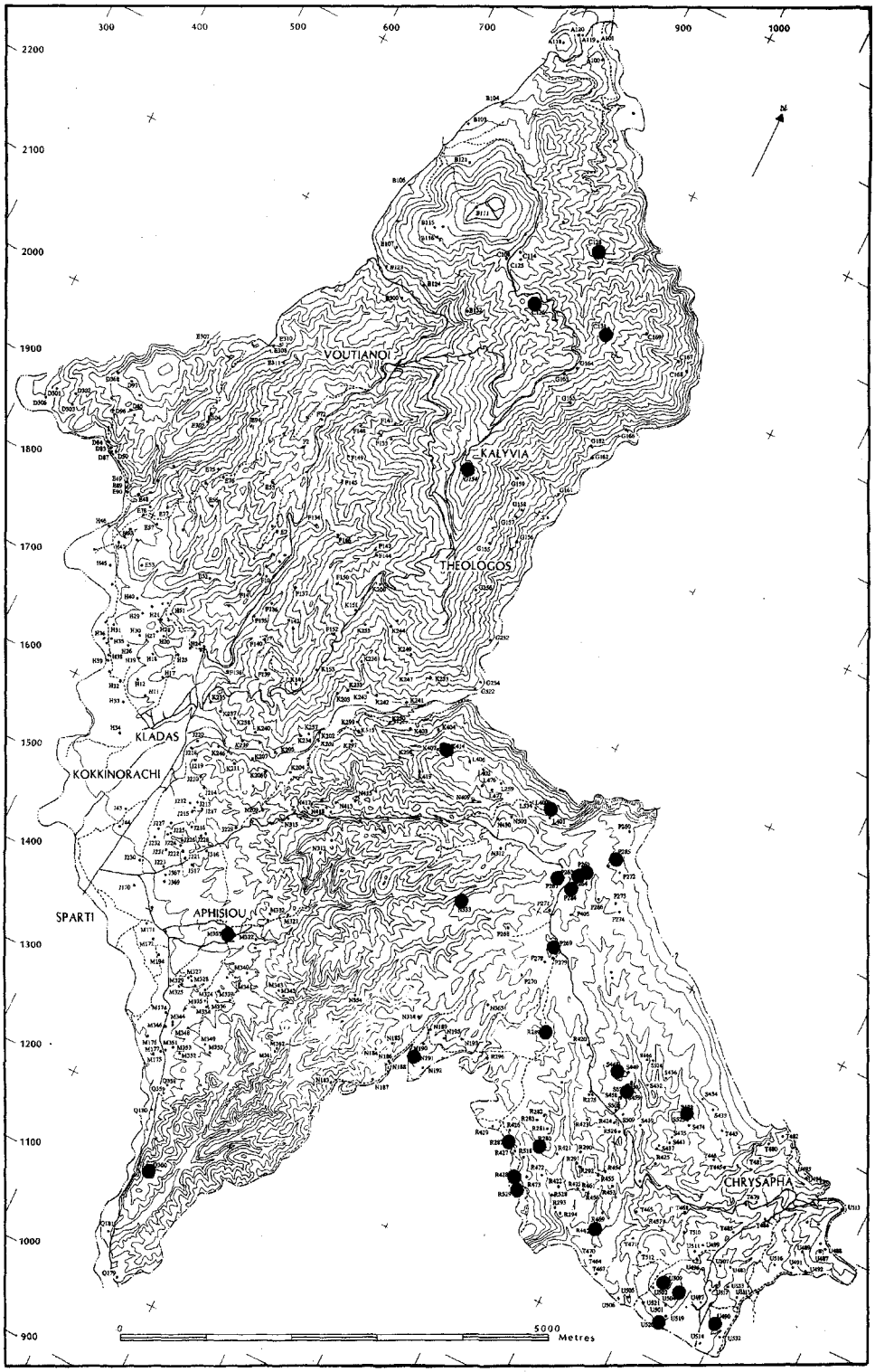


Figure 1.7 Laconia Survey: Early Helladic sites

three-tier settlement hierarchy of hamlets, villages and towns has been proposed for the southern Argolid (Jameson *et al.* 1994: 358–62) and a four-tier hierarchy in the Argive Plain (Kilian 1986: 69–70). Monumental architecture, in the form of corridor houses, is attested at Akovitika, Lerna and possibly Zygouries (Wiencke 1989: 496–97 and 503–505; Renard 1995: 177–79 and 182–89). The Rundbau at Tiryns may have been a massive communal granary (Kilian 1986). Clay sealings at Akovitika, Asine, Corinth and Lerna indicate administrative activity (Pullen 1994: 48–50; Renard 1995: 288–95). Pullen (1986: 79) concludes that EHII society was 'hierarchically organized into small, centralized socio-political units'. Proto-urban seems an appropriate term for this level of complexity (Konsola 1990: 463) but the Argolid may have been the exception rather than the rule.

Conclusion

In conclusion, it seems appropriate to stress the degree of regional variation which is readily apparent if we compare Laconia, Messenia and the Argolid, particularly in the Early Helladic period. This may be true of the Neolithic period as well but we still have much to learn about the Peloponnese at this time. The level of analysis which is possible in northern Greece remains a rather distant prospect. Early Helladic Laconia illustrates the point that we should also be conscious of intra-regional variation and of course there is a chronological dimension as well. Nevertheless, it is important to emphasize that a pattern of nucleation and dispersal may be a temporal phenomenon but can also indicate alternative settlement strategies within a region. The temptation to generalize will inevitably mask a more complex reality.

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2

From Sites to Communities: Defining the Human Dimensions of Minoan Urbanism

Todd Whitelaw

Introduction

To consider the nature of Minoan urbanism, it is essential that we have some idea of the scale, in human terms, of the phenomenon we are dealing with, and the purpose of this paper is to review the evidence we have for Minoan urbanism that is particularly relevant to estimating the populations of Neopalatial Cretan sites. Throughout much of the century of investigation of Minoan sites, work has concentrated on rich sites, such as the palatial centres, villas, cult locations and cemeteries, but early extensive work on town sites in East Crete, and information from recent smaller-scale research projects in various parts of the island (e.g. Kommos, Mochlos, Pseira, Palaikastro), and rescue excavations in modern towns, have led to the accumulation of a significant body of data relevant to the study of Minoan urbanism.

Population estimation seems to be viewed as a particularly dangerous inference by many Aegean prehistorians (e.g. Dickinson 1994: 51; cf. van de Mieroop 1999: 95–97), which seems curious in the light of our willingness to speculate about issues such as religious beliefs, which have a much less direct link to the actual material record which has survived. I do not consider this excessive caution to be justified, and in this paper suggest that we have much more relevant information for wrestling with this question effectively than is commonly appreciated, and can use approaches to population estimation that are significantly more reliable than those used in the past.

Estimating Populations through Archaeological Settlement Data

There are two standard approaches to estimating the population of settlement sites which have been used widely with archaeological data: estimations from overall site size, employing a general cross-culturally based multiplier for residential density, and estimations from the number of houses, with an assumption of the average number of residents per house (e.g. Russell 1958; Naroll 1962; Cook and Heizer 1968; Hassan 1981; Schacht 1981). Neither approach is as straightforward as is usually assumed.

The basis for most population estimations by the first approach is a study by Naroll, in which he correlated estimates of roofed living space, with the community population, for 18 cultures (1962). The data itself deserves to be seriously questioned, being based on very few cases, usually generalized from normative statements about 'typical' house areas, and in one case (Inca Cuzco) on ethnohistoric data that implies less than $1m^2$ of floor area per inhabitant. However, leaving uncertainties about the data aside, the analysis itself is so

misleading as to call into question all of the estimates which have been based upon it over the past four decades. Naroll was specifically interested in allometric relationships, and for his analysis took the logarithm of each variable. So transformed, the two variables were fairly strongly correlated, giving an r^2 of 0.788, meaning that about 79% of the variation between cases in roofed settlement area could be accounted for by the differences in their population. However, logging both axes also serves to tighten-up what is a very variable relationship, which can better be appreciated by plotting the original linear values (Figure 2.1). Numeric transformations may improve analytic predictions, but must be justified in behavioural terms, not used simply because they produce better correlations; after all, people occupy real space in their everyday activities, not the logged value of real space! In the linear presentation of the original data, the relationship between the two variables can be seen to be only the most general, and in no way strong enough to justify the reliance put on it in archaeological interpretations that have used Naroll's model. Indeed, Naroll's short-hand 'rule of thumb' simplification to $10m^2$ of floor space per person, widely cited and usually used instead of the regression model, can be seen to fit the data only very poorly.

The basic problem is that there is no simple relationship between people and the space they inhabit. The space required or desired for domestic accommodation, is determined by a range of social and symbolic, as well as functional considerations, which can vary with individuals, families, communities, statuses, and between cultures (Hall 1969; Tuan 1977; Severy 1979; Sommer 1969; Watson 1970; Rapoport 1969; 1982; Fletcher 1981; 1995; Wilk 1983; Kent 1984; Moore 1986; Johnson 1989; Blanton 1993; Parker Pearson and Richards 1994; Whitelaw 1994). This situation gets far more complex archaeologically,

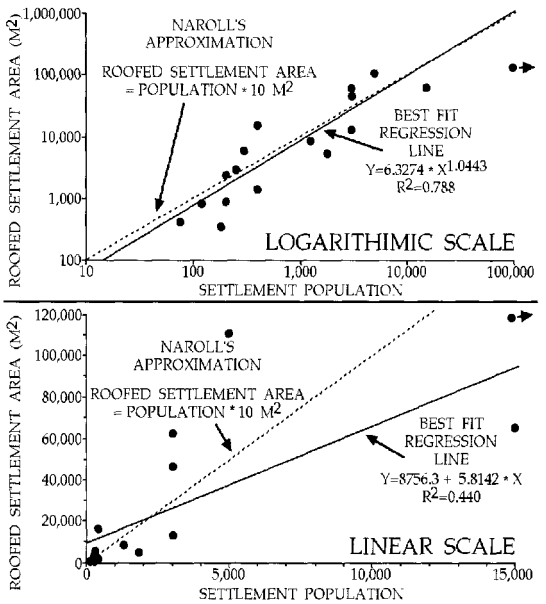

Figure 2.1 Naroll's analysis of community house floor area and population. Top: logged axes; bottom: linear axes.

where we usually work in terms of overall site areas, rather than estimates of roofed dwelling space. Community space incorporates several additional sets of behavioural variables involving the spacing between individual houses, as well as the overall layout of the communities, including communal, non-residential spaces and structures. Again, there is a vast range of variation, both between and within cultures. Basically, we need information about culture-specific concepts of space use and perception, as well as information on community organization and layout, to understand the differences in these patterns (Whitelaw 1989; 1991; 1994). We therefore need to derive such understandings from our culture-specific data, rather than impose assumptions *a priori*, by simply invoking global cross-cultural figures. When we are working in a context where no such culture-specific archaeological data exists, then such global perspectives may be the best

first order approximation, but where additional information from the culture under study is available, it is likely to improve considerably the relevance of estimates, and our confidence in them.

Attempts to side-step some of these contextual difficulties have involved the development of region-specific formulae relating settlement population to overall settlement area (e.g. Frankfort 1950; Cook and Heizer 1968; Drager 1976; Aurenche 1981; Kramer 1980; Sumner 1979; Adams 1981; Shiloh 1980; Kolb 1985; Carothers and McDonald 1979; Haviland 1972; Sanders, Parsons and Santley 1979; Zubrow 1974), by using ethnographic data on settlements in the same geographical region as the archaeological culture of interest. These rely on an assumption of direct historical continuity between the present and past cultures, which is rarely justified by an explicit argument of relevance. However, even with the latter, we still have little basis for assessing the additional assumption of continuity in spatial behaviour which is necessary for them to be of any interpretive value.

What about the alternative, more variation-sensitive approach: working from identifiable houses, multiplying-up by estimated average residential group – or household – size, and then multiplying this by an estimate of the density of houses within the community? In some archaeological cases, particularly where there is agglomerative architecture, it may be difficult to disentangle individual residence units, though this is often possible on the basis of detailed architectural study of the sequence and pattern of construction (e.g. Rohn 1965; Hill 1970; Dean 1970; Wilcox 1975; Adams 1983; Crown 1991; Lowell 1991; Whitelaw 1983; Ling 1997). On the other hand, for many sites, individual residential units are fairly readily identifiable architecturally, through cultural conventions in layout and construction. For example, at the Minoan site of Gournia, most analysts accept the original excavator's definition of individual houses, on the basis of room layout, interconnections between rooms, and regular differences in construction between internal and external walls (Boyd Hawes 1908: plan; Fotou 1993). Such boundaries between residences can be complicated by additions and modifications in property boundaries during the life of a structure, since the households using them also change in size and composition according to domestic cycles (Fortes 1958), and may adapt the houses physically to conform to their changing social needs (e.g. Stone 1981; 1987; 1996; Castel 1984). But regardless of such modifications, it is likely that changes in house size and layout will also be accompanied by architectural re-definition of spatial boundaries, so that the social units are spatially recognizable, at least to the inhabitants of the community.

Identifying and Interpreting the Neopalatial Household

In many cases, we could go on to debate whether it is appropriate to interpret such architecturally-defined units as independent residential households, but for most of our Neopalatial examples, this does not appear to be seriously in doubt (McEnroe 1982). What we do need to establish is what sort of households we are dealing with, since residential units can represent various different types of social group (Bender 1967; Yanagisako 1979; Wilk and Netting 1984; Hendon 1996; Price 1999). Neopalatial Gournia provides a good methodological example for exploring this question. One particularly marked feature of the houses which can be readily defined at Gournia is their standardization in size (Figure 2.2).

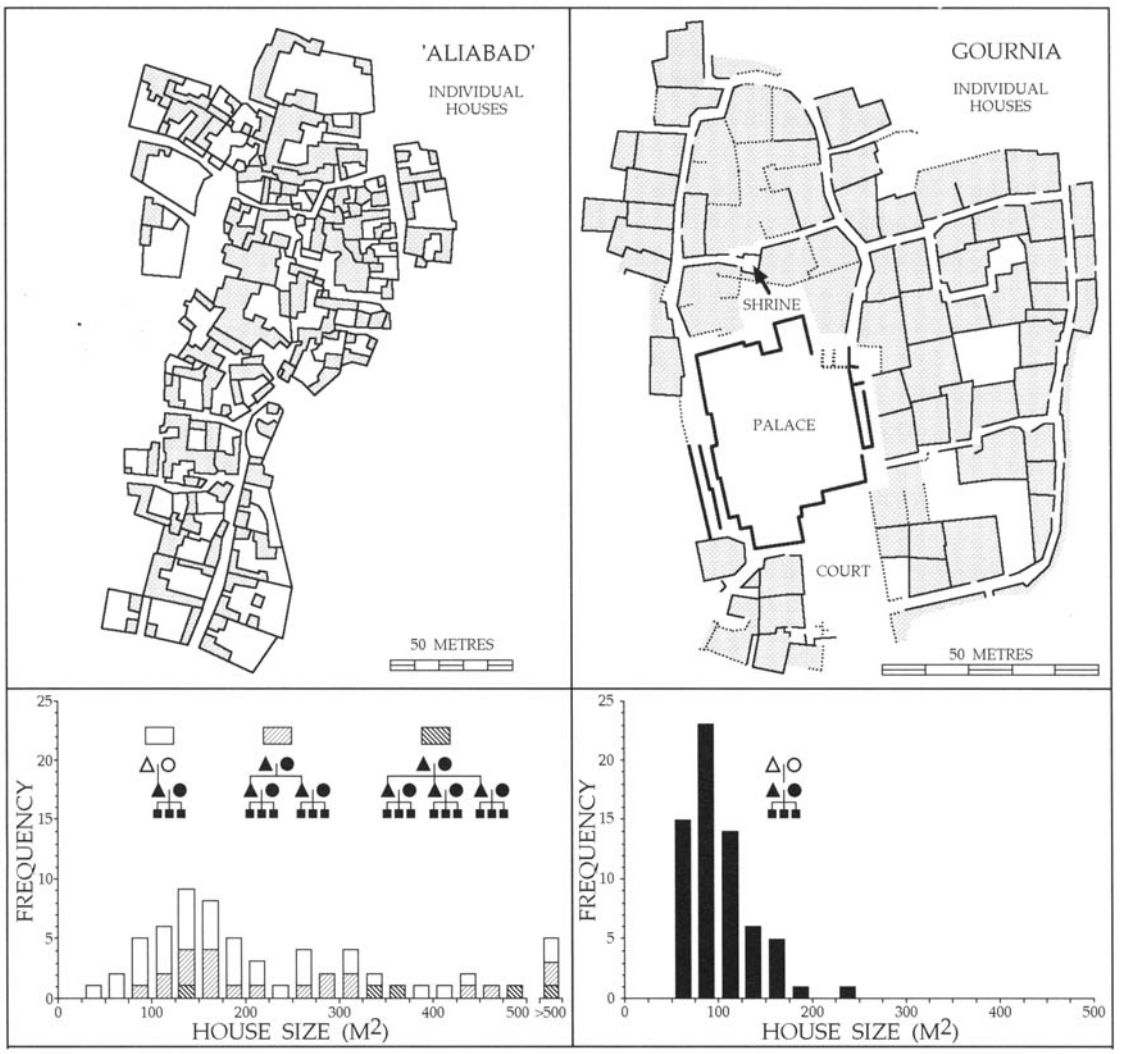

Figure 2.2 House size variability with family form: left: 'Aliabad', Iran, 1975; right: Gournia, Crete, Neopalatial period.

Having criticized the basis for Naroll's cross-cultural equation of 10 m^2 per person of roofed floor area, we can't really turn around and use it to suggest what sort of social group we should reconstruct as resident in each house, but the relatively small size, and particularly the standardization in size is itself strongly suggestive of nuclear or minimally-extended stem families – of about 4–5 individuals or so.[1]

The reason for proposing this is precisely the standardization in scale. In any society with regular polygamous households, we can expect considerable variation in membership and demands on space, depending on how many spouses – and their respective families – are incorporated into each household. The same applies to cultures with extended family structures – where households usually encompass the spouse of the household head,

and their juvenile offspring, as well as the families of variable numbers of married offspring. In such a situation, we should anticipate considerable variation in architectural house size, as indeed we see in Figure 2.2 for an ethnographically documented agricultural village on the left (where many households are composed of extended families: Kramer 1982: 21), but not for Gournia, on the right. While a general trend can be seen in the ethnographic case, linking larger houses with family size, the relationship is not direct, because of the lack of synchrony between social and architectural development – a nuclear family may reside in a compound expanded to suit an extended family in the recent past, while an extended family may be limited by a variety of factors from expanding their dwelling.

One might immediately object that any such variation in the archaeological case could be masked by the absence of information about the scale of occupation on the upper floor(s) of the structures. However, this is also relevant to the ethnographic case, and the very different pattern of variation still comes through in ground floor areas alone. We can expect that such a degree of variability in spatial needs will be manifest at the ground floor level as well as in total house floor area.

But estimating household composition from house floor area is not quite that straightforward, since the number of residents is not the only, or indeed always necessarily the principal determinant of house size. Commonly, cross-culturally, house size also varies considerably with household wealth, which can be independent of household size (Kramer 1982: 116–38, 170–81; Horne 1994: 157–60; Kamp 1987; Wilk 1983; Netting 1982).

Such wealth distinctions appear to be identifiable archaeologically, where, within a site or culture, increases in house size do not represent the replication of coherent sets of rooms within the larger architectural unit, as is often clear with multi-family residences, but rather involve an expansion or scaling-up in individual room size (while retaining similar features and layout), and the proliferation of small rooms, used in increasingly task-specific ways. In other words, the elaboration in scale (rather than duplication) of the same basic spatial organization. That this pattern results from wealth differences, can be explored in specific cases through comparisons with the quality of construction and materials, decorative elaboration, and quality and quantity of finds. At a gross level, this can also be suggested by the size distribution of the houses, with many small houses, and decreasing numbers of larger examples – typically what we would expect in a status pyramid. This is a very general pattern, which can be documented widely among both ancient and modern societies (Figure 2.3).[2]

Bearing in mind differences in scale due to wealth differences, where we can isolate architecturally individual households in Minoan prehistory, there appears to be good evidence for a long tradition of houses of approximately the same scale from the Early Bronze Age through to the Neopalatial period, which suggests the nuclear family as the basic social and residential unit in prehistoric Crete.

A relatively small number of sites which were extensively excavated in the early decades of this century, provide the bulk of the 207 Neopalatial structures which I have felt able to identify as distinct houses. At the palatial centres, while interest has focused on the exploration of the palaces themselves, a few houses have been explored in the immediate vicinity of most palaces, which complement the picture available from the extensively investigated non-palatial towns (Figure 2.4).[3]

Differences in the representation of houses of different sizes at individual sites raises a

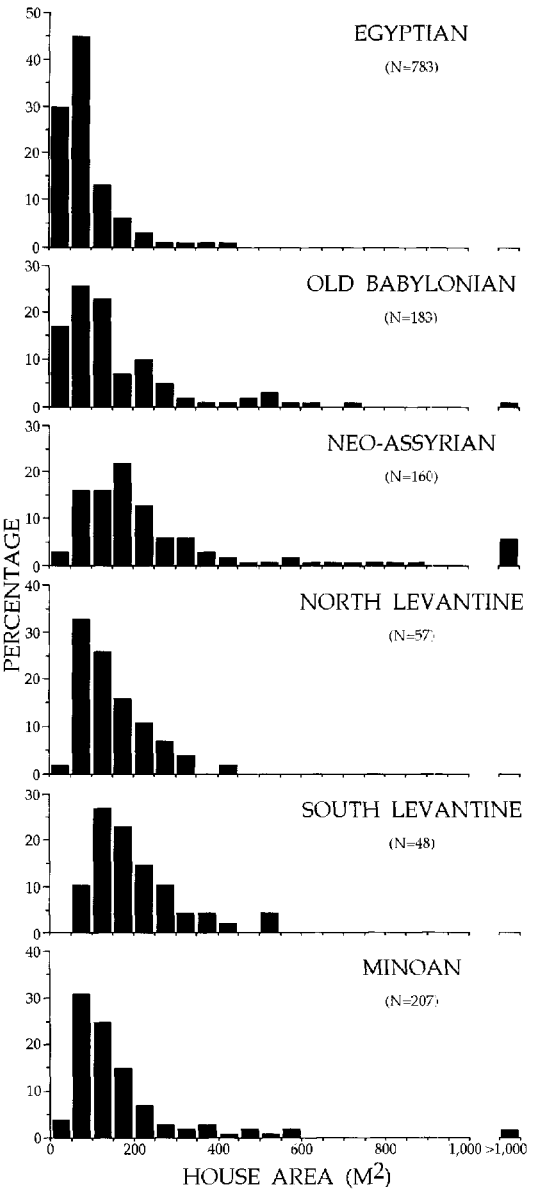

Figure 2.3 House size distributions for ancient cultures of the Eastern Mediterranean and Middle East. (For data sources, see note 2.)

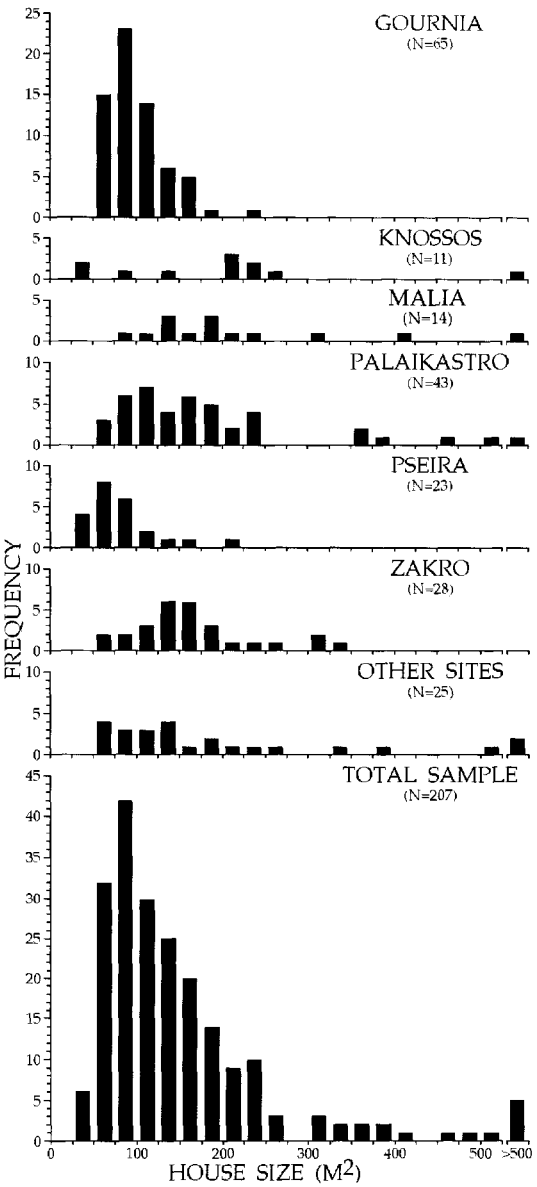

Figure 2.4 Neopalatial house size distributions by site. (For data, see appendix.)

new question. Palatial sites tend to have larger houses than non-palatial sites, but is this a real pattern which distinguishes between different communities, or types of community, or is this simply the result of excavation bias? Do excavators tend to explore larger houses and ignore smaller ones, because of the nature of the finds anticipated or actually being recovered?

I suggest the pattern incorporates both real differences between communities, and excavation bias. It is often clear from excavators' own

descriptions that they have pursued certain trenches in anticipation of 'rich' finds. At sites such as Knossos, Malia and Zakros, excavation has concentrated on relatively large houses close to the palaces, but smaller houses have been revealed at some distance from the palaces at Knossos (Stratigraphic Museum Extension: Warren 1981/1983; Acropolis House: Catling *et al.* 1979) and Malia (Quartiers Alpha and Gamma: Demargne and Gallet de Santerre 1953; Quartier Theta: van Effenterre and van Effenterre 1976).

On the other hand, a comparison of sites where considerable numbers of houses have been uncovered, such as Gournia and Palaikastro, suggests that there may have been real differences in housing patterns between these sites – borne out by other differences in construction style and finds – which suggest that many of the houses excavated at Palaikastro probably belonged to wealthier families. What we cannot know for certain is whether excavation has preferentially revealed the wealthy quarter of Palaikastro, or whether the whole town was, in general, composed of larger houses than are typical at sites such as Gournia and Pseira. Again, I suspect perhaps a bit of both, since smaller houses were investigated but not reported in as much detail on the fringes of the excavated area at Palaikastro (blocks Σ, Υ and Λ: Dawkins 1903–1904: 204, 214–15). Overall, the evidence that we have suggests that the palatial centres and other large communities such as Palaikastro, had a considerable range of housing, for residents across the entire social spectrum, whereas other sites, such as Gournia and Pseira, had more uniform residential groups, perhaps with few or no representatives of the wealthiest classes of Minoan society. Given the likely difference in position of different communities within regional settlement hierarchies, this should occasion no surprise.

To round out the architectural picture for Neopalatial Crete, it is appropriate also to consider the size data for so-called 'villas' and isolated rural structures (Figure 2.5).

Neopalatial Community Organization

So – can we now work out an average house size, assume a household of five – six individuals, and simply multiply up by our overall site sizes, to get population estimates? Alas no, there are a few other dynamics at work, which relate to the internal organization of communities. To work up from household data to estimate community populations, we need to understand the patterns of variation in households across a community, and situate this within an understanding of the overall spatial structure of the community.

In many cultures, the residential density of a community varies with its nature – larger sites, such as towns and cities, fulfilling central-place functions within the society, often

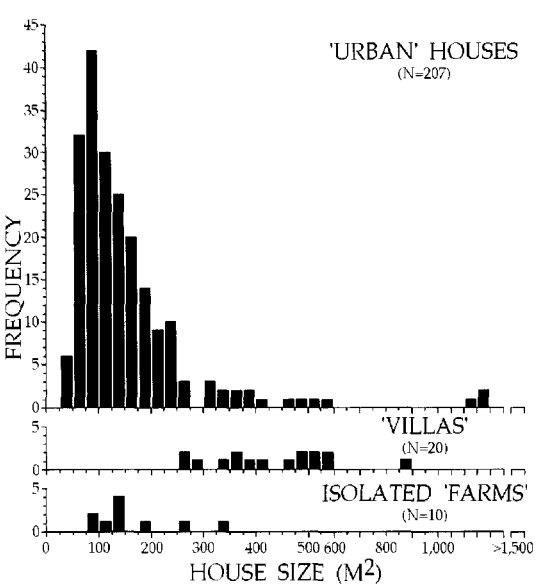

Figure 2.5 Neopalatial structure sizes: community houses, 'villas', and isolated rural 'farms'.

have higher residential densities than rural villages. In some traditional cities, particularly high residential densities are found in the central, oldest quarters, as house-lots have been sub-divided over the centuries, leading to considerable variation in residential density across the community. Central residences may also be socially desirable, and smaller houses may be a response to the higher value of plots in the popular areas of the city. On the other hand, in other pre-industrial cities, the city may be inversely zoned by status, with wealthy families able to maintain spacious houses in the centre of the community. In this case, despite larger numbers of resident servants, the spacious houses may produce lower residential densities in the city's centre. Together, these conflicting possibilities indicate that we need to assess each ancient culture (or even community) in its own terms, to see how urbanization developed in that context, and identify its own specific residential patterns (Carter 1983).

Some ancient cities, such as Ur and Nippur in Mesopotamia, reveal habitation quarters with distinct characters (Woolley and Mallowan 1976; Stone 1987; Henrickson 1981), while others, such as Amarna, indicate at least some more general mixing of large and small residences (Crocker 1971; Shaw 1992; Borchardt and Ricke 1980). Such a pattern can be seen in detail at Pompeii and Herculaneum, with houses of various sizes inter-mixed, as well as revealing complex histories of changing house divisions and amalgamations (Wallace-Hadrill 1994; Ling 1997). So, again, we need to work out, for the specific culture and communities we are dealing with, what sort of residential organization prevailed.

There have been too few extensive exposures of Neopalatial sites to establish a clear pattern, and it remains difficult to distinguish different overall patterns of behaviour between different sites, from more localized variations within individual sites. The extensively investigated sites of Gournia and Pseira, for example, are generally characterized by small houses (Figure 2.6). The less extensive samples of houses at Malia and Zakros reveal a much higher proportion of large houses, but as noted above, to a degree this probably represents the clustering of such residences close to the palaces – the focus of most excavation. The smaller and more densely packed Protopalatial and early Neopalatial houses of Quartiers Alpha, Gamma and Theta at Malia may suggest that smaller houses tended to dominate further from the site centre. The excavated area at Palaikastro gives a hint of such zoned organization, in that smaller houses are found away from the wide main street. Differences in spacing can also be significant, and the recent investigations at Pseira demonstrate less dense crowding of houses on the fringe of the town (Betancourt and Davaras 1999), a pattern which may also be represented by the patchy distribution of surface sherds on the periphery of the site at Palaikastro (MacGillivray *et al.* 1984).

At Knossos, while there has been less continuous exposure of residential areas, individual excavations are distributed fairly widely across the site. Close to the palace, well-built and elaborately finished houses stand in isolation, though often fairly closely packed. At the Stratigraphic Museum Extension site, small houses are laid-out in packed blocks, whereas further out, as with Hogarth's Houses on Gypsades, houses are more widely spaced. Finally, the small and poorly constructed Acropolis House, seemingly stands on the fringe of the community, with no close neighbours.

But in trying to understand community organization, we are concerned with more than just variations in house size and density.

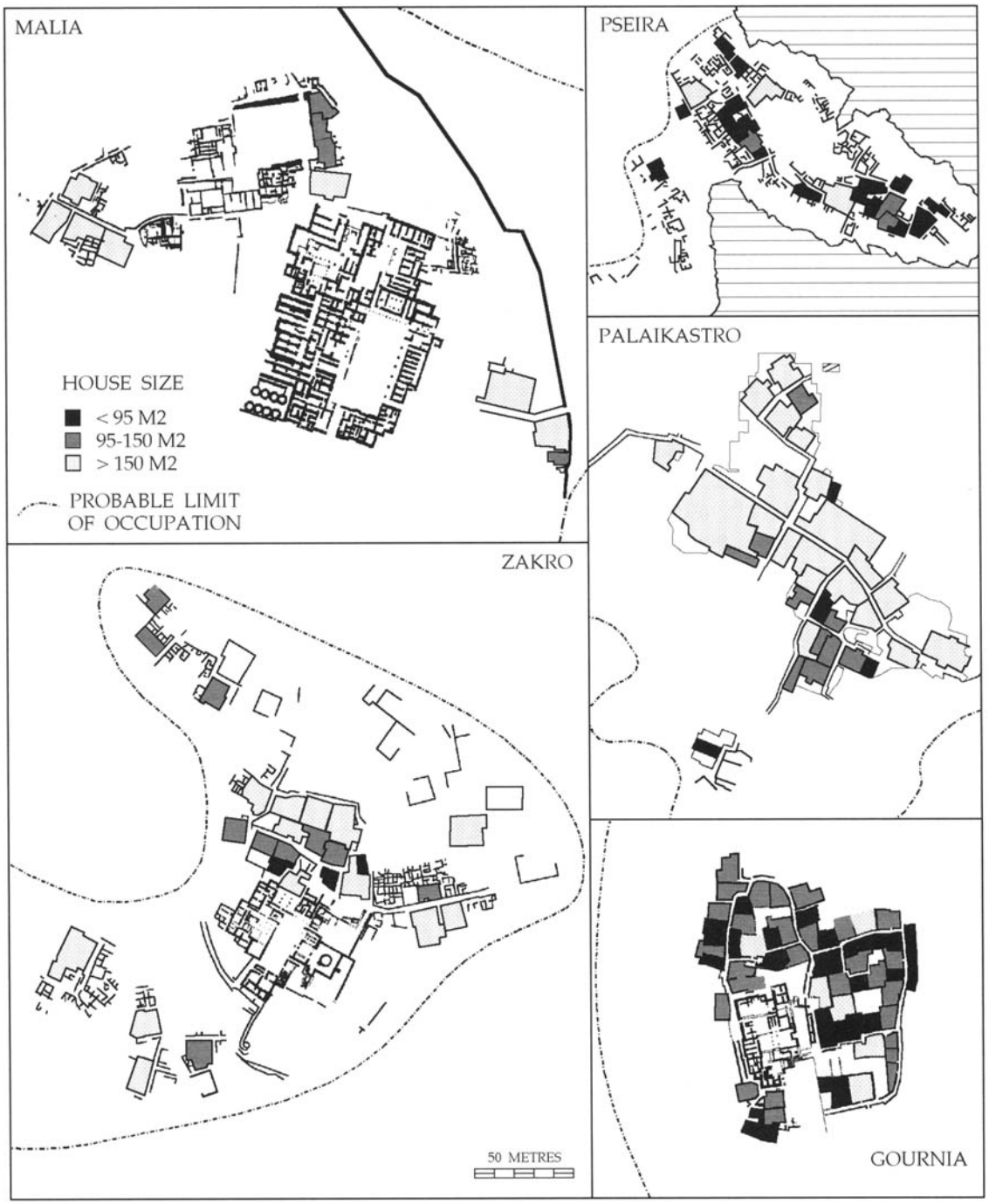

Figure 2.6 Neopalatial sites, spatial distribution of houses of different sizes.

It is clear from excavations at Knossos and Malia that there were large areas near the cores of the palatial sites devoted to administrative and public activities: the palaces themselves, but also neighbouring courts, and subsidiary, quasi-palatial or quasi-public structures. Equally structured space can be seen at smaller centres such as Gournia and Ayia Triadha (Figure 2.7). Calculations based on Gournia, where we have a good overview of the use of different parts of the extensively excavated core of the site, as well as an idea of its total extent, suggest that something like 3.5% of the town was administrative (the palace), 22.5% was public (streets and the town court), and 74% was residential. Rough calculations based on Knossos and Malia, where we also have some idea of the layout of the core, and estimates of the overall extent of each site, support broadly comparable divisions.

A variety of models has been proposed by urban geographers attempting to understand the organization of cities, though most are particularly relevant to industrialized centres (Sjoberg 1960; Fox 1977; Southall 1998; Carter 1983: 171–83; Marcus 1983). Ancient cities such as Pompeii demonstrate some degree of economic zonation (Wallace-Hadrill 1995; Laurence 1994; 1995), though nowhere near as formalized as in later industrialized examples. While differentiated spaces can readily be identified on Minoan sites, probably best illustrated by Protopalatial Malia (Van Effenterre 1980; Poursat 1988), little formal zoning is obvious. Rather, on the model of the Protopalatial maison-ateliers at Malia (Poursat 1996), the scattered distribution of workshops in the town of Zakros (Chrysoulaki and Platon 1987), and the evidence for small-scale 'cottage industries' at Gournia, Poros and Kommos (Boyd Hawes *et al.* 1908; Dimopoulou 1998; Shaw 1996), the larger-scale economic zonation identified at some ancient urban sites (e.g. Pracchia *et al.* 1985; Stone and Zimansky 1994; Millon 1981; Calnek 1976; Laurence 1994; Tosi 1984; Carter 1983: 150–70) would appear not to be a strong structural component of Minoan urbanism.

What are the implications of the elements of spatial organization which do seem to exist, for our attempt to estimate the population of Minoan towns? Taking Knossos as an example (Figure 2.8), the area immediately surrounding the palace seems to comprise a mix of elite residences with quasi-official structures, such as the Northwest Treasure House (Evans 1928: 616–25, 637–47), any Neopalatial precursor to the Arsenal (Evans 1928: 155; 1935: 668–69, 836–37), and the 'grandstands' along the 'Royal Road' (Warren 1994). Further south, an open court lies under the modern coach park (Hutchinson 1950: 210; Warren 1994), and the 'Caravanserai' and 'Spring House', whatever their purpose, do not appear to be domestic (Evans 1928: 101–39; Schofield 1996). Of the elaborate houses relatively close to the palace, the unique reception features of the Royal Villa (Evans 1928: 396, 413), the House of the Chancel Screen (Evans 1928: 391–96), and further out, the House of the High Priest (Evans 1935: 205–15), all suggest residences for important individuals, as does the Little Palace complex (Evans 1913–14; 1928: 513–44; Hatzaki 1996).

Further out, more limited evidence from excavations and soundings would be consistent with vaguely defined residential zones, dominated by different types of housing. At the core of the site, a zone of largely elite housing could support a residential density comparable to that of the excavated area at Palaikastro – c. 250 persons per hectare. Close to the palace, the palace itself and the open public areas and quasi-official structures in its immediate vicinity, would probably occupy about one-half of that area. In the

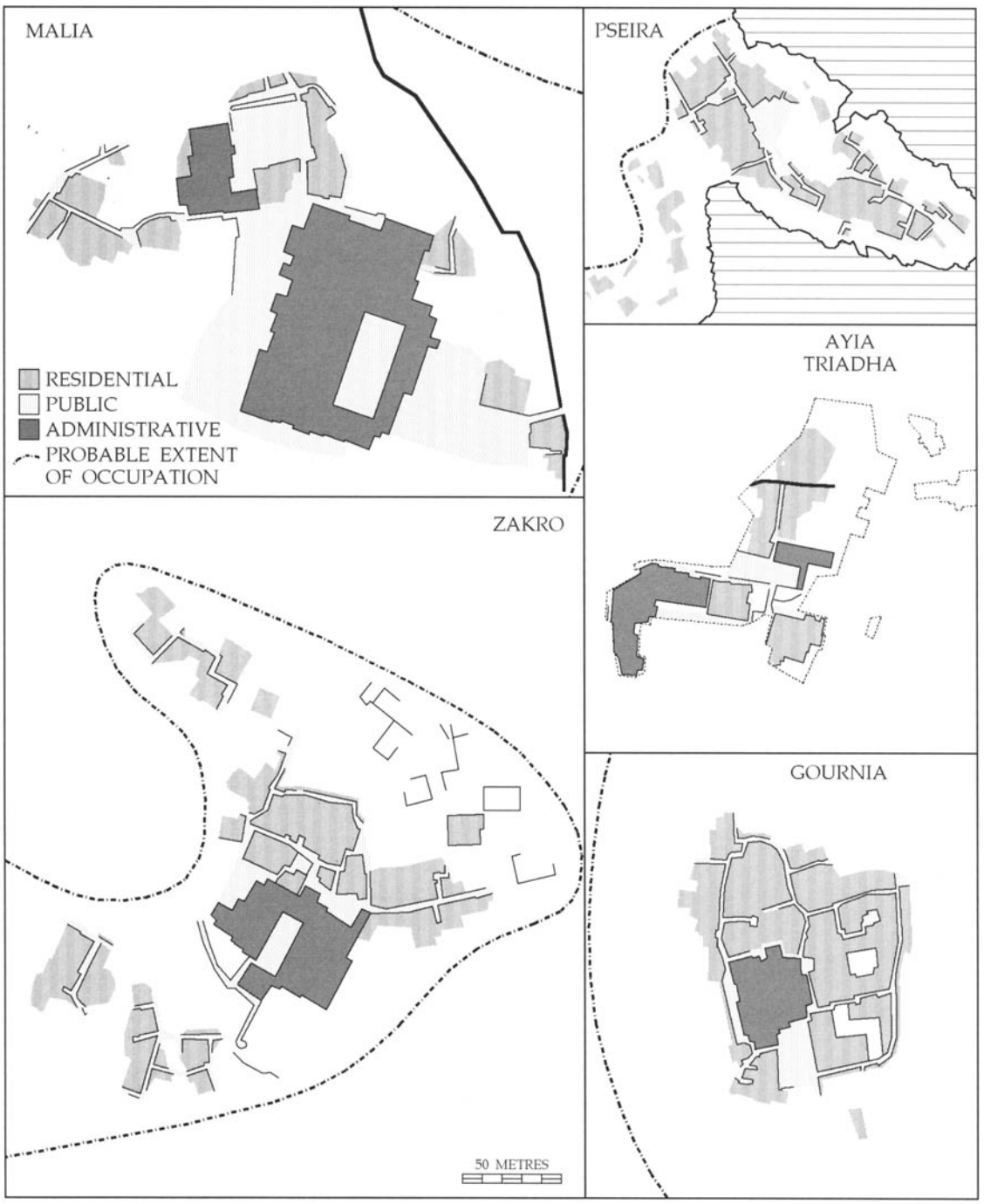

Figure 2.7 Neopalatial sites, broad categories of space use.

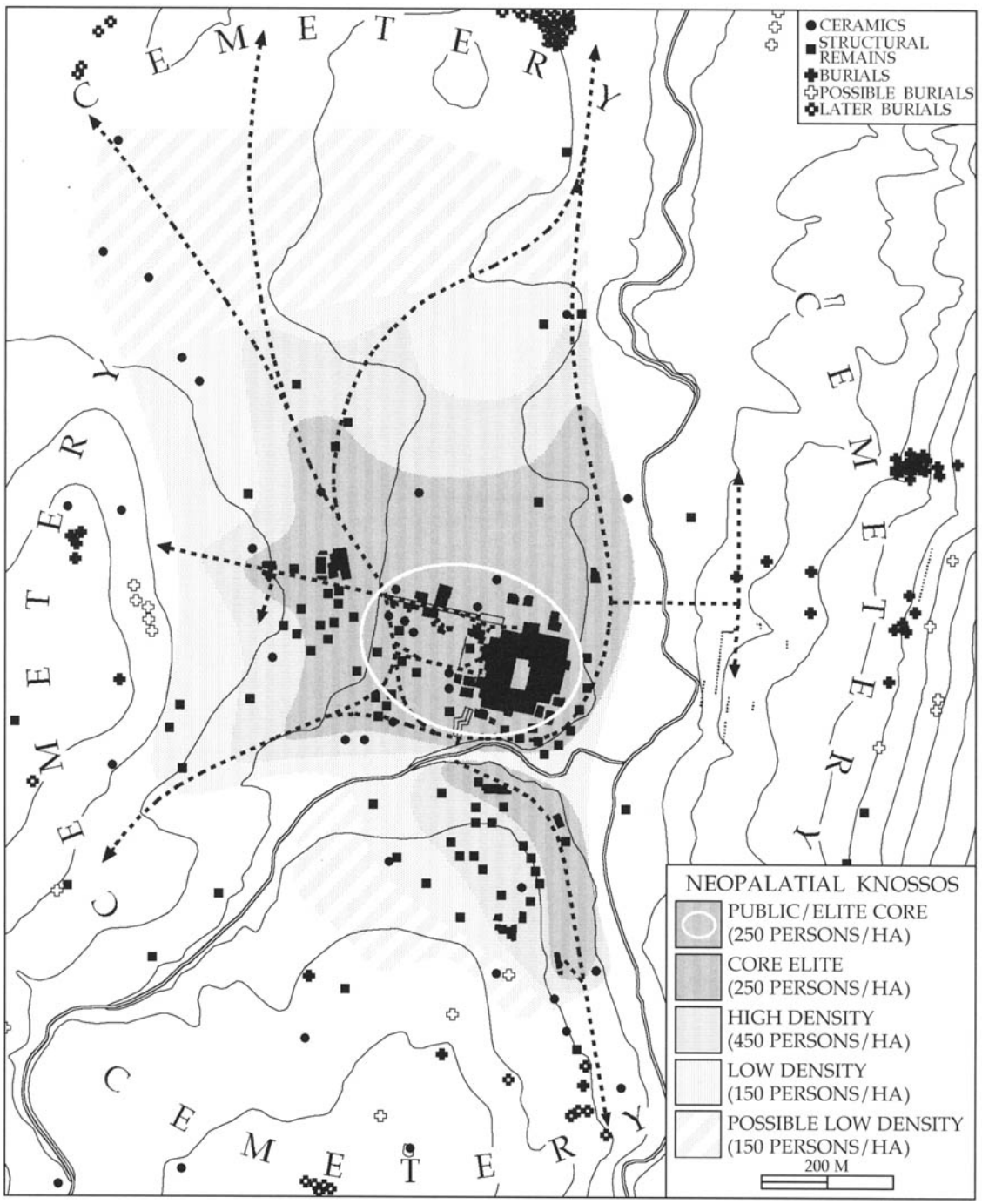

Figure 2.8 Neopalatial Knossos: proposed model of community organization.

middle zone, we might anticipate a concentration of smaller houses, with a residential density comparable to that at Gournia – c. 450 people per hectare. Finally, toward the fringe of the site, that density would be reduced – probably to half or less. Overall, juggling these figures in rough calculations, I would suggest an overall population for Neopalatial Knossos of some 14–18,000 individuals (Whitelaw 2000; in press). Averaged out over the whole area of the site, this would yield a global density of about 200–225 individuals per hectare.

Establishing the Scale of Neopalatial Urbanism

Bearing in mind all of the caveats that I have raised, one would ideally wish to establish whether space was used in similar ways at other Neopalatial sites, and to develop site-specific population estimates, based on the variable spatial organization and residential densities of different sites. In practice, this is difficult, given the limited excavated areas at most sites, but estimated site areas rather than estimated populations are still sufficient to draw out some interesting patterns in inter-site comparisons.

Turning to other Neopalatial sites for which we have some basis for estimating their overall extent (Figure 2.9), we can see that palace centres such as Knossos and Malia were exceptional.[4] It is also reassuring to see that the site extents which can be documented for the different palatial sites corroborate the assessments traditionally made of the relative importance of the different sites, based on palace size alone (a pattern further supported by Gournia and Petras). If we also consider sites where the spatial data is far less complete, we can start to put together a picture of a tier of second-order sites, such as Amnisos (Shaefer 1992), Archanes (Sakellarakis and Sapouna-Sakellaraki 1997), Tylissos (Hatzidakis 1934: 70–72), and Kastelli Pediadha (Rethimiotakis 1997), on the order of five to ten ha in size. Cautiously referring to the range of observed Neopalatial residential densities, we can suggest populations of up to a couple of thousand individuals for such sites. The regional surveys conducted to date indicate that most Neopalatial communities were far smaller than this, generally less than one to two ha, and it seems reasonable to suggest that they had commensurately smaller populations.

Minoan Urbanization in Comparative Perspective

Having considered a range of issues in trying to establish in outline the demographic scale of Neopalatial urbanization, it is worth commenting briefly on two more general issues.

First, in reviewing some of the elements which need to be considered in a discussion of Minoan urbanism, it will be immediately apparent that we cannot necessarily expect the same patterns of spatial behaviour in other cultures, whether at the level of the individual household, or community organization. This applies as much to other cultures within the prehistoric Aegean, as beyond, and on present evidence, urban centres appear to have been constituted in different ways in different regions of the southern Aegean (Figure 2.10). We lose an appreciation of this by treating Aegean urbanism as a unitary phenomenon, and indeed if we think of its development as a unitary process.

Second, the argument developed by Colin Renfrew (1972: 240–44) that the Aegean urban sites, and indeed, the states of which they were the centres, were some sort of scaled-down version of their East Mediterranean

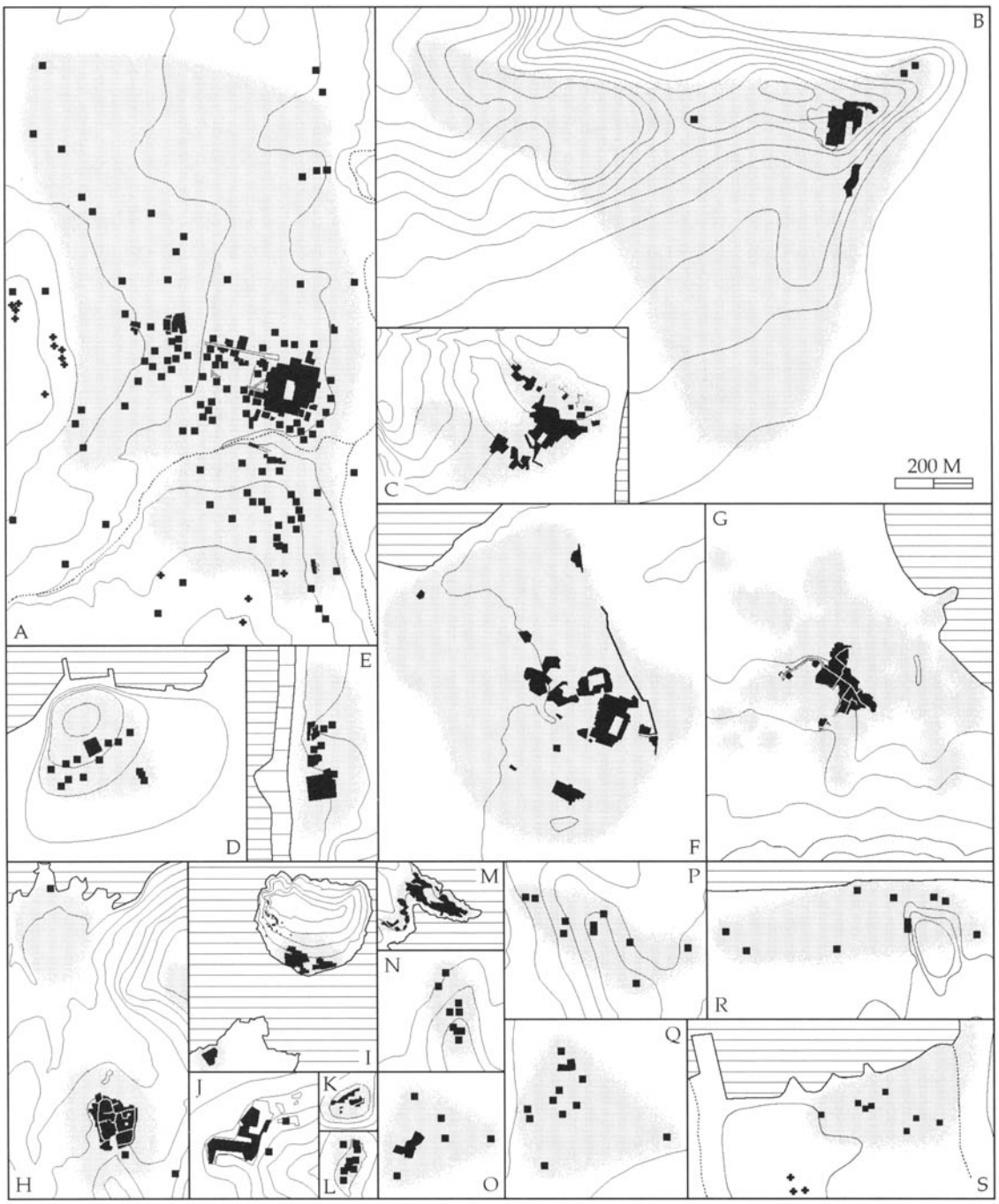

Figure 2.9 Evidence for the extent of better-documented Neopalatial sites. A. Knossos; B. Phaistos; C. Zakros; D. Khania; E. Kommos; F. Malia; G. Palaikastro; H. Gournia; I. Mochlos; J. Ayia Triadha; K. Myrtos Pyrgos; L. Kastellos Tzermiado; M. Pseira; N. Petras; O. Tylissos; P. Kastelli Pediadha; Q. Archanes; R. Amnisos; S. Poros.

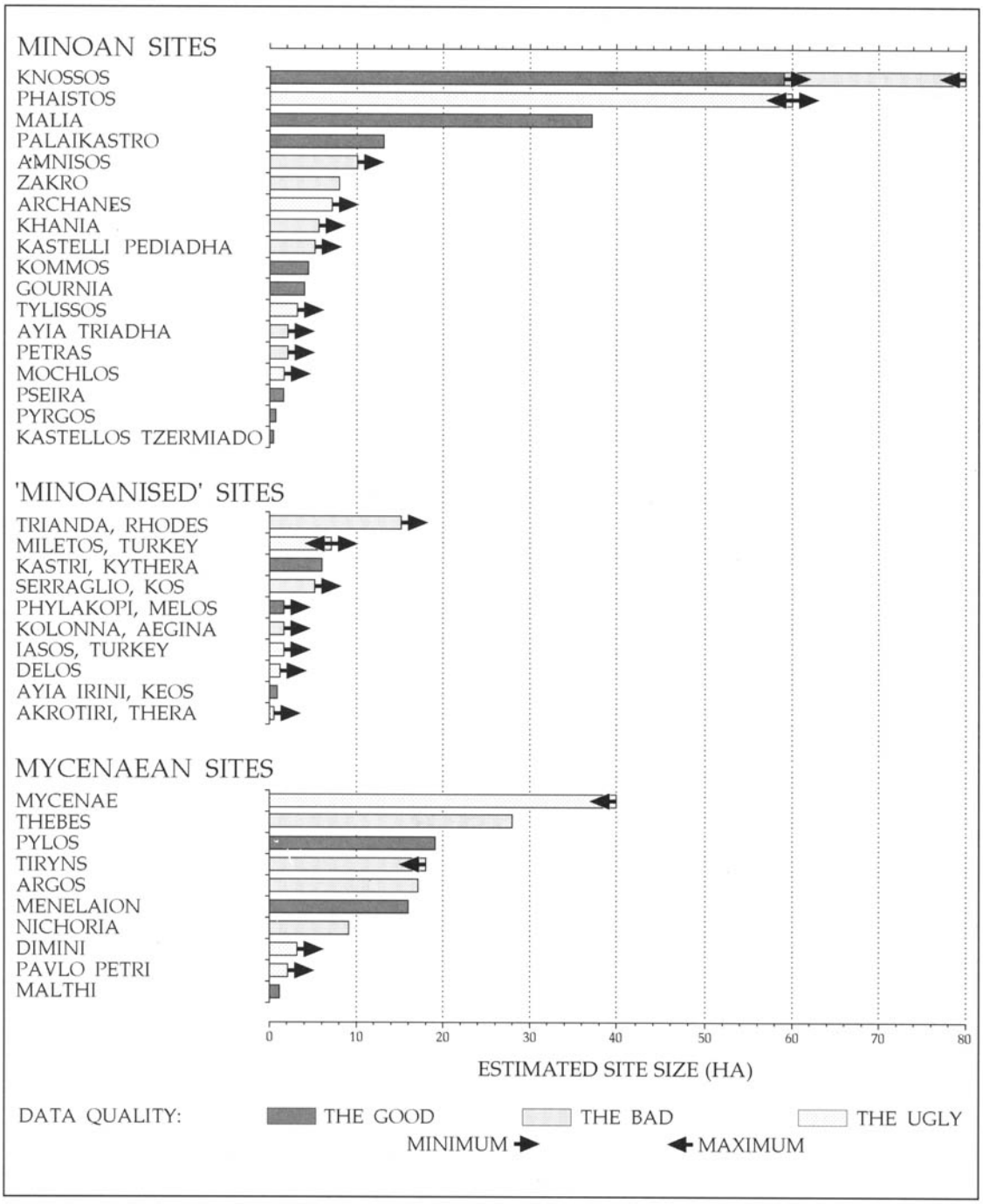

Figure 2.10 Comparative estimates of site size, Late Bronze Age Aegean sites.

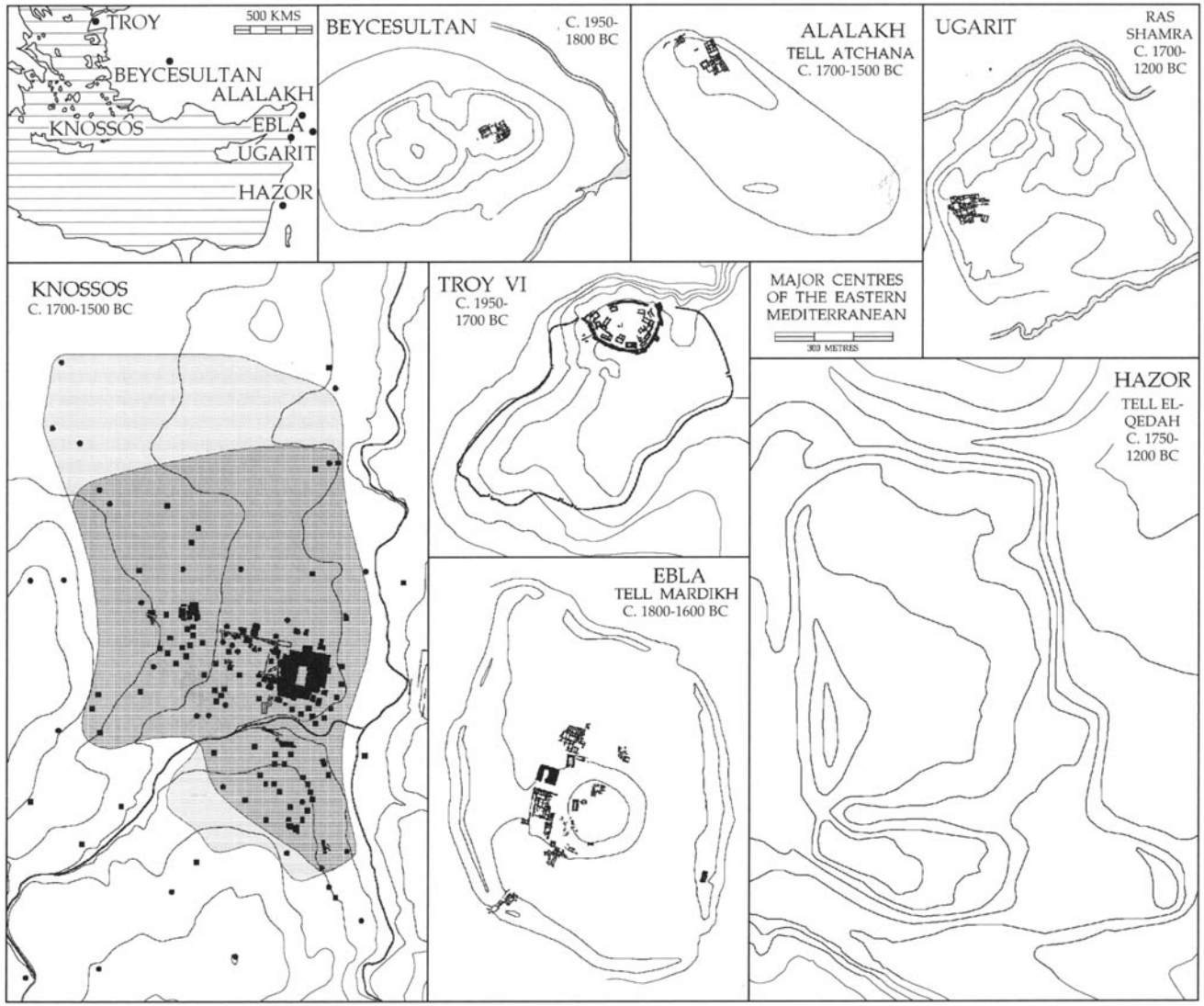

Figure 2.11 Eastern Mediterranean centres of the second millennium BC.

contemporaries, has often been repeated. He was only able to make this case by dismissing out of hand (1972: 238, 242–4) the empirical data on which previous estimates of the sizes of sites such as Knossos and Malia were based (Hood 1958; Demargne and Gallet de Santerre 1953: pl. 1; van Effenterre and van Effenterre 1963: 49–53). Subsequent fieldwork has shown these estimates to have been reasonably accurate (Hood and Smyth 1981; Whitelaw 2000; in press; Muller 1990; 1991; 1992). It may be that Renfrew's position was forced on him by his attempt to chart the emergence of states in the Aegean through Cycladic data, such that a small site such as Phylakopi needed to be definable as 'urban' (Renfrew 1972: 238–40; C. Broodbank pers. comm.; see Renfrew and Wagstaff 1981 for the idea of Melos as a microcosm for monitoring Aegean-wide processes).

In fact, any direct comparison with contemporary Eastern Mediterranean centres (Figure 2.11), emphasizes that the Aegean urban communities were not rustic cousins on the periphery of the civilized world, but the urban centres of states, comparable in scale and almost certainly complexity, to many of their Eastern contemporaries.[5]

Finally, it is worth returning to the methodological perspective which this paper has tried to develop. I have argued that there is considerably more relevant data, both for Neopalatial house size and for community organization, than has previously been considered in attempts to estimate Neopalatial site populations. In addition, I have outlined an explicit methodology for estimating populations, developed from a comparatively-based recognition of some of the factors affecting residential patterns; these are variable phenomena which need to be understood contextually. Such an approach allows us to develop an understanding of residential densities which is specific to the culture under study, rather than relying upon cross-cultural formulae or specific analogies which are of questionable relevance to Minoan Crete.[6]

Finally, in examining different Neopalatial sites, it is useful to recognize the differences in residential density which can be documented for different sites, rather than subsuming them into an overall average density figure. Exploring these local differences in residential practices may help us to recognize the different characters of individual communities in Neopalatial Crete, which are likely to have had different roles within larger-scale regional settlement systems. In such a manner, we can move beyond the study of individual sites in isolation, and through integration with the emerging data from regional survey, we can put the study of Minoan urbanism into its regional, as well as developmental context.

Acknowledgments

I would like to thank the editor for the invitation to participate in the Round Table (I hope I've satisfied my very specific brief), and express my appreciation to him and his colleagues (staff and students) and the other participants, for making it such an enjoyable and effective occasion. Anthony Snodgrass's relaxed approach to chairing was particularly appreciated. Lisa Nevett helpfully commented on a draft of the paper. Thanks, as ever, are due to Keith and Nong for their hospitality.

Notes

1. In estimating the population of Neopalatial Knossos, Evans assumed 8 individuals for each household (1928: 562) while Hood and Smyth assumed 10 (1981: 10), though in neither case was the basis for this figure explained. Recent studies of the demography of the family in pre-industrial societies support an average of c. four – five individuals per nuclear family (Laslett 1972;

Gallant 1991: 11–33). While it has been assumed that there would also be servants or slaves resident in a Minoan household (e.g. Marinatos and Betancourt 1995: 593), no concrete argument has been made to support this, and in any event, it would seem unlikely that this would be relevant for the majority of households within a community. Dependent work-groups appear to be documented in the Linear B texts, and some craftsmen may have dependent assistants (Chadwick 1976: 79; Lindgren 1973: 36–39; Uchitel 1984; Hiller 1988), but as yet no clear evidence for similar individuals has been identified in the Linear A records for the Neopalatial period, and servants or slaves are not obvious in Minoan figurative art.

2. Sources for comparative house-size data are as follows: New Kingdom Egypt: Crocker 1985; Arnold 1996; Tietze 1996; Mesopotamia: Battini-Villard 1999; Miglus 1999; Castel 1992; Henrickson 1981; North Syria: McClellan 1997; South Levant: Foucault-Forest 1996.

3. To explore the potential impact of upper floor space, each house plan was assessed for architectural evidence of clear or likely staircases, and evidence for split-level terracing (particularly at Gournia and Pseira). Adding additional floor space, where there was evidence for stairs, spread the house size frequency distribution, but did not change its overall shape significantly.

4. The extent of Phaistos in the Neopalatial period is not easy to estimate (La Rosa 1985: 48), though some sort of activity (though not necessarily continuous) over some 60 ha, can be documented for the Protopalatial period (Watrous *et al.* 1993: 225–27).

5. The relatively small scale of the Aegean centres has recently been emphasized by Manning, in his consideration of Knossos in the context of Fletcher's communication-based model of the limits to urban growth (Manning 2000; Fletcher 1995). However, the value of such a comparison is unclear, since it completely ignores the nature of the states involved, by comparing Knossos, the capital of an archaic state, with the imperial capitals of empires, which were, not surprisingly, often much larger, spatially and demographically.

6. Following Frankfort's comparison of the residential densities of modern Aleppo and Damascus with estimates for ancient Ur, Tell Asmar and Kafaje (1950: 103), a residential density of 400 persons per hectare has been widely used to estimate populations for Near Eastern and East Mediterranean sites, and occasionally cited by analogy for the Aegean, but rarely with any argument of relevance (Renfrew 1972: 251; Wiener 1990: 131–33). By and large, Frankfort's figure is no longer used by Mesopotamian archaeologists (cf. Adams 1981: 349–50; Johnson 1987: 109; Wilkinson 2000: 247–49), as the complex patterns of variation in residential behaviour have become increasingly appreciated (Adams 1965: 123; Adams and Nissen 1974: 28–30; Watson 1978; Sumner 1979; Kramer 1980; Aurenche 1981; Postgate 1994; Garr 1987). It is also worth noting, based on compilations of recent urban residential data (Fletcher 1981; 1995; Storey 1997), just how rarely, world-wide, occupation densities as high as 400 persons per hectare are reached.

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3

Aspects of Minoan Urbanism

Keith Branigan

Introduction

Minoan towns have been overshadowed both in excavation and analysis by the dominance of the palaces. Even when attempts have been made to discuss the towns as a whole (Hutchinson 1950), attention has been focussed on matters of architecture rather than on how the town was organized, or indeed whether, in the strict sense of the term, the town was 'organized' at all. As to the nature and character of Minoan towns, and their role in the social geography of Minoan Crete, these topics have been largely neglected. In this short paper I would like to examine three of these neglected aspects of Minoan urbanism, namely:

1. The hierarchy of urban settlements
2. The spatial organization of urban settlements
3. The demographic significance of urban settlements

As a necessary precursor to this discussion, I should say that I take my definition of a town from the combined wisdom of Louis Wirth (1938: 8) and Bruce Trigger (1972: 577) who between them identified a town as

> a relatively large, dense and permanent settlement of socially heterogeneous individuals, which performs specialist functions, of a non-agricultural type, in relationship to a broader hinterland.

This definition is one against which the evidence provided by **both** archaeological survey and excavation can be tested, but in the case of sites known only from survey it has to be conceded that it is unlikely that social heterogeneity can be identified and specialist functions may only be recognized where location is a key factor (e.g. harbour towns).

The Urban Hierarchy

There are perhaps two dozen Minoan settlements presently known in Crete which we might reasonably describe as 'urban' and to which we might attribute the term 'town' (Table 3.1). This includes settlements like Khania of which we have only key-hole glimpses archaeologically, and others like Xerokampos, which are known only from unpublished surface inspections and which are identified as probably urban settlements largely by reason of their relative size, density and permanence, as revealed by surface debris. The number will almost certainly increase, but not dramatically. How many new sites have been discovered in the many recent surveys in west, east and central Crete which might lay claim to urban status?

As almost all these surveys are unpublished at present, we cannot provide a definitive answer to that question, but preliminary

Table 3.1 A list of certain or probable Minoan towns

MINOAN TOWNS					
KNOSSOS	75HA	XEROKAMPOS	?	KOMMOS	4.5HA
MALIA	50HA	ZAKRO	8HA	TYLISSOS	4HA
PHAISTOS	40HA	ARKHANES	8HA	PLAKOURES	3HA
PALAIKASTRO	30HA	AMNISOS	8HA	MOCHLOS*	2.5HA
KHANIA	?	POROS	8HA	AYIA TRIADHA	2.5HA
GALATAS	25HA	KASTELLI PED	8HA	APODHOULOU	2.5HA
MONASTIRAKI	20HA	KATELIONAS	5HA	PETRAS	2.5HA
		GOURNIA	5HA	KHAMALEVRI	2HA
				PSEIRA	1.5HA
				PRINIATIKO PYR	1.5HA

SOME SITES WHICH MAY PROVE TO BE SMALL TOWNS:
FODELE
KASTELLI TZERMIDIAHON
SPILI
THE KOULE
VIRAN EPISCOPI

* includes settlement area on mainland (All estimates of area must be regarded as 'best guesses' made on the basis of excavation data, surface survey, and comments of the excavators/surveyors.)

reports suggest that sites which we would classify as even potentially 'urban' are very few and far between. But two sites found in recent surveys in eastern Crete suggest that such sites do remain to be found. The site of Plakoures, between Pacheia Ammos and Kavousi at 3–4 ha in size ranks above or alongside Mochlos and Gournia (Watrous and Blitzer 1999: 906). Around the Stavromenos hill at Katelionas is a settlement of about 5ha, overlooked by a villa-like structure on the hill.

It seems likely that the number of potentially 'urban' sites identified in Minoan Crete may slowly increase from around the mid-twenties to the mid thirties. The first point we might make therefore is that Minoan Crete had few towns, perhaps between two and three dozen, an average of one every 200 – 250km^2 (Figure 3.1). But given the very mountainous terrain of much of the island this is not surprising, and in fact it compares closely to the average density of towns in LBA Palestine, where there are about 70 towns in an area about twice the size of Crete.

Nevertheless, with only about fifteen urban sites even sampled by excavation, it is obviously difficult to confidently present an urban hierarchy, and tempting to do so solely on the grounds of size. Rackham and Moody (1996: 89) took this course and concluded there were four levels in the Minoan settlement hierarchy – hamlets, villages, small towns and large towns. On present evidence the estimated sizes of Minoan towns do indeed fall into two very clear groups – those above 20ha (Knossos, Malia, Palaikastro, Phaistos, Galatas, and probably Monastiraki and Khania, and those below 10ha. In numerical terms, the 'small' towns outnumber the 'large' towns about 3: 1 at present, although it is this group that is most likely to be increased by new discoveries and the true ratio may have been more like 5: 1. In second millennium Palestine, where there is a similar (but less abruptly defined) dichotomy between large towns and small towns, the latter outnumber the former by about 6: 1.

Establishing a hierarchy by size alone, however, would be to ignore the other defining

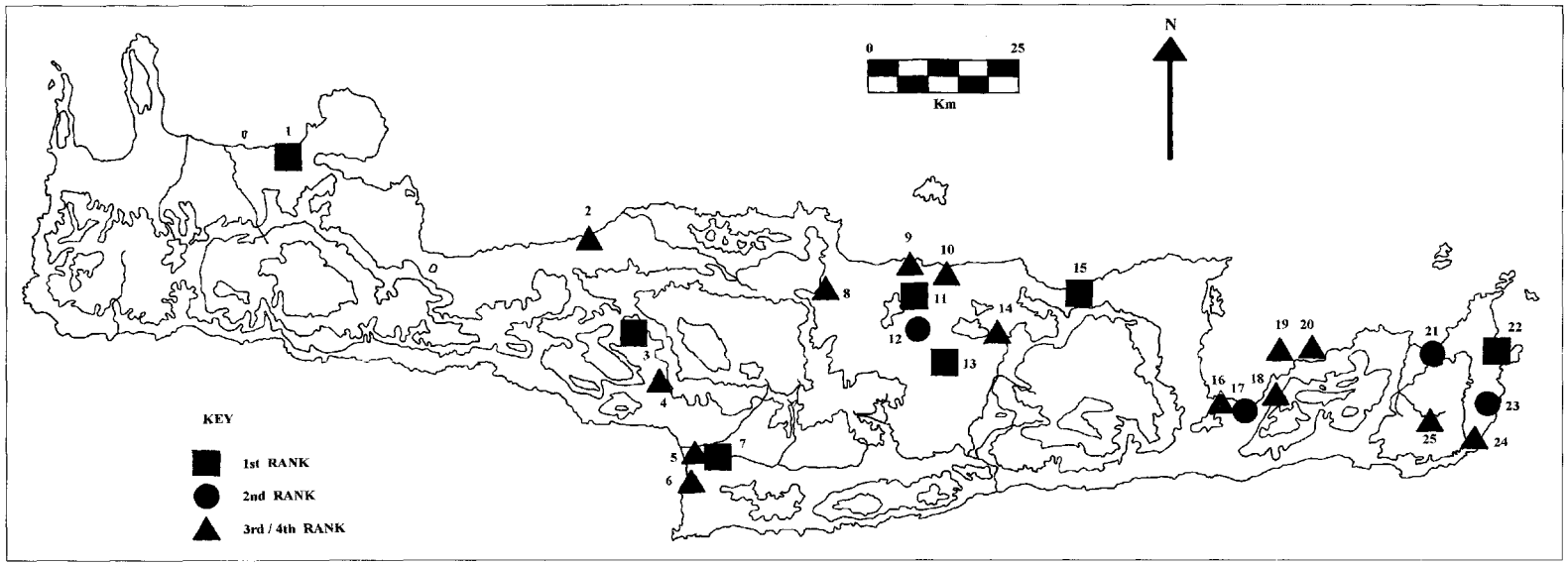

Figure 3.1 The location of certain and probable Minoan towns.

1. Khania
2. Khamalevri
3. Monastiraki
4. Apodhoulou
5. Ayia Triadha
6. Kommos
7. Phaistos
8. Tylissos
9. Poros
10. Amnisos
11. Knossos
12. Arkhanes
13. Galatas
14. Kastelli Pediadha
15. Malia
16. Priniatiko Pyrgos
17. Gournia
18. Plakoures
19. Pseira
20. Mochlos
21. Petras
22. Palaikastro
23. Zakros
24. Xerokampos
25. Katelionas

features of towns as outlined by Wirth and Trigger. Taking into account the evidence for 'service' provision, and particularly for administrative services, we have to suggest a slightly more complex structure. At the top are the large towns with major administrative / ceremonial buildings. This group would in fact be the same as the 'large' towns of the two level hierarchy, with the possible exception of Palaikastro which has stubbornly refused to yield evidence of a 'palace', but which nevertheless sports paved principal roads with raised ribs, flanked by substantial houses with ashlar facades, like the very biggest and best palatial centres. The second level in this hierarchy includes the small towns with substantial central buildings which in their architectural features and furnishings emulate the principal palaces, of which the most obvious at present are Arkhanes, Gournia, and Petras. A third level can be identified in the form of small towns probably offering specialized services related not directly to administration so much as to marketing and exchange – coastal settlements such as Kommos, Mochlos, Pseira, Priniatiko Pyrgos and Zakro. Some of these towns have one or more buildings with ashlar masonry and a level of accommodation above that of the other buildings in the settlement. A comparable group of small towns with one or more superior buildings seems to have existed inland too. Tylissos and Katelionas appear to be examples of this type. Whether there is a fourth level of urban settlement – small inland towns offering social and economic services but without any elite building as their focus is at present debateable. The newly discovered site at Plakoures might be an example. Without excavation such sites will be difficult to distinguish from a large village; even with excavation the distinction might be difficult to establish. In essence then, the suggested hierarchy of urban settlement for Minoan Crete is tri-partite like that proposed by Ilan for MBA Palestine (1996: 305). Ilan identifies Regional Centres and Gateways as the top level, and then on a second level places both sub-regional centres and loci of specialist production or services. In fact, Ilan goes farther by sub-dividing his top tier sites into four groups – 1st, 2nd and 3rd order gateways (all coastal sites or in the Rift Valley controlling trade routes) and regional centres. His first order gateway is Hazor, which at 80ha is about the size of Knossos, and his second order gateways include Ashkelon which at 50ha is a fair match for Malia. It has been common in Crete to separate Knossos from the remainder of the large urban sites and place it at the top of the Minoan hierarchy in the same way that Ilan places Hazor at the top of the Palestinian pyramid. But with the evidence presently to hand we would do well to heed John Cherry's caution (1984: 24) against a rush to judgement on this matter.

Before leaving the topic of the urban hierarchy, we might briefly compare the size of Minoan towns to that of towns in the contemporary civilisations of Turkey and Mesopotamia. It has become commonplace to regard the towns of Minoan Crete as minnows compared to those of the Near East (Renfrew 1972: 244; Dickinson 1994: 51). Undoubtedly Uruk, at 450ha, is in a class of its own, but Nippur at 135ha and Boghazkoy at 120–160ha are also clearly much larger towns than Knossos, let alone the other 'large' Minoan towns. But thereafter, Minoan large towns are a match for those of the Near Eastern states (Table 3.2). Ur at 60ha and Khafaji at 40ha, Kultepe at 50ha, and Quatna at 65ha and Mari at 60ha are in the same order of magnitude as Knossos, Malia, and perhaps Palaikastro and Phaistos. It is also salutary to note that two of the most important trading centres (they are often called

cities) of the ancient Near East, Ugarit and Byblos, were both much smaller than the four or five largest Minoan towns. Small towns comparable to those of Crete also exist in these civilisations – Beycesultan (6ha), Alaja (4ha), and even Tel Harmal (Syria, 1.7ha). If there is a distinction at this end of the hierarchy it seems to be that the small towns make up a smaller percentage of the urban hierarchy in Mesopotamia, Syria and Turkey and that they are mostly rather larger than the small Minoan towns.

In this respect, although Minoan Crete might be said to stand comparison alongside the imperial states of the contemporary Near East, the closest comparisons in terms of urban hierarchy still lie with the towns of second millennium Palestine. Here, Hazor compares to Knossos, Ashkelon and Beth Shan to Malia and Palaikastro, and Megiddo and Jericho to Gournia and Arkhanes. Dever (1997: 180) has linked the smaller scale of urban settlements in Palestine to the 'much smaller-scale landscape' which is much more fragmented and less productive than Mesopotamia and Syria, and allows the threshold for 'truly urban configurations' to be lowered to about 6ha. Whether the similar scale of urban settlements reflects a broadly similar geo-political situation in MBA Crete and MBA Palestine is an interesting but arguable proposition.

Urban Organisation

The most striking feature of Minoan towns when viewed in their contemporary context

Table 3.2 Comparative table of urban settlement size in Crete and the Near East in the 2nd millennium BC. (Sizes in hectares)

CRETE		PALESTINE		SYRIA/LEB		MESOPOT		TURKEY	
						URUK	450		
						NIPPUR	135		
								HATTUSAS	120
KNOSSOS	75	HAZOR	80						
				QUATNA	65				
				MARI	60	UR	60		
MALIA	50	ASHKELON	50					KULTEPE	50
PHALISTOS	40	BETH SHAN	40			KAHFAJI	40		
		KABRI	40						
PALAIK'o	30								
GALATAS	25								
MONAST'KI	20			RAS SHAMRA	21				
		T. AJJUL	15						
				BYBLOS	9				
ZAKRO	8								
ARKHANES	8	LACHISH	8						
POROS	8								
								BEYCE	6
GOURNIA	5								
KOMMOS	4.5	MEGIDDO	4.5					ALAJA	4
TYLISSOS	4	JERICHO	3.8						
MOCHLOS	2.5								
A. TRIADHA	2.5								
PETRAS	2.5								
						T. HARMAL	1.7		
PSEIRA	1.5								

is the continuing absence of defensive wall circuits around most if not all of them. There is still no clear and convincing evidence that any LBA Minoan town was encircled by defences in the way that most contemporary towns were in Palestine, Syria, Mesopotamia and Anatolia. Fragments of possible defence walls have been noted at Malia and recently at Gournia (Watrous and Blitzer 1999: 906) and a 'substantial' wall delimits part of the site at Petras (Tsipopoulou 1997: 269). But nowhere is there convincing evidence of a complete circuit (without which the defensive value of the wall is negated) and the wall at Petras does not bear comparison with contemporary defensive walls elsewhere in the Aegean in either the scale or quality of its build. Since there were many well-defended urban settlements elsewhere in the Aegean during the second millennium BC, and their walls in several cases survive well around much of their circumference, their absence in Crete must be seen as highly significant. Although the construction of defences, and in particular variation in their design and architecture, carries symbolic messages involved as much with prestige, display and competition, as with military efficiency and need, their absence must surely imply that Minoan towns and the early states of which they were a part, were not normally involved in military struggles with either their immediate or their more distant neighbours. Although it could be argued that Minoan towns were defended 'at a distance' by a Minoan navy, there is very little evidence for the existence of such a force.

In terms of urban organization and planning, however, the absence of defences is also an important factor for three reasons. First, defences obviously impose immediate constraints on urban spatial expansion and encourage a greater density of occupation within the urban area. Second, they exert an influence on the orientation of buildings in their proximity. Third, they either pre-ordain or else confirm and elevate the importance of certain routeways/streets within the town – those which pass through the walls and gateways and make their way to a town's socio-political focus. This in turn may influence the location of certain types of building or certain groups of residents who may cluster along these 'main streets'.

The absence of defences around the towns of Minoan Crete may therefore have had a significant influence on their spatial organization. We might expect a lower density of population than in other towns in the contemporary east Mediterranean, and a tendency to what we might call suburban sprawl for want of a better term. We might also expect more freedom of orientation and greater variability in the location of more prestigious buildings – whether 'public' or private. We might also expect to find street systems which have more freedom to meander and where there are several contenders for the title of 'main street'. The only large Minoan towns of which we have even moderately extensive excavated plans and additional survey data – Malia and Palaikastro – perhaps offer some modest support for these conjectures.

Next to the absence of defences, the scarcity of large 'public' buildings other than the palaces themselves is the most striking feature of Minoan towns. In the Near East temples and related substantial buildings occupy significant positions in most towns. In Minoan Crete a handful of small 'public' shrines (not temples) like those at Gournia and Malia (Hood 1977) represent a totally different concept in terms of public worship to the monumental temple structures of Turkey, Syria, Mesopotamia, Palestine and Egypt. It may be that the Minoan palaces were the homes of a theocracy, but if so the Minoan

theocracy behaved very differently to its contemporaries in the Near East. Where they expended much energy on the construction of impressive temples which must have been urban focal points, the Minoan elite invested much more modest amounts of energy mostly in building and equipping small exclusive shrines within the palace walls or in supporting remote peak-top sanctuaries with clearly rural affinities. Apart from the palaces, Minoan towns were not dominated by the architecture of power, although proto-palatial Malia has a complex of major structures north of the site of the palace. Indeed, even the palaces are less dominant than we might expect. They stand at the centre of the settlement, but since in almost every case they seem to be implanted into an existing, if smaller, pre-palatial settlement, they do not appear to have an overwhelming or formative influence on the shape and character of the town. Galatas may prove to be an exception to this rule. Nor do the palaces take up excessive amounts of space. The palaces at Knossos, Malia, and Phaistos, all seem to occupy about 2% of the total area of the towns in which they stand. At Gournia, Petras and Zakro the 'palaces' take up 4–5% of the urban space. These modest claims on urban space are matched by the relative openness of the palaces; unlike many of their counterparts in Anatolia and the Near East, Minoan palaces do not stand inside walled enclosures with fortified entrances. In this sense, at least, Minoan towns were more open and less restricted than most second millennium BC settlements in the east Mediterranean.

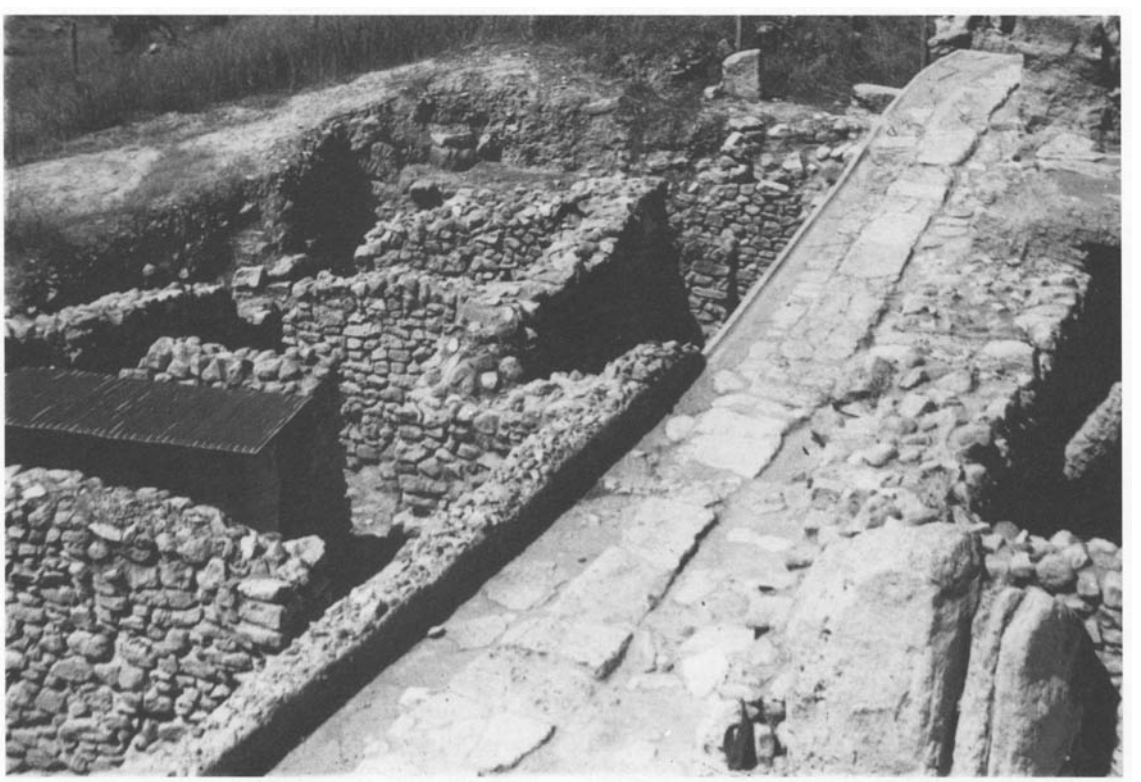

Figure 3.2 A paved 'principal way' with raised central rib approaching the West Court at Phaistos.

Neither were they formally organized in any way which is apparent in the archaeological record. There were of course paved or cobbled streets and lanes, some of which were flanked by clay water pipes. In general, however, the streets form no coherent pattern although some with paved surfaces and raised central ribs were clearly identified as 'principal ways' which usually begin or end at the palace (Figure 3.2). In the case of Knossos, Warren (1994: 201) has tentatively argued that something approaching a road grid may have been laid out to the west of the palace in MM.IB or MM.IIA, but the evidence at present is inconclusive. Similarly, although parts of the street system at Palaikastro suggest something approaching a planned system, other parts seem to lose direction and regularity of width. The palaces lie at the town centre and around them are found, for the most part, the larger, better built and better furnished private houses. At Knossos, Malia and Palaikastro the smallest and most simply built houses are found on the periphery. Although I have myself toyed with the idea that there may have been quarters of a town given over to craft activity (Branigan 1972: 758) the evidence for this remains tantalisingly slight in Minoan towns. Perhaps the best evidence for the concentration of craft activities in one area is to be found at Malia and Mochlos. In quartier Mu at Malia five or six workshops existed in a cluster, making pottery, metalwork, stone vases, seals and perhaps bone artifacts. At Mochlos, the discovery of buildings devoted to metalworking, pottery making and stone vase manufacture on the mainland contrasts with the apparently entirely domestic nature of the houses on the island. But it would need more extensive excavations on the mainland to establish whether there was an industrial quarter here or just two or three buildings involved in craft activity, surrounded by many other purely domestic structures. There is certainly no reason to think that certain quarters of Minoan towns were occupied by anything like the tradesmen's guilds of medieval European cities.

In analysing pre-industrial towns in western Europe Paul White (1984) identified three different types of town or city, which were characterized by different spatial organisation. The Feudal City was divided into districts, each occupied by both artisans and rural workers belonging to a faction led by wealthy rural landlords. Each district had its own social focus or 'palace'. In the Merchant City where craft and commerce were all important and links with the countryside were insignificant, the town was divided into areas occupied by guilds and each serviced by its own guildhall. In the Absolute City, where religious and political power were in the hands of a single family, the central area of the city was dominant and the elite clustered around the rulers palace. The rest of the mixed population of artisans and rural workers lived around the periphery. In terms of spatial organization the Minoan towns appear to most closely resemble the Absolute City in White's tripartite scheme. Whether this suggests similarities in the power structures which lay behind the spatial patterning is open to debate.

Demographic Significance

Because Minoan towns reveal little evidence of anything approaching 'town planning' and few monumental public buildings beyond the palaces, because they are not enclosed by impressive defences, and because beyond the five or six largest towns we are looking at very small urban centres (between 2ha and 8ha in area) it is tempting to regard the towns of Minoan Crete as under-developed and

unimportant. McDonald and Hope-Simpson (1969: 175) went so far as to question the very existence of urbanism in Mycenean Greece on the grounds that one could not demonstrate "a really sizeable concentration of population at urban centres". In purely demographic terms, however, I think we are almost certainly under-estimating the significance of urbanism in Minoan Crete. In order to test this assertion we have to get (briefly) into the difficult and dangerous world of population estimates.

When he was attempting to plot the growth of population in the Aegean from the Neolithic to the Late Bronze Age, Colin Renfrew (1972: 249) constructed a formula (with four factors) for estimating the population of a given region. He concluded that MBA Crete had a population of around 215,000 people, which rose in the LBA to around 260,000. He conceded the figures might err on the side of generosity. A few years later I queried the value of the some of the factors in his equation, added a fifth, and concluded that Renfrew's estimate was indeed on the generous side (Branigan 1980). Cherry and Wagstaff (1982: 138) came to the same conclusion in applying Renfew's figures to EBA Melos. Recently Rackham and Moody (1996: 96–97) have estimated (in a quite different way) similar brackets to Renfrews figure of between 215,000 – 270,000 people in palatial Crete. We might compare these figures with the first Venetian census of 1534 which recorded a population of 175,000 (and that after the very considerable efforts of the Venetians to boost the population of the island by both force and inducements). Although such estimates, or guesstimates, are open to a variety of objections, modifications, and adjustments, they do provide some broad 'ball-park' figures for population levels in the ancient world and most Aegean prehistorians have at some time played this particular game. For what its worth I present my present guesstimate of the population of Minoan Crete around 1600 BC (Tables 3.3 and 3.4). Because since Renfrew wrote in 1970 we have had a plethora of surveys, most of which are not yet published, I take as the base figure for the number of known LM sites that used by Renfrew in 1970 – 284, minus say 24 which we would classify as urban, a baseline of 260 non-urban sites. But experience in the Ayiofarango and Ziros, and the comments of others who have surveyed intensively in Crete over the last 30 years suggest that this figure should be multiplied by a factor of about 6 (not 2 as Renfrew suggested). About 10% of these sites will prove on examination not to be settlement sites (but shrines, tombs, or field-houses etc). Of the remainder some will not be in contemporaneous occupation, but for the relatively short period we are looking at I reduce Renfew's estimate of 25% of non-contemporaneous sites to 15%. So I arrive at an estimated total of around 1200 non-urban occupation sites in the mid second millennium BC. Estimating how many of these were villages, hamlets and farmsteads is difficult as patterns of rural settlement vary widely according to terrain and elevation. When we have all the surveys published we

Table 3.3 An estimate of the rural population of palatial Crete

RURAL POPULATION			
Non-urban settlement baseline in 1970		260	
Undiscovered factor of 6 – notional total		1560	
Non-occupation factor of 10% (i.e. -10%)		1400	
Non-contemporaneous factor 15% (i.e.-15%)		1200	
Of these 2/3rds hamlets/villages	800		
And 1/3rd farmsteads	400		
Hamlets/villages av 20 households (16,000) =		80,000	
Farmsteads with one household (400) =		2,000	
Estimated total			82,000

may be able to arrive at some respectable generalized figure. Certainly there seems to be a shift towards nucleated settlement from the EBA to the M/LBA, and from Vance Watrous' preliminary Mesara report (1993: 227) villages and hamlets seem to outnumber farmsteads in the palatial period. I take the balance as 2: 1 in favour of nucleated settlements in my guesstimate, and so assume about 800 villages and hamlets and 400 farmsteads. I have then taken an average number of households for hamlets (with perhaps only 5–10 families) and villages (with perhaps 15–40 families) together as about 20.

Taking the widely agreed average figure of 5 persons per peasant family, this provides a total rural population of something over 82,000 people (Table 3.3).

To add to, and set against this figure, we have to estimate the urban population. Here I have taken the estimated size of the known major settlements. The size of Phaistos is difficult to estimate. Watrous (1993: 225) has suggested that it might be as large as 150ha, but this assumes that widely spread deposits to the west and south of the hill on which the palace sits were part of a single continuous nucleated settlement. It seems unlikely that Phaistos would be twice the size of Knossos and three times that of Malia. There is nothing in the size and architecture of the palace, nor in the archival material to suggest that Phaistos outshone Knossos and Malia so dramatically. A possible indication of its comparative size is its provision of 'public' storage in the koulouras along the edge of the west court. The four koulouras at Phaistos could store about 75 tons of grain, compared to the 250 tons which could be stored in the contemporary kourlouras at Knossos. Another possible comparative indicator is the relative size of the palace. At Knossos and Malia – the other major palatial towns of which we know much at all – the palaces take up about 2% of the estimated total area of the town. With a palace of 8000m^2 at Phaistos, we might on this basis expect a town of about 40ha. In the case of Khania I have assumed it is a major settlement but belongs in the lower echelons of this group. I have then taken a figure of 4ha (slightly lower than the average of the known small towns, which is around 4.5ha) and multiplied this by a total of 30 minor towns. This assumes that there are still small town sites to identify, a justifiable assumption in that four of the small towns on the list have only been discovered or their full extent only established within the last ten years. Some possible future candidates for 'urban' status are listed in Table 3.1. The net result of these calculations is a total of about 390ha of urban settlement.

To convert this into an estimate of the total urban population we have to estimate the likely number of inhabitants per hectare. Renfrew suggested a figure of 300 persons per hectare for Minoan Bronze Age towns (assuming a figure of 400 for Near Eastern towns), and Todd Whitelaw's differently based calculations for EM sites produced a figure equivalent to about 350 per ha (Whitelaw, 1985: 337–39). However population densities in Near Eastern towns have been substantially revised downwards since

Table 3.4 An estimate of the urban population of palatial Crete

URBAN POPULATION		
Total area of major towns (inc average allocated to Khania)	270ha	
Total area of 30 minor towns with an Average area of 4ha	120ha	
Total area of urban settlement	390ha	
Urban population if average population Density of 200 people per ha:		78,000
estimated total population		160,000
Alternative scenario		
Av urban density of 150 people per ha:		
Urban population:		58,500
estimated total population		140,500
(of which 42% town-based and 58% rural).		

1972, to figures of around 150–200 per hectare (summarised in Manning 1999). At the same time, a multi-factored approach to estimating both the population of Minoan Crete as a whole and Knossos and Malia in particular (Firth 1995) has proposed revisions to both sets of figures. Firth has suggested (1995: 35–56) that Renfrew's figures could be 'recalibrated' by reference to the Minnesota Messenia Expedition survey results, and that the population of LM.III Crete on this basis could be placed at around 110,000. He further argues (1995: 48–49) that suggested population figures of 12,000 for Knossos and 10,000 for Malia would have been unsustainable in terms of basic food supplies in the Bronze Age. If we apply the figure of 150 per ha to our total area of urban settlement, we arrive at a figure of about 60,000 town dwellers in palatial Crete, with perhaps 11,000 at Knossos and 7500 at Malia.

On the other hand, detailed study and survey at Pseira has suggested a total of about 60 houses in this small harbour town, which might be translated into a population of about 300 persons. Pseira probably occupied about 1.5ha of space, so that the population density here might have been nearer 200 per hectare than 150. If that figure is used for Crete as a whole, then we would have an estimated urban population of around 80,000 (Table 3.4).

There are obviously all sorts of caveats and arguments one could introduce into these calculations, but even if (for example) we have underestimated the rural population by a factor of 30%, we are still left with a palatial Crete where a very significant proportion of the population lived in towns (the bulk of them in just half a dozen large towns). The percentage of 'town dwellers' would be somewhere between about 40% at the low end of the calculations and up to 50% at the high end. This is a remarkably high proportion. We might compare it to Roman Britain – with its 100–120 towns – where the urban population is widely agreed to have formed somewhere between 5 and 10% of the total population (e.g. Millett 1990: 185). Interestingly, it is much closer to the situation in second millennium BC Palestine, where Kempinski (1992) has proposed a total population of about 200,000 people, of which 60% are urban and 40% rural.

Such a high proportion of town-dwellers raises all sorts of questions and speculations for which we have space to mention only a few. Almost certainly a good number of town-dwellers must have been involved in agricultural production in the land around the towns. This seems to be confirmed by excavations in the towns themselves which reveal only small numbers of houses where craft production may have had anything more than a casual role, and also the frequent appearance of agricultural installations (mostly grape or olive presses). Equally, the bulk of the work-force in the palaces – whether clerks and administrators or menial servants – probably lived in the town-houses rather than the palace itself (again, a proposition supported by the small areas of domestic occupation identified in the palaces).

It seems highly unlikely that the urban populations could be supported entirely off the produce of the land immediately around the towns however, particularly in the case of the major towns (see Firth 1995: 48–49). The reliance of the urban centres on the rural population must have been even greater than we have perhaps assumed in the past. Such heavy dependence must have been reflected in the way in which the Minoan states organized and controlled their hinterlands. The relationship between town and country, urban centre and hinterland, must have been close and crucial and fully justifies the attention devoted to it elsewhere in this volume.

Finally, I have several times alluded to the similarities between Minoan urbanism and that of second millennium BC Palestine. These similarities appear to include a tri-partite urban hierarchy with large towns in the 20ha-80ha bracket, small towns with probably an administrative role in the 2–10ha range, and small towns with special service roles. There is a similarity in the ratio of small to large towns, and in the density of towns in the landscape. Finally, there is a similarity in the relative size of urban and rural populations. These comparisons might reflect similarities in the role, nature and organization of Minoan and Palestinian towns, and given that we have more extensive archaeological and historical knowledge of Palestinian towns they might provide a fruitful field for further comparative studies.

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4

History and Hierarchy. Preliminary Observations on the Settlement Pattern of Minoan Crete*

Jan Driessen

Introduction

In this paper, I explore regional dynamics in settlement trajectories on Protopalatial and Neopalatial Crete. This is an exploratory attempt to make use of the mass of archaeological data, collected during this century, with the intent of reconstructing the political geography and the settlement hierarchy of the island in the Minoan period. Reconstructing the political geography of Crete on the basis of survey data is an exercise which has to remain largely hypothetical partly because the inferences from as yet unpublished or largely unpublished survey data may be far off the truth, and partly because these surveys only relate to a tiny fraction of the island which has been intensively studied (Figure 4.1).

Indeed, a rough and exaggerated count suggests that, of the 8,305 km² taken up by the island (Bonnefant 1972: 17), less than

Table 4.1 Surveys on Crete (partly based on Moody, Nixon, Price and Rackham 1998: 88; *indicates provisional data; Knossos and Palaikastro are the only two as yet surveyed settlements; totals do not include Kythera)[13].

Area	Extent in km²	FN/EM I	Prepalatial	Protopalatial	LM I	LM IIIA2-B
Akrotiri[5]	171	12	36	98	107	48
A. Vasilios*	38	(15)	(0)	(6)	(11)	(4)
Ayiofarango	c. 20	3/5	3/5	<3	1?	1?
Gavdos	c. 45	DATA	NOT YET	PUBLISHED		
Gournia[6]*	24	(c. 3+)	(c. 7)	(c. 16)	(c. 13)	(c. 5)
Itanos*[7]	c. 30	(?)	(1+)	(?)	(c. 20)	(?)
Kavousi	c. 50	2	9	53	30	7
Knossos	c. 10					
Kommos	25	9	9	32	29	6
Lasithi[8]	c. 85	14	5	36	13	14
Malia*	c. 40	(1)	(5+)	(75+)	(9)	(9)
Palaikastro	0.36					
Praisos*[9]	9	(4)	(0)	(6+)	(4)	(9+)
Petras/Photia	4	2/3	2/3	2/3	6	3
Pseira[10]	1.75	DATA	NOT YET	PUBLISHED		
Sphakia	470	DATA	NOT YET	PUBLISHED		
Vrokastro[11]*	50	(3)	(24)	(24)	(46)	(35)
W. Mesara[12]*	22	(9)	(c. 17)	(>25)	(<20)	(?12)
Ziros	2	8	0	6	6	1
Kythera	13	(?)	(7)	(0)	(4)	(0)
Crete: 8,305 km²	**> 1097 km²**	**88**	**121**	**383**	**315**	**154**

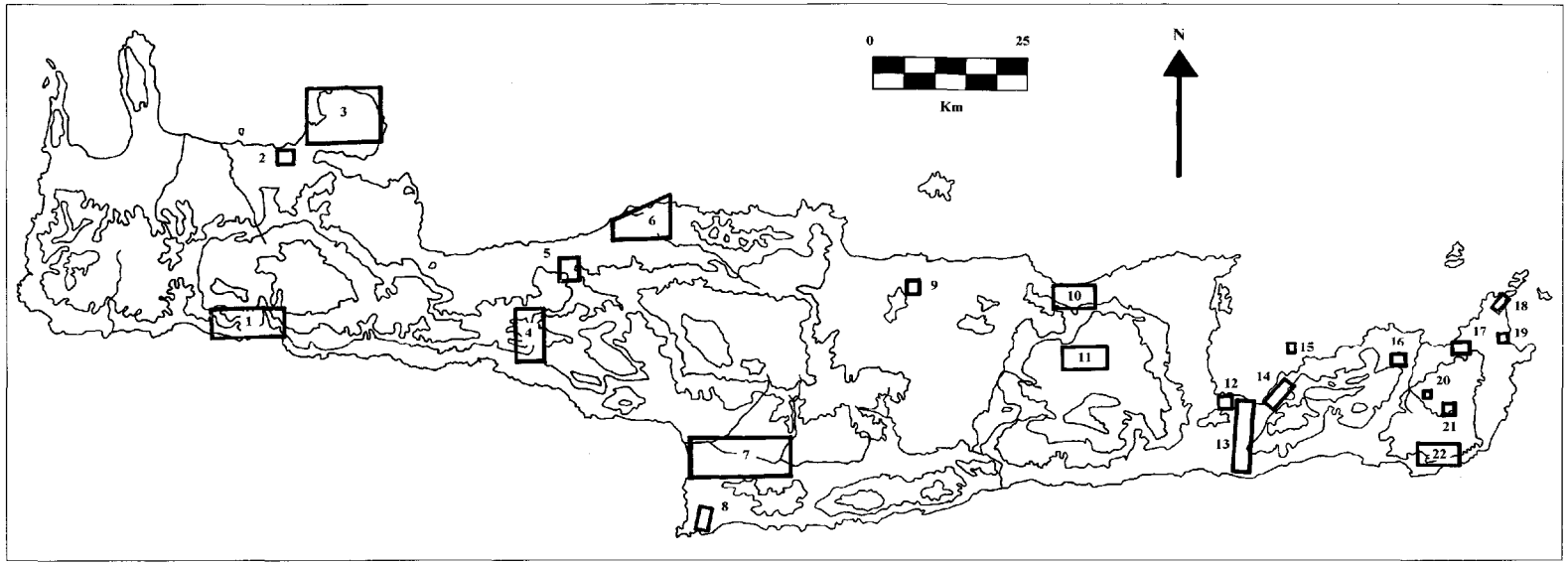

Figure 4.1 The location of archaeological surveys in Crete.

1. Sphakia
2. Nerkourou
3. Akrotiri
4. Ay. Vasilios
5. Eleftherna
6. Landbegehungen
7. W. Mesara/Kommos
8. Ayiofarango
9. Knossos
10. Malia
11. Lasithi
12. Vrokastro
13. Gournia
14. Kavousi
15. Pseira
16. Achladia
17. Petras/Ay. Photia
18. Itanos
19. Palaikastro
20. Praisos
21. Ziros/Katelionas
22. S.E. Crete

1,100 km² has been or is being surveyed, i.e. c. 12.5% and, as far as more or less published surveys are concerned, we only know the settlement history of an area of about 437 km² that is, after all, about 5% of its surface. If we take into account that 61% of the island is between 0 and 400 m asl (with 26.6% between 400 and 800 m asl, 12.3% over 800 m asl) we observe that, relatively speaking, the Sitia area has more land below 800 m asl than the other three modern provinces. Most of the surveys indeed relate to land below 800 m (i.e. 87% of the island) and it is indeed doubtful that, apart from some highland plateaux, occupation was anything more than sparse in the mountains, which results in a somewhat more positive picture[1]. The Sphakia survey has, however, found traces of settlement at an altitude of +1000 m² in the White Mountains, which may imply that, in certain periods, the highland formed an effective, integrated part of some of the lowland polities. In our modern study area of Palaikastro this is certainly still the case and the people of the plain use the highland plateau of Magasa (situated at +550m) for a multitude of purposes[3].

Aside from the fact that the picture presented here (Figure 4.2) is based on an unrepresentative sample, there are other problems with the data. Degree of area coverage, site determination, chronological attribution, changes within a chronological phase and site extent (as well as their reciprocal influences) and a number of other features could not always be defined properly in the various reports[4]. Most importantly, there are still some 'black holes': EM III, MM III and LM II. Although sites attributed to EM III and MM III are mostly included in Figure 4.2, there can be no doubt that something was happening on the island in these respective 'Intermediate Phases' that still eludes us (see e.g. Watrous 1994; Haggis 1999). The resulting site curve, however, could look entirely different than the general impression provided by Figure 4.2, with serious drops during the 'black holes', followed immediately afterwards by a considerable upsurge.

There is another drawback, however, since most of the older surveys have concentrated on areas that seem peripheral to the development in the palatial centres. This is now being remedied with the Western Mesara and Malia surveys. The great unknown is the Knossos area: although the 'survey' by Hood (1958), and the updated Hood and Smyth (1981) version, can give us an idea about the general trend of the settlement proper, we desperately need information on the wider Knossos area before construction destroys all the evidence.

Given all these limitations, it is obvious that speculations on modes of regional integration will need to be properly scrutinized. Whatever their deficiencies, however, surveys remain the best way of obtaining a general idea about relative demographic changes, site trajectories and diachronic relationships between cities and countryside.

This is not the place to repeat the pros and cons of the unitary or peer polity model on Neopalatial Crete or, if you wish, the existence at one or more periods of a single integrated political system as opposed to a multitude of regional units (Cherry 1986; Driessen and Macdonald 1998; Schoep 1999). The present administrative organisation of the island is largely based on that of the Venetians who themselves took over the episcopal division of Late Roman times (Van Spitael 1981: 9; Bennet 1990: 205, fig. 4). It has to be admitted that the geography as well as the elongated shape of the island begs for such a division and, as Bennet (1990: 207) has noted, it is indeed singularly difficult to administer the island from a single capital except if this lies outside the island, such as Rome, Venice, Constantinople, Istanbul or Athens. Our contemporary (i.e. Bronze Age)

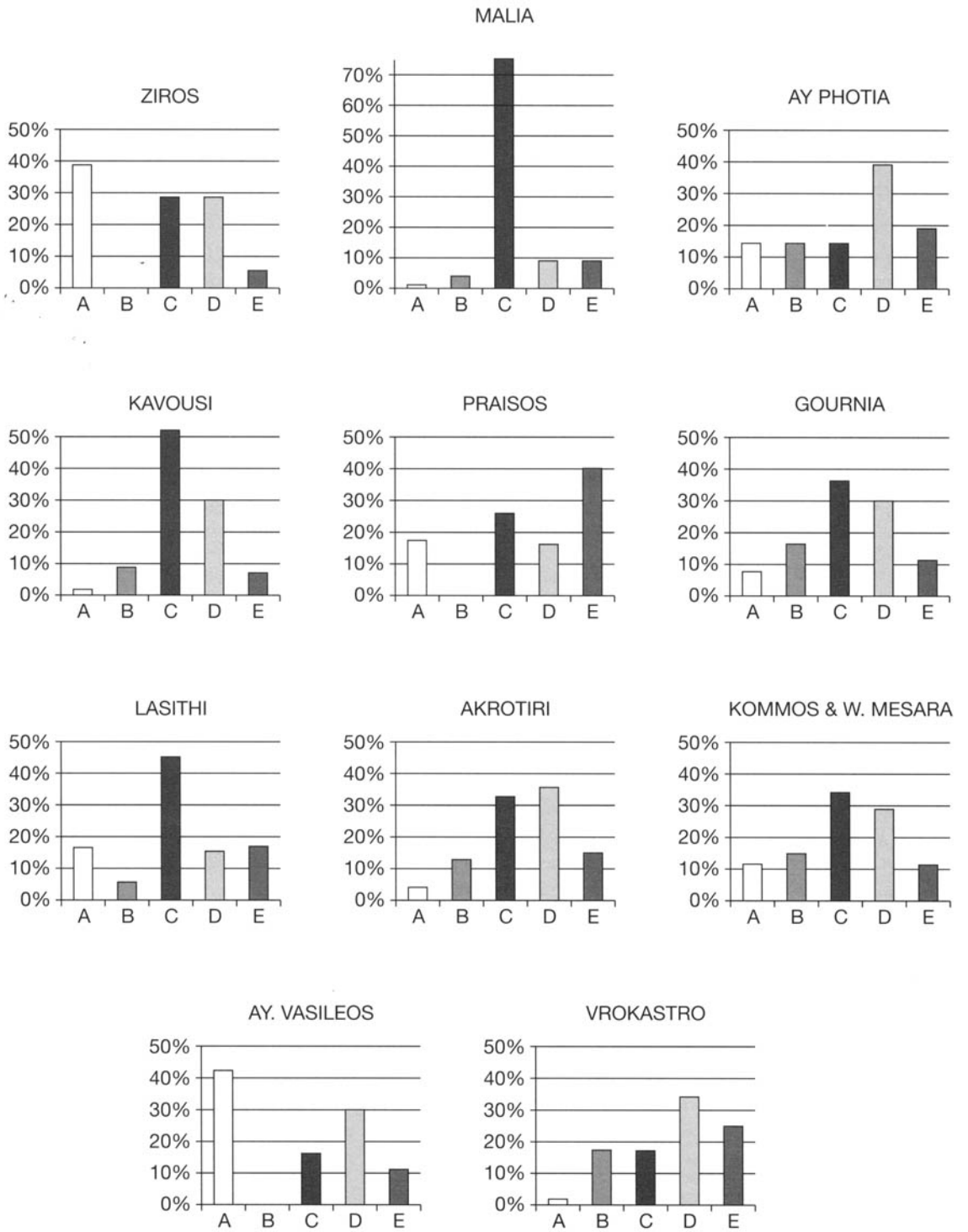

Figure 4.2 Crete: Settlement patterns from survey data. Column A = Neo/EMI. B = Prepalatial. C = Protopalatial. D = Neopalatial. E = Postpalatial.

written sources are not of much help either. Near Eastern archives mention the geographical circumscription of the people *Keftiu* or *Kaptara*, for example, which can be compared with words such as *Alashiya* or *Akhiyawa*. Only twice, the ruler of the *Keftiu* is explicitly mentioned and I have suggested that this may reflect a short period of political unification in LM II-IIIA1 (Driessen in press). I leave aside our Cretan documentary evidence since this has recently been assessed by Ilse Schoep (1999) who believes there is no conclusive evidence for an overall administrative apparatus, at least during LM IB, corroborating some of the ideas expressed in Driessen and Macdonald (1998). We are left with the rest of our material evidence and to see whether or not it reflects signs of integration. In the past, architecture seems to have provided the best indication (Driessen 1989) and indeed ashlar buildings obviously play a role in the reconstruction of the political landscape not only because of the elite message expressed by this feature of conspicuous consumption but also because they often repeat specific features of plan, design, construction and decoration (Driessen 1999: 122). Crete is fortunate in conserving a large sample of ashlar buildings that may be identified as public because of scale, plan, location and other features. Many of these are court-centred and we are used to dub them "palaces" although I prefer the term 'court-centred buildings'. These display a functional and stylistic consistency both in smaller and larger settlements. This could be an argument in favour of a single integrated system since other, so-called "archaic states" (Marcus and Feinman 1998: 4–5) show similarities between the paramount and subordinate centres, because the lower order centres would repeat, at a less grandiose scale, the functions exerted by the capital. Such a scenario would perhaps work for Crete but the many gaps in our evidence do not allow a clear-cut reconstruction. Zakros, for instance, has a larger court-centred building than Petras but both share other functions such as storage and administration. Does size matter and was Zakros a higher order centre than Petras? If so, what about Palaikastro, which has as yet not revealed such a central building but which in terms of the quality of urbanization surpasses both Zakros and Petras (Cunningham, this volume)? It is obvious that only new excavations and surveys can and will help to adjust this impression.

It may therefore be better to make a *tabula rasa* of all established ideas on Minoan state systems, largely a legacy of Sir Arthur Evans, and conduct a new exercise by looking at settlement distributions, their number and extent and this for a specific reason. The definition of the state, as correctly stressed by Flannery (1998: 15), should remain a task for anthropologists and political scientists but we can at least attempt to define its archaeological correlates (cf. Cherry 1986; 1987). One of the essential characteristics of a state, whether you call it pristine, early, archaic or whatever, is a variety of *levels* via which goods are mobilized towards the centre and thus a *spatial hierarchy* of settlement. 'Chiefdoms' are assumed to have two or a maximum of three levels, states at least four: cities, towns, large villages and small villages. Although somewhat artificial, it provides a handy tool for a first explanatory attempt. The more levels we can detect, the more developed and complex the hierarchy seems to have been. These are settlement hierarchies, however, and not administrative hierarchies which are much more difficult to detect archaeologically on the terrain than community sizes. There is a *caveat*, however. Certain archaeological data, as we have tried to suggest in the *Troubled Island* (Driessen and Macdonald 1998), can reflect sudden changes in political organization. Settlements and

architecture are much more static and will only be affected if the changes are really influencing social and political organization. Moreover, we should not expect a linear development. It should be proven and not assumed that a polity, once it achieves statehood, will remain static. The possibility should be left open that a polity can demote to a lower level of political development or be incorporated into a larger frame. I in fact suspect that some of the features that will be highlighted in this paper are a result of demotion, breakdown, incorporation, reintegration or upgrading of specific areas.

This said, it might be instructive to review some of the surveyed areas on Crete briefly. First, I illustrate how settlement *history* differs amongst the various regions and next I examine the presence of settlement *hierarchy* in the various sub-zones. To run ahead of my argument, I want to stress *spatial and temporal diversity of development* on the island, and I would like to think that the best way to explain this diversity is as a result of a varying impact of extra-regional stimuli. I have dubbed my paragraphs divergent trajectories and regional dynamics. I have not included a handful of surveys in this preliminary assessment because the nature of the publication or the original set-up of the survey does not allow an easy recovery of data. Absent are thus the surveys of the Sphakia area and the islands of Gavdos[15] and Pseira[16], as are the unpublished surveys of Nerokourou (French 1990: 80), the Pediadha and some others[17], the *Landbegehungen* in the Rethymnon area (Schiering 1982) and in the southeast of the island[18]. Apart from the data collected by Captain T.W. Spratt, A. Taramelli and F. Halbherr, I have also left aside the information collected during the explorations of Hood and co. in the sixties (Hood 1965; 1967; Hood & Warren 1966; Hood, Warren & Cadogan 1964), the individual site identifications by a score of Greek (esp. S. Marinatos, N. Platon, C. Davaras)[19] and foreign archaeologists (A.J. Evans [1896], J.D.S. Pendlebury [1939; Pendlebury *et al.* 1934], T. Wroncka [1959], P. Faure [e.g. 1956; 1958; 1960; 1962] and K. Nowicki [e.g. 1991; 1992]) or those collected by the Minoan Roads Project (Tzedakis *et al* 1989; 1990) and others. All sites located during these various explorations should, however, be included in any proper analysis and it is hoped that, when the Gazetteer of Bronze Age Sites on Crete finally sees the daylight, it will provide us with a better tool to proceed.

Divergent Trajectories

Renfrew (1972: 233, fig. 14.2), in the *Emergence of Civilisation*, argued for a continuous upward curve for Minoan settlement numbers from the Early Minoan up to the end of the Late Minoan IB period[20]. A preliminary count of the site numbers on Crete (total of 1061) given in Table 4.1, however, results in 88 Final Neolithic/Early Minoan I sites, 121 Prepalatial (+37.5%), 383 Protopalatial (+216%), 315 Neopalatial (-17.75%) and 154 Postpalatial sites (-51.11%), meaning that the curve already went down after the Protopalatial period[21].

This, of course, is just a general trend, a closer look at the different sub-zones results in a more even-handed picture. I briefly summarise the number of settlement sites known and their chronological attribution.

In the **Lasithi** plain, Watrous (1982) identified 15 FN/EM I sites. Only five, especially slightly larger, hilltop sites at the edge of the plain remain occupied during EM II-III but this number increases to about 40 during the Protopalatial period. This number plunges to about 15 in LM I and stays more or less the same in the next period, LM IIIA2-B, after a possible hiatus during LM II-IIIA1. The drop

in site numbers in the Neopalatial period is attributed to emigration to prosperous coastal centres (Watrous 1982: 15). The material from the Psychro Cave includes some LM II, which suggests that visitors arriving on the plateau must have been able to stay somewhere (Watrous 1996: 41, 52–53). During LM I-III, the main centre may have been at Plati. The identity in settlement numbers before and after the Middle Bronze Age is interesting, suggesting that this is the norm and that the Middle Minoan boom results from an external stimulus.

This inland area contrasts with coastal **Vrokastro** where Hayden, Moody and Rackham (1992) have surveyed an area of c. 50 km^2, which includes 13 ecological zones with site density largest in the coastal area and the river valleys up to the LM I period (Hayden, Moody and Rackham 1992, 317–318). They located only three FN/EM I sites but the number of sites increases to 24 during the Prepalatial period, a number which remains more or less the same afterwards during the Protopalatial period. Here the settlement boom occurs in the Neopalatial period when the number almost doubles to 46. After LM I, the settlement number drops a bit to 35 but still remains high.

Further along the coast, in the **Kavousi** area surveyed by D. Haggis (1996), the picture seems again somewhat different: in an area of about 50 km^2, Haggis located nine FN or EM sites with a drastic increase to about 60 during the Protopalatial period. In Neopalatial times, the overall site number drops slightly to c. 50 but afterwards the area is almost abandoned with only six sites showing some signs of reoccupation. 'Equally striking is the marked increase in settlement size and numbers in the subsequent LM IIIC and Protogeometric periods' (Haggis 1992: 408).

Three areas, three different settlement histories. It gets worse though.

The **Malia** survey, directed by Sylvie Müller, has found evidence for at least one Neolithic site and a handful of EM sites. The increase in the number of sites during the Protopalatial period to about 80 is staggering especially considering the subsequent drop in number during the Neopalatial (9+?) and Postpalatial periods. The survey covered 40 km^2 and in toto 87 sites were located (Müller 1996: 1236; 1998: 548, 552).

The surveys by Hope Simpson of the **Kommos** area (Shaw & Shaw 1995; Hope Simpson 1995) and by Watrous and Vallianou (1994) for the **Western Mesara**[22] fortunately seem to suggest a parallel settlement history. The Kommos survey covered an area of c. 17.5 km^2 and no other 'large' (i.e. more than 10.000 m^2) settlement was found apart from Minoan Kommos and Roman Matala (Hope Simpson 1995: 326). The Western Mesara survey intensively covered 22 km^2 around Phaistos, a tiny fraction of the Mesara plain, which, with its 362 km^2, comprises two thirds of the best arable soil of the island. Both areas together contain about 18 FN/EM I sites and this number increases to about 30 in the Prepalatial period. The settlement number is highest during the Protopalatial period (at least 25 for the Western Mesara, 32 for the Kommos area). In the Neopalatial Period there is a small drop in both areas and a serious plunge during LM III with only half a dozen of sites remaining occupied in the Kommos area and slightly more in the Western Mesara.

Another recent survey, that of the **Ayios Vasilios** Valley by Moody, Peatfield and Markoulaki (1996: 95), succeeded in locating 88 Bronze Age sherd scatters (Tomlinson 1995: 64). There are about 15 FN/EM I sites. Surprisingly the area seems to have been basically abandoned afterwards up to the

Protopalatial Period when half a dozen sites were established, a number that doubled again in the Neopalatial Period.

Yet another, slightly different, picture resulted from the **Ayiofarango** survey by Blackman and Branigan (1977: 68–69): several FN/EM I sites with more in EM II – EM III but a decline during the Protopalatial Period and afterwards and the same was true on the coast nearby up to Kaloi Limenes (Blackman and Branigan 1975: 34–35). Moody's **Akrotiri** survey covered about 100 km^2 and identified about 245 sites. It also illustrates a continuous upward site curve with about 18 FN, 56 EM, 147 MM and 150 Neopalatial sites (Moody 1987; 1990; Moody, Rackham and Rapp 1996). Only afterwards a serious drop occurs to 76 sites in the LM III period.

A preliminary report of the **Gournia** survey mentions how an area of 24 km^2 was surveyed and 154 prehistoric sites were identified. Preliminary numbers give seven Prepalatial, 16 Protopalatial and 13 Neopalatial sites (Watrous 1992: 607–608; 1999; pers. comm.)[23], and, in recent paper, Betancourt (1999: Plate VIII.b) discusses material from three Final Neolithic/Early Minoan I sites.

The recently published **Ziros** survey found evidence for eight Final Neolithic sites after which the area was abandoned (Branigan 1996; 1998; 1999). It was again settled during the Protopalatial and Neopalatial periods with half a dozen sites after which it was again largely abandoned (one site remaining). The nearby **Praisos** area was also settled in the FN/EM I period (four sites) and also abandoned afterwards during the Prepalatial period (Whitley, Prent and Thorne 1999: 233, 257; Whitley 1998). The Protopalatial period is better represented than the Neopalatial period but especially during the Postpalatial phase, the area knew a boom in occupation sites.

The survey at **Petras** and **Ayia Photia** yielded two or three FN/EM I sites and a similar number afterwards during the Pre- and Protopalatial periods (Tsipopoulou 1990). Only during the Neopalatial period did the number slightly increase to half a dozen after which it was halved again. Finally, the **Itanos** survey in the north-eastern tip of the island, directed by A. Schnapp-Gourbeillon (A. Schnapp [pers. comm.]; Greco *et al* 1996; 1997; Kalpaxis *et al* 1995), has hitherto covered an area of c. 30 km^2: they have found one Prepalatial site and about 20 Neopalatial ones but as yet there is very little evidence for a Protopalatial occupation of the area, an impression that reinforces our ideas about the Palaikastro countryside which seems only to have been used for extensive settlement from the Neopalatial period onwards (Driessen and MacGillivray 1989). We may conclude by referring to the results of the recently published 1998 season of the Kythera survey under direction of C. Broodbank (1999: 200–209) that covered an area of c. 13 km^2: 7 Prepalatial and 4 Neopalatial sites were located but no Protopalatial and Postpalatial sites[24].

Of course, these numbers as such are not very meaningful since they can only be properly understood if the size of the settlements is also taken into account and processes of nucleation or dispersal. Some general comments are possible though. For a start, it is obvious that the main 'colonization' phase of the island is the **Final Neolithic** period when occupation begins in all sub-zones of the island, both in coastal and highland areas. This is the first floruit for the entire island (cf. Strasser 1992; Branigan 1999: 64)[25]. We may wonder whether this move inland is a result of population pressure or of factional competition in one or more of the larger Neolithic centres.

In any case, something must have happened in the course of the **Prepalatial** period

to set off the divergent trajectories that can be observed, from now onwards, in the various sub-zones of the island. Four, rather remote, inland areas (A. Vasilios, Lasithi, Ziros, Praisos) and perhaps even the Ayiofarango witness a serious drop in settlement numbers. This is, apart from in the Ayiofarango, not a result of nucleation, at least not within the same sub-zone itself. It may, however, be a result of the attraction which nearby coastal agricultural areas presented, especially those where palaces would be constructed in MM IB. In fact, it suggests already that larger centres were operational at this early stage, something confirmed by the existence of monumental buildings at various EM sites (Knossos, Malia, Palaikastro, etc.)[26].

During the **Protopalatial** period, the island again illustrates a combination of stagnation, boom and regression. Earlier abandoned or semi-abandoned inland areas are mostly recolonized, suggesting a serious pressure on agricultural land in the coastal zones. This is corroborated by the increase in settlement numbers in those coastal areas where palaces are established such as Phaistos, Malia, perhaps Khania and possibly Gournia. Other areas, and especially in the far east of the island (but also Kythera in the far west), do not follow this development and instead show a drop or stagnation in site numbers. When we first commented upon this feature, particularly where Protopalatial sites around Palaikastro were concerned (Driessen and MacGillivray 1989: 102), some authors (e.g. Dickinson 1994: 69 Haggis 1996: 393, n. 64) protested by calling attention to developments elsewhere on the island. I like to believe that our view is now substantiated by some of the other surveys in the area and that a divergent trajectory did indeed exist. Since Petras, Palaikastro and Zakros were flourishing settlements in the Protopalatial Period, it may well be that some kind of nucleation process took place in these regions and a similar process may have occurred on the island of Kythera (cf. Broodbank 1999: 212). The south-east of Crete, including the Praisos, Palaikastro, Ziros and Zakros areas, are very much characterized by the presence of a large number of small but almost cyclopean structures, situated at regular intervals along road-terraces that connect the different Protopalatial settlements (Tzedakis *et al* 1989: 60, fig. 20 and fig. 22; 1990). Moreover, the number of Protopalatial peak sanctuaries is much higher in the far east than anywhere else on the island: 11 against 12 elsewhere on the island (Nowicki 1991: fig. 7). How to explain this coincidence of anomalies is another matter but I will further on suggest that these features combined may explain the special nature of the far east of the island.

For the **Neopalatial** period, again the picture differs: a drop in settlement numbers occurs in Lasithi and the regions around Gournia, Kavousi and Malia as well as in the Western Mesara. Elsewhere, however, on Akrotiri, in the Vrokastro area, the Ay. Vasilios valley and in the east of the island, around Petras, Palaikastro and Itanos, the number of sites seems to rise slightly or considerably. We assume that this difference results from local environmental or geopolitical conditions and that another region positively gained some of the loss of one region, especially since the drop is obvious in areas in which court-centred buildings are situated. The great unknown here, yet again, is the Knossos area. The picture is very blurred after the LM IB destructions when many areas seem at least temporarily abandoned or sparsely inhabited. The reoccupation or recolonization after LM II is especially obvious in some inland areas as Lasithi and Praisos but some of the traditional agricultural coastal areas continue to be relatively densely occupied as shown at Malia, Vrokastro,

Akrotiri and Gournia. Other areas, however, are again basically abandoned such as Kavousi, the Ayiofarango and the Ziros area. Since some of these areas were also those that suffered mainly during the Early Minoan period, I assume that similar processes were at work.

Regional Dynamics

It may be instructive at this point to have a look at site hierarchy and this is where it gets tricky. The existence and the size of 'public' structures at some sites evidently manifest the presence of some kind of 'power' at these settlements (Driessen 1999). The size of these structures requires both a considerable population and a social cohesion and their mere existence implies an energy input and hence the presence of administrative personnel. Since many sites do reveal such buildings, it can reasonably be assumed that there were different levels of importance, i.e. a hierarchy of sites. Since we lack a sufficient number of excavated settlements within a single region[27], we are left with settlement sizes to detect different levels in spatial organization at a given time. In her Akrotiri account, Moody (1987) has suggested a four-tiered hierarchy but, following Near Eastern examples, I thought it useful to add a category of sites that are larger than 25 hectares. If we assume a density coefficient of 250 people per hectare (Hasan 1978; Postgate 1994; Whitelaw this volume), we have the five categories seen in Table 4.2.

The drawback here is that only very few of the published surveyed areas provide information on settlement extent and the exercise conducted here will need to be redone once all the information is published. Until then it is impossible to present proper rank-size distributions for the island or to examine how the number of sites varies in each hierarchical level with each chronological period in each region (cf. Cherry 1987). What follows are therefore simply some preliminary observations.

For the **Final Neolithic** period, our data are sparse but it appears that small, nucleated villages and isolated farms of Level 5 coexisted throughout the island aside from Knossos where, according to a recent study (Manning 1999: 471), a Level 3 settlement or town of 5 ha may already have existed in the Late Neolithic period. In view of the extent of the site during the Early Minoan period, this seems somewhat exaggerated but it is not impossible that the sheer size of Final Neolithic Knossos forced the migration of groups to other, not yet settled areas of the island, explaining the first wave of colonization alluded to above.

During the **Prepalatial** period, some regions witness the growth of larger, Level 4 settlements: Malia itself already had an extent of about 2.58 ha and recently another

Table 4.2 Hypothetical Site Hierarchy.

Level	Settlement Type	Size	Households	People
Level 1	Capital Town	25 ha or more	> 285	c. 6250 or more
Level 2	Large Town	7 to 24.9 ha	80 to 284	1750 or more
Level 3	Town	3.5 to 5 ha	40 to 50	875 or more
Level 4	Village	2.4 to 3.49 ha	28 to 38	600 or more.
Level 5a	Small village	1 to 2.3 ha		250 or more.
Level 5b	Hamlet	0.28 to 0.99 ha		70 or more
Level 5c	Single house/farm	< 0.2 ha		< 50

large site was identified a few kilometres east, near the Arkovouno hill (S. Müller in Blackman 1997: 109). Knossos is said to cover 4.84 ha (Whitelaw 1983: 339), Phaistos about 1.5 ha (Watrous *et al* 1993: 224) and Watrous' team has identified a series of small sites (campsites, hamlets) as well as 'the largest EM I-II settlement in the Isthmus of Hierapetra' at Halepa at the east end of the Pacheia Ammos bay which covers 2 ha (Tomlinson 1996: 45; *BCH* 120 (1996): 1234–1235; L.V. Watrous pers. comm.). Blackman and Branigan (1977: 69) discovered a 3.25 ha site in the Ayiofarango, 'possibly the largest Early Minoan settlement yet known'. In some areas, we seem to have a two- or three-tiered hierarchy which people tend to equate with 'chiefdoms', ranked societies in which chiefly families played a considerable role. I think it is very likely that at least Knossos and Malia, but most likely other places too, may already have developed further at this point but this needs more archaeological corroboration. Malia at least already seems to have some kind of central building and the same is probably true for Knossos and Palaikastro (MacGillivray and Driessen 1990: 399; Schoep 1999a).

This, still limited, hierarchy heralds what happens next in these areas since both the site number and site extent show a massive increase in the **Protopalatial** period. Indeed, the data make it clear that some regions such as that of the Akrotiri with the site of Khania (7.64 ha) and the Western Mesara with the site of Phaistos (15 ha) (Watrous *et al* 1993: 225) achieved a four-tiered hierarchy starting with Level 2 sites. The Malia and Knossos areas, on the other hand, may already have known a five-tiered hierarchy since both evidence Level 1 settlements of more than 25 ha since 45 ha for Knossos and 60 ha for Malia have been claimed (Whitelaw 1983: 339; Hood and Smyth 1981; Müller 1997: 52)[28]. In the case of Malia, it can be argued that the site grew through the incorporation of a population that was initially established elsewhere on the plain (Arkovouno ?) or in the hinterland. Malia, at present, seems to have been the largest Protopalatial polity of the island, which is amply illustrated by the score of public buildings at the site (e.g. Poursat 1987). As shown by Sylvie Müller (1996; 1997), the secondary settlements of this period are located in three, almost concentric circles around the city. The success of Knossos is more difficult to explain, again because of the lack of surveys in its hinterland. In contrast to these areas, some other regions such as Lasithi, Kavousi, Vrokastro and East Crete have failed to provide evidence for a developed hierarchy in this particular period. Other zones, as mentioned, were largely abandoned during this phase. This seems to suggest that these areas remained outside of the territories administered by the First Palaces and hence outside the mainstream development (Cadogan 1990; 1995; Haggis 1996: 424; Knappett 1999; Knappett and Schoep 2000). A fourth trajectory seems illustrated by the far east of the island (Figure 4.3): there is evidence for at least three Level 2 (if not Level 1) sites during the Protopalatial period, Petras, Zakros and Palaikastro, but as yet little evidence for the presence of sites that stood on a lower hierarchical step apart from a very large number of Level 5c sites (Branigan 1972; Driessen and MacGillivray 1989; Tsipopoulou 1995; 1996; Tsipopoulou and Papacostopoulou 1997). Road stations and peak sanctuaries form the latter, at the lowest level. Nucleation appears to have been the rule here, and, although I use the concept hesitantly and anachronistically, the east Cretan towns may have been some kind of city-states 'avant la lettre'. If correct, city and countryside may have been entirely integrated, perhaps in an *achoritic*

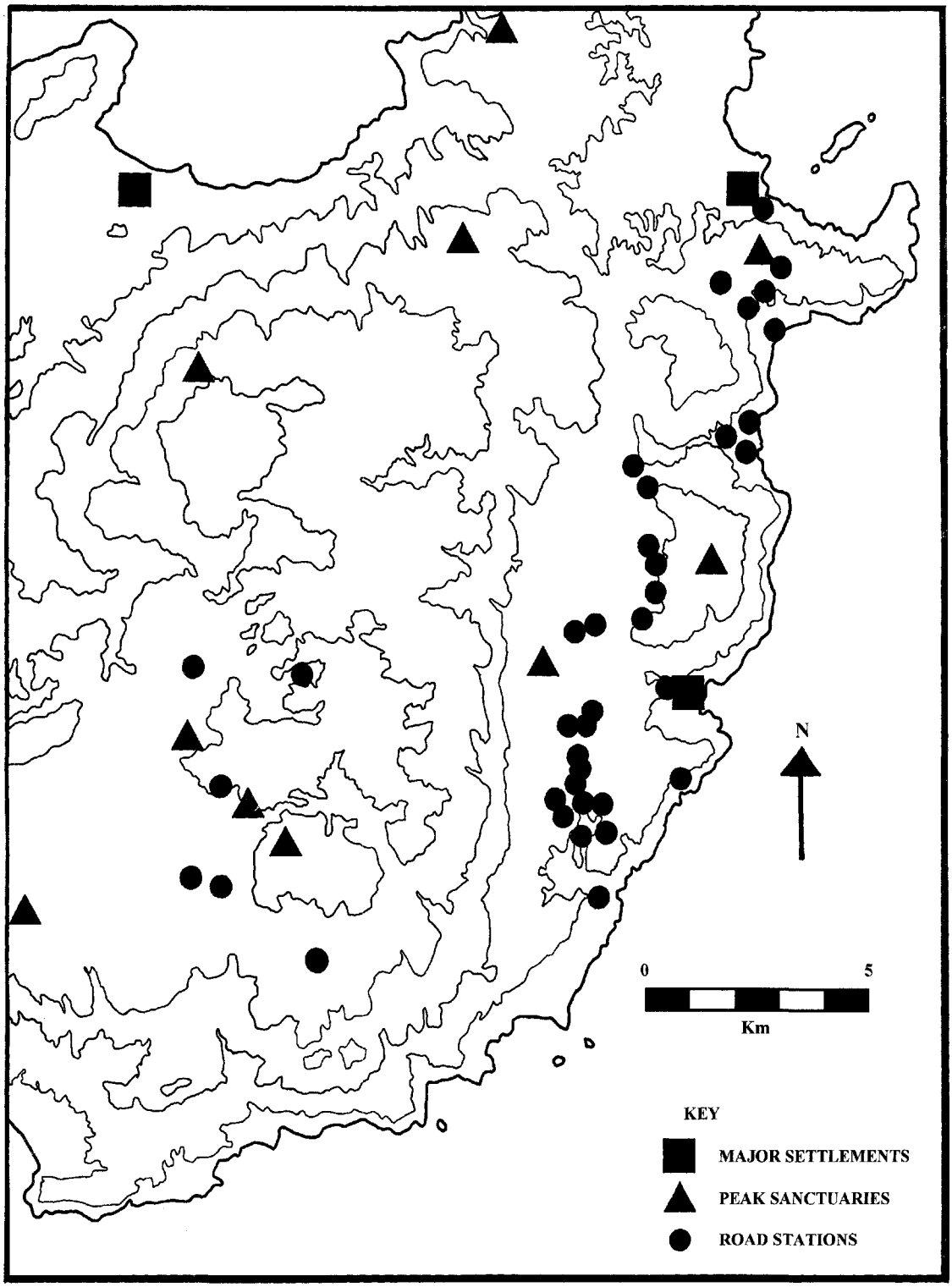

Figure 4.3 East-Crete: main settlements

system, where farmers lived in town and not on farms. Such societies seem to have been very much kinship based[29]. This achoritic system should then be considered against the background of the mentioned 'watchtowers' and the presence of a high number of peak-sanctuaries. There is obviously a great cultural uniformity at play here in the Protopalatial period and I wonder whether the peak sanctuaries formed discrete but obvious boundaries between the different components of some kind of confederacy, linked via a road system.

The Gournia area, on the other hand, may also have had a three or four-tiered hierarchy during the Protopalatial period and its main settlement is now thought to have had an extent of about 21 ha[30]. There is as yet no proof that it attracted settlers from the rest of the Mirabello area where the site numbers increase or stay the same and no hierarchy develops. Gournia indeed may well have been a mini-state.

For the **Neopalatial** period, there is an islandwide establishment of small Level 5 sites, usually identified as farmsteads or, when there is obvious architectural elaboration, as 'villas' (Hägg 1997). At the same time, I have the impression that some settlements grow in size whereas some intermediate sites disappear. In other words, the five-or four-tiered hierarchy broke down into a three-tiered one. When such a process happens elsewhere in the ancient world, it usually suggests *incorporation* into a larger framework. Could this be happening on Crete? Some of the regions show an obvious, overall reduction in settlement numbers and a reduction in the extent of the main settlement during LM I. These same areas see an increase in higher order centres (e.g. the Phaistos-Ayia Triadha-Kommos triangle [Shaw and Shaw 1985]). This is especially clear for the Malia and Phaistos areas, for example. All hypotheses, however, depend on the position of Knossos and it would be interesting to know precisely what is happening in its hinterland during this phase and what its relations were with the major settlements at Tylissos, Archanes, Amnisos and Galatas. The *Knossos Survey* (Hood and Smyth 1981: 10; Warren 1994: 209) suggests an intensively settled area of 75 ha during the Neopalatial period[31], which, if we accept a density coefficient of 250 people per hectare, represents an increase for the city from the Protopalatial to the Neopalatial period from 11,250 to about 18,750 people. The decline of the Malia and Phaistos polities – both with smaller palaces and surrounding settlements than in the Protopalatial period – with an accompanying loss of integration in their respective hinterlands may then suggest that Knossos, which boomed in this period, had effectively taken the lead and that those sites that were situated nearby had been demoted into some kind of provinces, to all intents and purposes under control of Knossos. If so, the Malia and Phaistos court-centred buildings would really represent smaller, subordinate versions of the capital's 'paramount palace'[32]. If this hypothesis is acceptable, it follows that, at least during LM IA, Knossos was in charge over the entire central Cretan area. It thus acted as a real 'central place'[33], with a well-integrated hierarchy in which the Level 2 towns (Phaistos, Malia, Ayia Triadha, Kommos, Tylissos, Archanes[34], Galatas[35], Plati[36] etc.) would in turn be encircled by Level 3 satellite settlements at regular and shorter distances, in this case Vathypetro, Khania-Mitropolis, Pitsidia, Milatos etc. Myrtos-Pyrgos would, still following this reconstruction, represent some kind of boundary station for the Knossos state in LM IA, explaining its architectural elaboration with obvious Knossian features as I have discussed on another occasion (Driessen 1989: 21).

Elsewhere, especially in the far east and west of the island, we can observe that the Neopalatial settlements not only outgrow their Protopalatial predecessors but these regions also illustrate an increase of site numbers and a more developed hierarchy. In fact, they seem to reflect a situation similar to that of the main polities during the Protopalatial period and those in the far east may only now have crossed the early state threshold, illustrating some kind of secondary state formation. Some areas, such as those around Gournia, Kavousi and Vrokastro and in the Lasithi, show a reduction in the number of Neopalatial settlements but a more developed site hierarchy and obvious signs for nucleation in one or two larger settlements. It is at this point, for instance, that several Protopalatial settlements along the north coast of Mirabello were abandoned and we may assume that the Gournia polity integrated several areas[37], perhaps as a reaction against pressure from the west (the Knossos state). Plati too may well have taken control over the Lasithi plain. As far as this evidence is concerned, I do not think it is sufficient to suggest incorporation by Knossos.

During the **LM IIIA** period, there are initially rather few larger settlements left on the island and isolated farms and hamlets are also rare. The absence of a complex local hierarchy may then suggest that Knossos was indeed, for some time, in overall control of the island, with a more developed supra-regional hierarchy. The progressive establishment of more settlements on different levels illustrates, however, that within the LM IIIA-B period, the political situation also changed, opening the possibility that this Knossos state disintegrated in different political units (cf. Bennet 1985; 1987; 1990).

Preliminary Conclusions

Site numbers and sizes do not suffice to reconstruct a persuasive political geography and ideally, this preliminary outline of settlement history and hierarchy should be substantiated with other archaeological data, especially those related to the presence of high status artefacts, elaborate architecture and documentary information. Moreover, it must be verified with the settlement history of some major sites such as Knossos, Malia and Palaikastro. Further, we should try to establish whether areas with nucleated settlement patterns show traces of increased urbanization and from what moment onwards 'central places' with their hierarchical site arrangement but without signs of urbanization form a feature of the Cretan landscape. What we first need, however, are proper intensive surveys of the Knossos, Palaikastro and Zakros hinterlands to try out the validity of the hypotheses presented here.

What is clear, however, from this first analysis, is that different trajectories were being followed on the island and this from a very early moment onwards. The evidence further seems to suggest that already during the Early Bronze Age regional powers existed in some areas of the island and that these attracted people from outlying areas. The resulting demographic stress in the core settlement may subsequently have led to the incorporation of outlying areas, if only to ensure the supply of agricultural produce to the centre. Territorial claims may have led to conflict at the end of the MM II period. Elsewhere on the island, both some sort of 'city-states' and more conservative kin-based systems may have been the rule for quite a long time. Afterwards, during MM III and LM IA, it appears that some of the different, large, comparatively well integrated polities that existed during the Middle Bronze Age in central Crete were incorporated into a larger political framework and a territorial state headed by Knossos. Elsewhere on the island we may only now witness the development of pristine states.

A final note of warning, however. The regional dynamics and different trajectories that can be observed make me wonder whether, where Minoan Crete is concerned, we are not trapped into established theoretical models and definitions of political and territorial organisation. The scarcity of fortification systems, an absence of an overt royal iconography and the difficulty of tying in the Cretan situation to territorial organizations known from the Bronze Age Mediterranean, leaves me frustrated. Taken together, it may imply that Crete, because of its insularity, had developed a different type of territorial organization, perhaps largely ritually motivated, which reduced intra-insular tension.

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*To Paul Faure, great explorer of Crete and great-grandfather of Danae.

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Notes

1. D. Haggis (pers. comm.) reminded me that the area between 400 and 800 m is still largely unknown but may eventually prove to be an important ecozone as shown by a highland site such as Zominthos on the way to the Idaean Cave and the defensible and pastoral sites identified e.g. by Faure 1962 and Nowicki 1991; 1992.
2. One site in the Madhares area was even found at + 1810–1840 m (L. Nixon in French 1993: 81); D. Haggis (pers. comm.) located a 2+ ha Protopalatial site at +600 in the Triphti mountains whereas the Malia survey found a protopalatial site at +801 m between Malia and Mochos ('peut-être les traces d'un bivouac de bergers', Müller 1991: 749).
3. I admit having 'fudged' some of the numerical data where not obtainable: if a 'dozen' sites were mentioned, I have taken this to represent '12'; when the site number is then said to be 'halved' I assume this to mean '6'. Likewise, when a 'couple' of sites are mentioned, this is interpreted as '2'. All numbers are, of course, provisional and conditional. At the Knossos conference held in Heraklion in November 2000, Nikos and Marina Panagiotakis presented the first result of a survey carried out in the Pediada, covering about 800 km^2 in which about 125 Protopalatial and 230 Neopalatial sites were discovered. I thank Mr. Panagiotakis for his permission to mention this work. Once published, the results will add greatly to our understanding of the hinterland of Knossos.
4. For other problems, methodologies etc. of Cretan surveys, see Soetens and Gkiasta (in press).
5. Moody 1987: chapter 6; I have used her numbers for occupation and sacred sites.
6. L.V. Watrous (pers. comm.).
7. Data based on personal communication with A. Schnapp and preliminary reports (Greco *et al.* 1996; 1997; Kalpaxis et alii 1995).
8. Numbers of occupation sites based on the maps published in Watrous 1982.
9. Precise number not clear from the publication (Whitley, Prent and Thorne 1999).
10. P.P. Betancourt (pers. comm.).
11. Numbers based on maps published in Hayden, Moody and Rackham 1992; since the three chronological groups given are EM-MM II, MM III-LMI and LM I/III-EIA, I have counted the number of Pre-and Protopalatial sites twice.
12. Watrous *et al.* 1993, 225–228 mention 'a handful of sites', 'this number doubles', etc. so the given numbers only reflect a general trend.
13. Incidentally, this gives a site density of about 1 site per 13.5 km^2 in the Final Neolithic period, 1 per 9.61 km^2

during the Prepalatial period, 1 per 3.35 km² in the Protopalatial period, 1 per 4 km² in the Neopalatial period and 1 per 7.77 km² in the Postpalatial period.

14. Moody, Nixon, Price and Rackham 1989: 88. The Sphakia survey attempted to cover c. 470 km² but it is not entirely clear whether the entire region was explored intensively. After the 1987 and 1989 seasons, 15 km² had been explored and 34 prehistoric sites identified. Nixon (in French 1993, 81) reports that all in all 218 sites were discovered but no chronological attributions have as yet been presented that can be used for statistical analyses; see also Nixon 1996; Nixon, Moody, Price, Rackham and Niniou-Kindeli 1990; J. Moody and L. Nixon in French 1990: 81–82.

15. Although very few Minoan sites seem to have been identified, there is good evidence for Middle Minoan occupation (Kopaka 1996: 70)

16. There is an abstract on the survey and some ideas on landuse but no mention is made of the chronological attribution of the sites (Betancourt and Hope Simpson 1992; Hope Simpson and Betancourt 1990). For the Chrysokamino survey, see *BCH* 120: 3 (1996), 1324. P.P. Betancourt (pers. comm.) mentions the discovery of 300 sites on the island of Pseira (1.75 km²): 'the island is first settled in the Final Neolithic. Its main period of use is LM I'. The Chrysokamino survey was included in the Kavousi survey (see below) but was even more intensive and managed to locate 40 sites (1 km²).

17. The area around Achladia seems to have been examined in detail (Tsipopoulou 1995) and a survey in the Nerokourou area is mentioned in French 1990: 80; apparently surveys have also taken place in the areas around Thronos/Sybrita (Rochetti 1994), Monastiraki and Eleftherna.

18. See especially Schlager 1987, 1991 and 1997 and Blackman 1997: 117–118. Recent reports mention the discovery of 44 Minoan and later sites in the communities of Ziros and Agia Triada but no information on their size or chronological attribution is as yet available.

19. See the annual reports in *Archäologischer Anzeiger* before World War II and those in *Praktika tis Archeologikis Heterias* and *Archeologikon Deltion* afterwards.

20. A similar stand is taken for the Vrokastro area by Hayden, Moody and Rackham 1992: 335: 'Activity gradually increased throughout the Bronze Age to culminate in the LM I period; during LM III, the absolute numbers of sites decreased and the nucleation of settlement began'.

21. Compare with Renfrew 1972: 232, Table 14.III where a total of 379 sites is considered (42 Neolithic, 111 Prepalatial, 190 Protopalatial and 284 Neopalatial).

22. For a long time, the eastern Mesara has remained *terra incognita*. This seems now gradually changing with new and exciting discoveries by the *ephoreia* as mentioned by P.M. Warren at the Knossos 2000 conference in Heraklion.

23. See also the reports in *BCH* 117 (1993): 886; 118 (1994): 815; 119 (1995): 1020; 120 (1996): 1324–1325 and *AR 39 for 1992–93*: 73, *AR 40 for 1993–94*: 81; *AR 41 for 1994–95*: 65 and *AR 42 for 1995–96*: 45.

24. C. Broodbank (pers. comm.) reported that during the 2000 campaign this picture was somewhat rectified with the discovery of two or three Protopalatial sites, one of which very large, and many more Neopalatial sites.

25. See also Warren 1984 for internal and external colonization for reasons of demographic pressure in later Minoan periods.

26. For other processes at work during the Prepalatial period, see especially Dabney 1989, Dabney and Wright 1990 and Haggis (in press).

27. The Knossos region, for instance, comprises a high number of high-class sites including Archanes, Vathypetro, Tylissos, Amnisos etc, but without surface exploration it is extremely difficult to attribute a hierarchy to this collection. It is hoped that the Pediada survey will rectify this situation.

28. O. Pelon, J.-C. Poursat and R. Treuil in *Aerial Atlas*, 176, assume the Malia settlement to have covered 80 ha but this seems to have been an educated guess before Müller's survey took place.

29. Compare with Crumley 1995: 29, who distinguishes between *synchoritic* settlements (where the population of the centre is supported by the surplus produced by a rural population), *achoritic* settlements (like the Greek poleis) and *epichoritic* settlements where the centres are all but deserted except for a few specialists but the outlying area supports a sizeable rural population.

30. According to Watrous 1992: 608, Gournia measured 700 × 300 m at its prime although Watrous 1999: 906, talks only about 4 ha. and 400 to 1200 inhabitants. The *Aerial Atlas*, 104, gives 2.5 ha excavated area (with the palace measuring c. 50 × 37 m, the court 40 × 15 m). L.V. Watrous (pers. comm.) mentions that many protopalatial sites were found, a few of which are village sized.

31. We may wonder to what degree the size of the central building reflects the size of the settlement: Knossos palace measures 13,000 m², Malia c. 9,350 m², Phaistos c. 6,000 m², Zakros about 3,000 m² and Kommos c. 4,500 m²) (cf. Shaw and Shaw 1993: 186, n. 151). Other authors give different sizes e.g. Knossos palace and surroundings 4 ha (Cadogan in *Aerial Atlas*, 129), Malia palace 8.900 m² (*Aerial Atlas*, 176), Zakros palace c. 8000 m² (*Aerial Atlas*,: 298). Sakellarakis and Sakellarakis 1998: 77 assume a palace at Archanes of 14,000 m² but this seems slightly exaggerated; see especially Wiener 1990 for settlement sizes.

32. And this may then also apply to Galatas. Compare with Warren 1985: 79, who reconstructed a Knossos polity with a territory of c. 1000 ha.; moreover, since he calculates a population of 17,000, the site needs a considerable catchment area.

33. 'This is a term for an administrative hierarchy so well integrated that Tier 2 towns encircle the Tier 1 city at very regular distances; in turn, Tier 3 settlements encircle Tier 2 settlements at regular (and shorter) distances' (Flannery 1998: 18).

34. Sakellarakis and Sakellarakis (1998: 139) argue for a very large settlement with another one at Vitsila, measuring 18 km² – surely this should be 18 ha.
35. Approximate size: 7 ha (cf. *BCH* 120 (1996): 1332).
36. Watrous (1982: 15) suggests a settlement on two hills of c. 2 ha.
37. Watrous (1999: 908) believes that the abandonment in the Gournia area only happened at the time of the Santorini eruption. Hayden, Moody and Rackham (1992: 335) assume that the Vrokastro area formed part of the Gournia polity during the entire Minoan Palace period. Unfortunately, the site numbers given for the Vrokastro area are difficult to use because of the chronological attribution in two groups (MM III/LM I and LM I/III).

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5

Variations on a Theme: Divergence in Settlement Patterns and Spatial Organization in the Far East of Crete during the Proto- and Neopalatial Periods

Tim Cunningham

Introduction

This paper addresses settlement hierarchy and regional political organization during the Bronze Age in the easternmost portion of Crete by looking at settlement patterns in the territories and the spatial organization of the towns of the three major sites of Petras, Palaikastro (Rousolakkos) and Kato Zakros. Essential to the consideration of political or economic territorial entities is the question, still unanswered, of whether or not there was a central building at Palaikastro, and if so, what form it took. Consequently a disproportionate emphasis will be given to this question and the evidence from Zakros and Petras presented in more summary fashion. The focus will be on the so-called palatial periods from MMIB to LMIB.

Settlement Patterns

Petras

Tsipopoulou has argued that the territory under at least the nominal control of the palatial settlement at Petras extended as far south as Praisos, west to Chamaizi and east to Analoukas (Tsipopoulou and Papacostopoulou 1997: 206). This area can be seen to form a geographic unity (Figure 5.1), and the identification of a Petras 'territory' has been supported by a petrographically-based distribution study of ceramics (Day 1997). Furthermore, although the Petras central building is small for a palace (central court either 6 × 13 m. [Driessen and Macdonald 1997: 227] or 6.6 × 18 m. [Tsipopoulou 1997: 269]) it is nonetheless large enough to stand out clearly as at least a 'first among equals' in its proposed territory. Finally, the discovery of a Cretan Hieroglyphic archive provides almost certain evidence for a position of dominance during the Protopalatial; as there is no evidence to suggest a decline in importance during LMIA, or the emergence of a rival within its territory we can reasonably extend this position of dominance into the Neopalatial as well. This is supported by surface finds of two Linear A tablets. Although the argument that Petras served as the local administrative and political center for the aforementioned territory is convincing, it is worth noting that such an argument (e.g. Tsipopoulou 1997 and Tsipopoulou and Papacostopoulou 1997) ever had to be made in the first place. Indeed, if we follow Tsipopoulou (1999: 848) it may be that just as some archaeologists needed to be convinced of Petras' position in our own time, so too did some of its own neighbors during Middle Minoan IIA.

Part of the reason for this is the nature of the settlement pattern and distribution in the Petras territory. Tsipopoulou (1997: 273) and Tsipopoulou and Papacostopoulou (1997: 212)

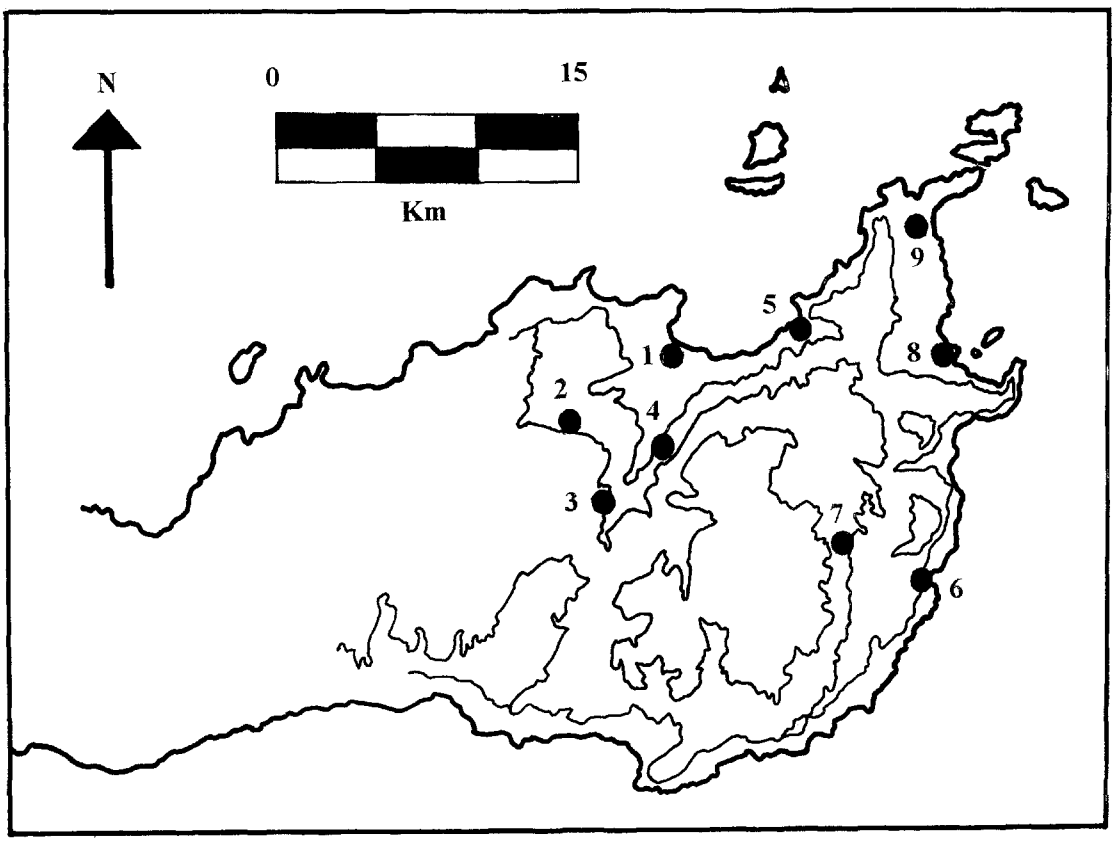

Figure 5.1 Map of eastern Crete showing sites mentioned in text: 1. Petras; 2. Achladia-Riza; 3. Ayios Georgios/Tourtoloi; 4. Zou; 5. Ayia Photia; 6. Kato Zakros; 7. Epano Zakros; 8. Palaikastro; 9. Vai (After Boquist).

suggest a three-tiered hierarchy of sites. Petras itself occupies the first tier, then the 'villa' sites of Zou, Achladia-Riza, Ayios Georgios/Tourtouloi, and Klimateria, then isolated farmsteads at Analoukas, Ayia Photia plain, Siteia Airport, and Achladia-Platyskoinos. Aside from Klimateria which 'had a specific function distinctly different from the other more distant rural villas' (1997: 210), the tier 2 'villa' sites listed above are all themselves central buildings within hamlets or villages (see L. Platon 1997: 187–202; also discussion session p. 214 for a dissenting view). The rural villas also show evidence of storage (all three), industrial areas (all three), and localized pottery production (all three). Regarding the latter, it is important to note that while Day's petrographic study (1997: 219–227) suggested that in terms of distribution the territory seems to be unified with two clear production centers, the main one at Petras itself and another near Achladia, finds of a potters wheel at Ayios Georgios/Tourtouloi and a kiln at Zou must be taken into account (the former site was apparently not included in Day's study and the latter proved to be geologically indistinct from Petras). These sites had been seen as largely independent and self-sufficient (L. Platon 1997: 202). Furthermore, the situation of these 'villa' sites is similar to that of Petras, particularly Ayios Georgios/Tourtouloi which is set atop a small hill; as Tsipopoulou states 'these 'villas' constitute the central entity in the intra-settlement hierarchy, thus

enjoying a position comparable, although on a smaller scale, to that of the main unit at Petras' (1997: 268). In comparing the 'villa' sites from the Petras region to Central Cretan examples, it can be seen that the Petrasian sites lack certain elite architectural features (Tsipopoulou and Papacostopoulou 1997: 210; also tables 2 and 3). This too, mirrors the situation at Petras itself where the palace, though clearly a palace, is primarily defined through what may be the essential functional (archive, storage, central court) aspects of palatial buildings. This is a matter of degree; the Petras palace is an impressively conceived and constructed building that does display features that could be called luxurious or ostentatious. However, the palace at Kato Zakros is so lavish in comparison with its surroundings that it has been interpreted as a 'summer palace' for the ruler of a much larger area (Hood 1983). It may be that this contrast is not simply a matter of the relative wealth of the Petras and Zakros regions (the Petras region is larger and far more agriculturally viable than Zakros) but reflects fundamental differences in strategies of resource manipulation for the establishment and maintenance of power.

The patterns are clear and can be summarized:

- Clustering of subsidiary buildings around a central building, usually at the highest point; these clusters form islands of settlement;
- These clusters tend to be located on defensible sites;
- The clusters are easily distinguished on a three-tiered hierarchical scale;
- There seems to be a functional or utilitarian bias with regards to architectural form;
- There is a pattern of patterns; that is, the smaller sites seem to reflect the larger.

Kato Zakros

Despite efforts to the contrary (see especially Tsipopoulou and Papacostopoulou 1997: 203), no such pattern can be found for the area controlled by Zakros, regardless of how it is defined. We can put aside for the time being notions of Zakros being in control of the Palaikastro area (or indeed all of eastern Crete) based as they are on a presumption (all sites must belong to a palace) and negative evidence (Palaikastro lacks a palace). The topography of the Zakros region is quite different from Petras or Palaikastro with a far smaller amount of easily accessible arable land. The terrain is difficult, cut with gorges and surrounded by steep slopes. The locations of the town in the terrain and the palace in the town do not seem to have been motivated by defensive considerations.

There was a 'villa' at Epano Zakros, and a house at Azokeramos, but by far the most significant feature of the Zakros territory is the system of roads and 'watchtowers' uncovered by S. Chrysoulaki and I. Tzedakis. This system was constructed in the Protopalatial period and the 'watchtowers' may have been later reused as farmhouses. It is not important here what the exact nature of these buildings or function of these roads was. What is significant is that they make up the built environment of the greater Zakros area and that whatever they are they could never be confused with the settlement pattern outlined above for Petras, no matter how much one allows for the subjectivity of the archaeologist (see Driessen in this volume for the variability of survey results). The best explanation for this feature may well be as a topographically necessitated adaptation of the natural environment. Two of the most obvious characteristics of Kato Zakros are that it lacks any sign of defensive works or economic viability on a scale appropriate to the size of the palace and richness of the architecture and finds (Wiener

1987: 265). It may not be coincidence that the two most likely explanations for the road/'watchtower' system are military and/or economic, the latter case being either for the transport of produce to the town or to support the import/export activities of the harbor, perhaps in particular the export of timber. There is only one outlying site which shows possible signs of self-sufficiency, the aforementioned 'villa' at Epano Zakros, for whatever one makes of Chiromandres, it is certainly not a 'villa' in the sense of the Petras examples or Epano Zakros. At Azokeramos, the pottery showed a mixture of Palaikastro and Zakros fabrics (Day 1997: 225), suggesting that it lay on the border of these two territories and may not have belonged to either. Indeed, pottery sampled from the Zakros region showed 'such great differences in the technique of paste formation' that Day suggests not only different production centers, but different 'cultural traditions of pottery making' – a sharp contrast to both Petras and Palaikastro (Day 1997: 225).

The patterns for Zakros then can be stated:

- Nucleation at a central site without a significant number of satellite settlements;
- A system of constructed and controlled access into the surrounding territory requiring considerable resource expenditure to service and/or defend the central settlement. Though perhaps mandated by an inhospitable topographical situation, what is most important to note here is that this system is not an adaptation of a 'human' construct to a 'natural' one but rather a modification or transformation of the natural environment itself.

Palaikastro

Palaikastro also exhibits a nucleated settlement pattern. There is a 'villa' at Vai (Driessen and Macdonald 1997: 234), but structures at Ta Skaria, Kouremenos, Ayia Triada, Ayios Nikolaos, and Angathia, whether houses or 'watchtowers' are too small and too close to the main site at Rousolakkos to be compared to the 'villas' around Petras; the remains at Kouremenos and Angathia also belong to LMIIIB and are thus outside consideration here.

Rousolakkos itself is by far the largest of the three sites under consideration and is usually ranked second (behind Knossos) or third (behind Knossos and Malia) in size and population for the Neopalatial period on Crete. The quarries at Ta Skaria are among the largest known for Minoan Crete (J. Driessen: pers. comm.), and in terms of house sizes, abundance of ashlar masonry, profusion of elite architectural forms, and evidence for town planning the site is likewise remarkable for the island as a whole, best compared to Knossos and perhaps Malia. Thus far no central building has been found. The site is densely occupied and as there is no sign that this could be the result of geomorphological concerns, other explanations must be sought. Branigan (1972: 756) suggested poorer 'tenants' filling in smaller unused lots; Driessen and MacGillivray (1989: 106) counter that this density of building may be the result of extended family or clan members adding on to ancestral homes. A further explanation, though hypothetical, might be the presence of a fortification wall at some point in the site's development. Possible remnants of such a wall were noted in the 1983 survey (MacGillivray *et al.* 1984). The road/'watchtower' system mentioned above has been traced as far as Palaikastro (MacGillivray and Driessen 1990: 401). Much further study remains to be done to understand fully the nature of this system. However, even if it were discovered that this road system originated from Palaikastro and that Karoumbes and Zakros were in fact under the control of

Palaikastro, the point made above for Zakros would merely be extended, and would still hold true, as stated, for Zakros itself. Implicit in this hypothesis would be the discovery of a palace at Palaikastro along with other evidence for such control.

The settlement patterns for Palaikastro are:

- Nucleation at a central site;
- Considerable density of occupation, to a degree beyond that mandated by topography.

Spatial Organization

Petras

The Petras palace was built in MMIIA (Tsipopoulou 1999). EMII occupation is evident but obscured by later activity. The Cretan Hieroglyphic archive, found in an MMIIB destruction layer, demonstrates that Petras was an administrative center at that time. Though the 'villas' mentioned above are said to have been built in MMIII, it cannot be ruled out that there was earlier habitation at the same spots as they have not been fully explored. Alternatively, these sites may be the result of processes of hinterland nucleation subsequent to the establishment of the palace at Petras, though the presence of fortified and/or defensively located sites already in MMI, such as Ayia Photia and Chamaizi favors the former hypothesis.

The town of Petras is concentrated on a series of four hills, particularly the main hill where the palace is located. The two houses so far excavated and published to some degree (Tsipopoulou and Papacostopoulou 1997) give too incomplete a picture to speak with much certainty about the spatial organization of the town around the palace, although it may be pointed out that they are terraced and seem to be fitted into the hillside. As mentioned above, in comparison with the other known palaces (Knossos, Phaistos, Malia, Zakros and Galatas) and even with some of the non-palatial (or not-as-yet palatial) central buildings, such as Ayia Triada, Kommos building J/T, Monastiraki, Khania, and Archanes-Tourkogeitonia, the Petras palace is small and lacks both certain palatial architectural features (such as a Lustral Basin, Minoan Hall, Light Well or Pillar Crypt) and elements of ostentation (such as extensive use of gypsum or monumental orthostates). Evidence of schist dadoes, mason's marks, cut door jambs, columns, etc. (Tsipopoulou and Papacostopoulou 1997: 211) suggest that the omissions may reflect choices, attitudes or perhaps functional differences and not simply economic or technical limitations.

The palace is situated atop a conspicuous hill; that this hill was levelled, and in some areas bedrock dug out to make room for the palace shows the importance of its location. That the location is defensible has been pointed out above; the presence of a massive retaining wall and bastion may also indicate defensive concerns in the first phase of its existence (MMII). Another essential feature of the location of the palace, possibly more essential than pure defensibility, is its visibility, both from the sea and the land around it. Given the horizontal restrictions of the hilltop, it may be that the palace was built up vertically and the massive walls in the north storage area could be an indication of this (Tsipopoulou 1999: 852). Such a building atop a hill itself coated with houses (an image familiar from Minoan iconography generally) projects a powerful message not only to travellers (Tsipopoulou 1999: 849) but perhaps more importantly to locals. The use of monumental building to visually transmit a unifying social message is well documented (Fletcher 1995: 149 gives a material behaviorist approach; also Moore 1996: 92–120). While

Petras might not qualify as monumental building by some definitions (Trigger 1990: 119 suggests that the resource investment in a monumental building must considerably exceed that required by utilitarian concerns, for example), from a functional standpoint it certainly does, if we consider the entire hill with the palace atop as providing a visual representation of authority and of identity.

To summarize:

- The town of Petras is adapted to fit onto the hills below and around the palace, subordinate to and supporting the central building.
- The palace itself, set atop the hill and rising two or perhaps even three (?) stories, is placed so as to project a unifying (and possibly threatening) visual message.

Kato Zakros

In sharp contrast to Petras, at Kato Zakros the palace is located at the lowest point of the settlement, surrounded and overlooked by the town, which 'seems to dominate the palace' (Chrysoulaki and L. Platon 1987: 77). The date for the establishment of the LMI palace at Zakros has been traditionally given as early in LMIA (Driessen and Macdonald 1997: 235). Recently, L. Platon (1999: 680; also paper delivered at the 'Knossos: Palace, City, State' conference, Iraklion, 2000) has argued, based on recent ceramic study, that the palace was not constructed until the beginning of LMIB. While it may still be too early to accept this latest date, it must in any case be considered. The precise nature of the Protopalatial Building at Zakros remains uncertain. Limited tests below the central court revealed earlier court surfaces (L. Platon 1999: 680), but of course the dimensions and dates of these are unknown. If the road/'watchtower' system was built from Zakros there must have been a central authority and, probably, a central building to go along with it. The question remains if this earlier building might not have taken a significantly or even radically different form. Regardless, the imposition of the new palace at Zakros must be seen as a highly significant event in the site's history and one responsible for the arguments that Zakros was 'the eastern port of Knossos' (Warren 1999: 902; also Wiener 1987: 265). This construction could not have begun any earlier than the beginning of LMIA; and if L. Platon is right, it was not completed until at least the beginning of LMIB.

In its initial phase, the palace seems to have been rather permeable, with entrances from the northeast, north, southwest and possibly northwest (Driessen and Macdonald 1997: 237). The boundary between the palace and the town to the north has been so difficult to locate that the excavator, N. Platon, felt that these houses closest to the palace must have been incorporated into it. This is no longer believed to be the case (Chrysoulaki and L. Platon 1987: 80) but remains a powerful illustration of the physical relationship of palace to town. These factors have led to the opinion that the palace was inserted into a pre-existing town of quite different character (Chrysoulaki and L. Platon 1987: 80; L. Platon 1999: 678).

Although the houses of the town are in a seemingly dominant position to the palace, they are notably smaller and show fewer examples of elite architecture than might be expected, given the size and quality of the palace itself. This is not to say that there are no elite indications in the town of Zakros, rather that in comparison with the other excavated palatial centers, the dichotomy in terms of elite signifiers and manifestations of wealth between the palace and its immediate neighbors is far greater at Zakros than at any other site. This is of course true for the larger Central Cretan palatial sites, but is also true when compared to Petras, which shows a

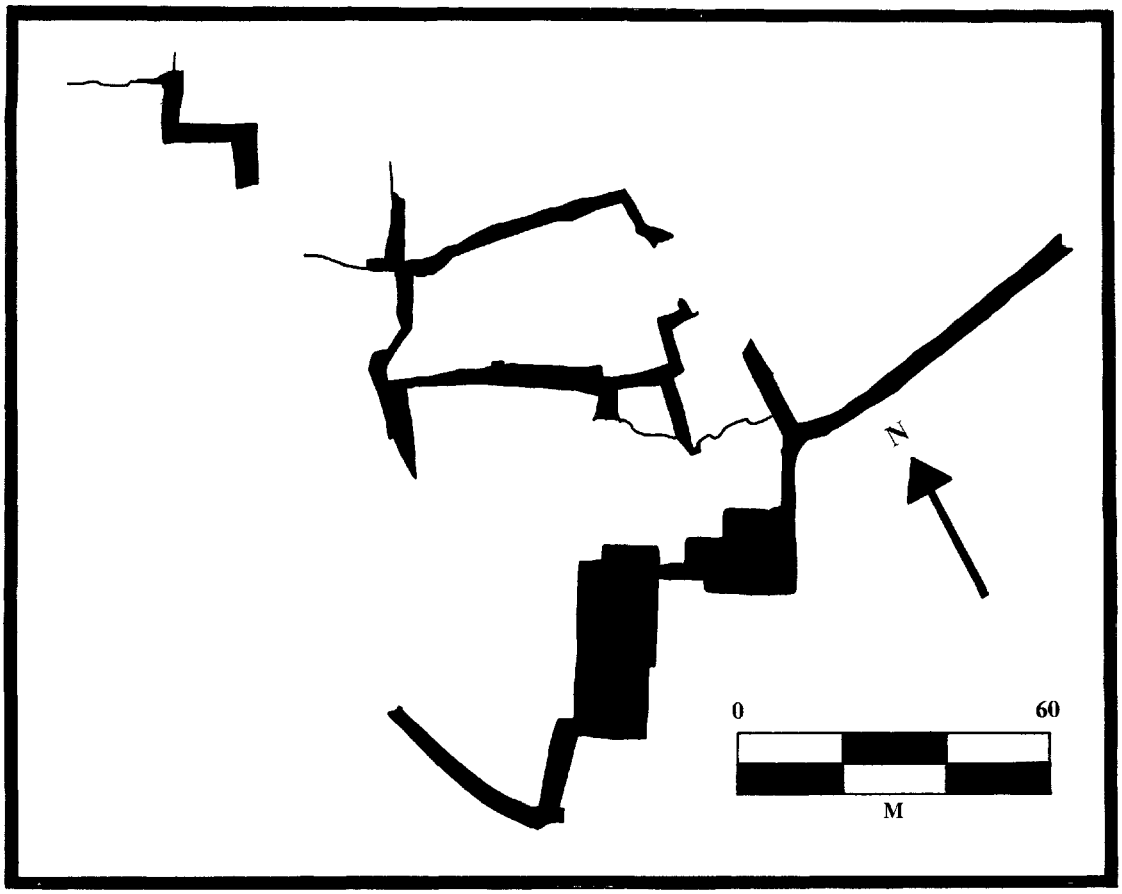

Figure 5.2 Open space diagram of Kato Zakros.

relative harmony or balance between town and palace in those regards.

The town itself lacks intelligibility, a measure of the extent to which the layout of a town or city can be understood and hence navigated from what is immediately visible in a given spot (Hillier 1996: 313–327). With the single exception of Harbor Road, the street grid at Zakros, such as is preserved (Figure 5.2), lacks any degree of axiality and is continuously isovistically blocked. Within this system of low intelligibility the houses themselves are generally well integrated according to Hillier's definition (1996: 36). As Chrysoulaki states,

> The majority of the houses at Zakros have the following interior arrangement on the ground floor: numerous small rooms, used chiefly for storage, are arranged around a large room with a bench and a central support, with direct access from the street. (Chrysoulaki and L. Platon 1987: 78).

This central room also usually contains a staircase, where one is evident. The lack of intelligibility of the grid and integration of the houses in the town of Zakros suggest that this street grid was primarily if not exclusively used to service the local inhabitants and that this local population may have been markedly homogeneous. This is supported by the exceptional Building G (Chrysoulaki and L. Platon 1987: 80) which does have a formal entrance (with portico) and a vestibule which could serve as a transitional space

where transpatial boundaries (e.g. class) can be crossed (for an in-depth account of the theoretical principles see Hillier and Hanson 1984: chapter 4; esp. pages 159–163). This house is built after the palace and may indicate the beginning of a change in the social matrix.

The dichotomy between palace and town in terms of wealth and prestige has led some to posit an outside agent, as noted above. However, the permeability of the palace (in its inception), the dominant or possessive position of the town above and around it, and the indications of social homogeneity make such a hypothesis unlikely. Furthermore, certain 'palatial' functions such as a major archive of parchment or hide documents are located in the town at some distance from the palace itself (House A). Food and wine production was also located in the town, not the palace, and the houses were well equipped with storage space, one element which seems to have been lacking in the palace itself (Wiener 1987: 265 n. 32). This evidence all suggests a strong local component to the authority represented by the palace.

To summarize, Zakros:

- Shows a palace that seems to have been inserted into the town;
- Has a town that seems to be inwardly focussed and socially homogenous;
- Shows a marked distinction between palace and town in terms of wealth or indications of elite status;
- Has a degree of permeability between both the houses and the palace (in its first phase) though the palace does show evidence for a restriction of access at some point in LMIB (Driessen and Macdonald 1997: 237);
- Gives an overall impression of being a 'special case' of some sort (e.g. a Knossian outpost).

Palaikastro

The excavated remains of the Minoan town of Rousolakkos at Palaikastro belong primarily to the Neopalatial period, based on a street grid first laid out in the Protopalatial (MMII) with alterations made in LMIB, and in some cases substantial reoccupation in LMIII. Settlement at Palaikastro seems to have begun in EMIIA and in EMIIB a massive building (walls 2 m thick and 35 m long showing right angles) is built under later Block X (MacGillivray and Driessen 1990: 398–399). Occupation and growth seems to have been gradual and continuous from then on with traces of another major building below Block X belonging to the MMII period. The quarries at Ta Skaria are thought to have been first used no later than the beginning of MMIIIA (or even MMIIB) (MacGillivray and Driessen 1990: 401) and the fine ashlar Building 6 was constructed in this period (MacGillivray and Sackett 1998: 239). The planned town as known today (Figure 5.3) is also thought to have been laid out in MMIII, though the plan of the MMII town is not known.

The spatial information we have can be described as a portion of a town, with a regular street grid and evenly sized and spaced blocks comprising usually two to four discrete units. Only ground floors are preserved, however the presence of upper stories is demonstrated by stairways and collapsed debris.

The houses in Palaikastro show clear indications of elaborate spatial segregation with the most integrated rooms well removed from the street. This stands in sharp contrast to the situation at Zakros, where the standard house plan is oriented around a central pillared room 'immediately accessible from the street' (Chrysoulaki and L. Platon 1987: 78). Houses at Palaikastro are also oriented around a large central room, but this room is usually located at the farthest point from the

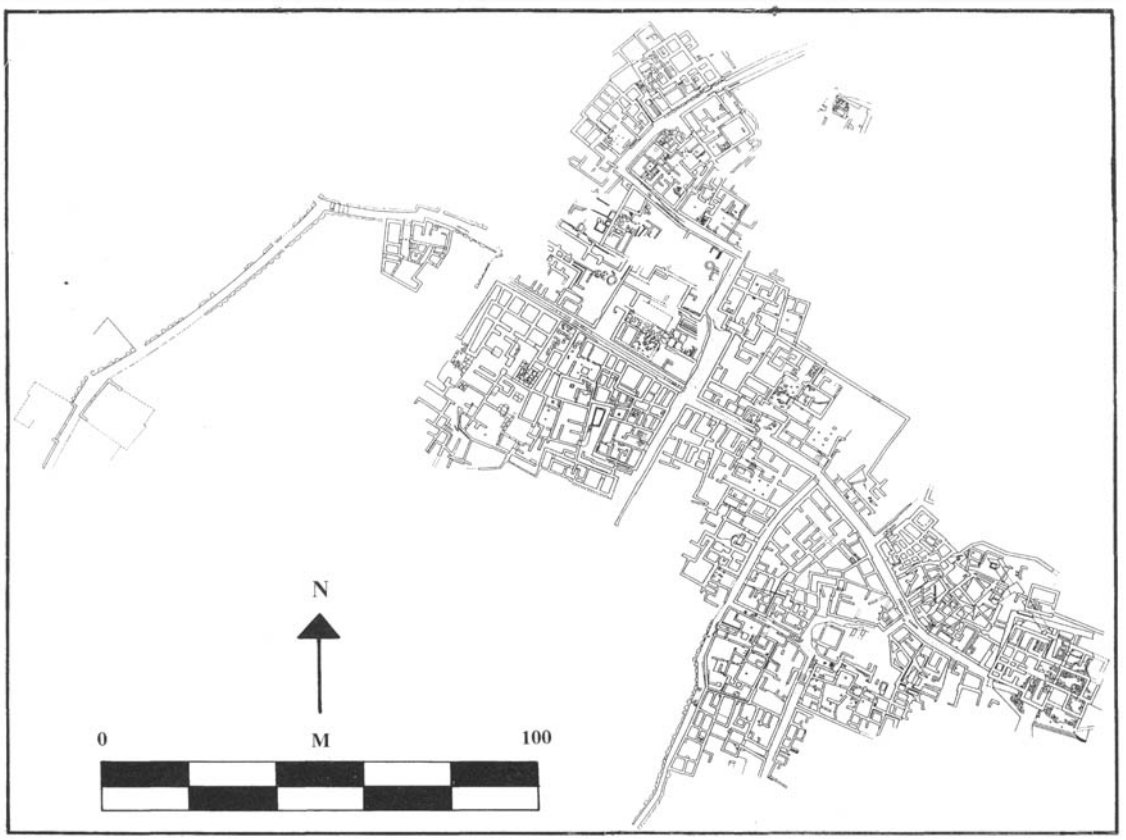

Figure 5.3 Plan of Palaikastro (J. Driessen).

street and accessible only through a succession of two to three vestibules or corridors. This need for greater segregation may be a consequence of the greater size and density of the settlement at Palaikastro; however, it may also reflect differences in the social matrix. It is possible that Zakros, with its permeable palace and attached town with similarly permeable houses, was a more homogenous and isolated area, with a far lower occurrence of non-resident interaction. An examination of the spatial layout of the towns themselves supports this.

At Palaikastro the street grid itself is remarkably straight and regular showing a high degree of axiality, (Figure 5.4) in contrast to Zakros. The street system facilitates movement through the settlement rather than between the domestic buildings, and while wide enough for considerable traffic, it still lacks 'pooling' spaces where social interaction could occur. Rooms within the houses are not laid out axially. This fundamental difference in the structuring of space, coupled with the placement of main rooms away from the street, might produce a disjunction between public and private space. This disjunction itself would necessitate transitional areas (vestibules, corridors) in the houses. Furthermore, it might heighten residents' awareness of the street system as a discrete spatial entity. Leaving a house and stepping out into the street, one would have a clear sense of being in a unified spatial environment. There is no reason not to believe that

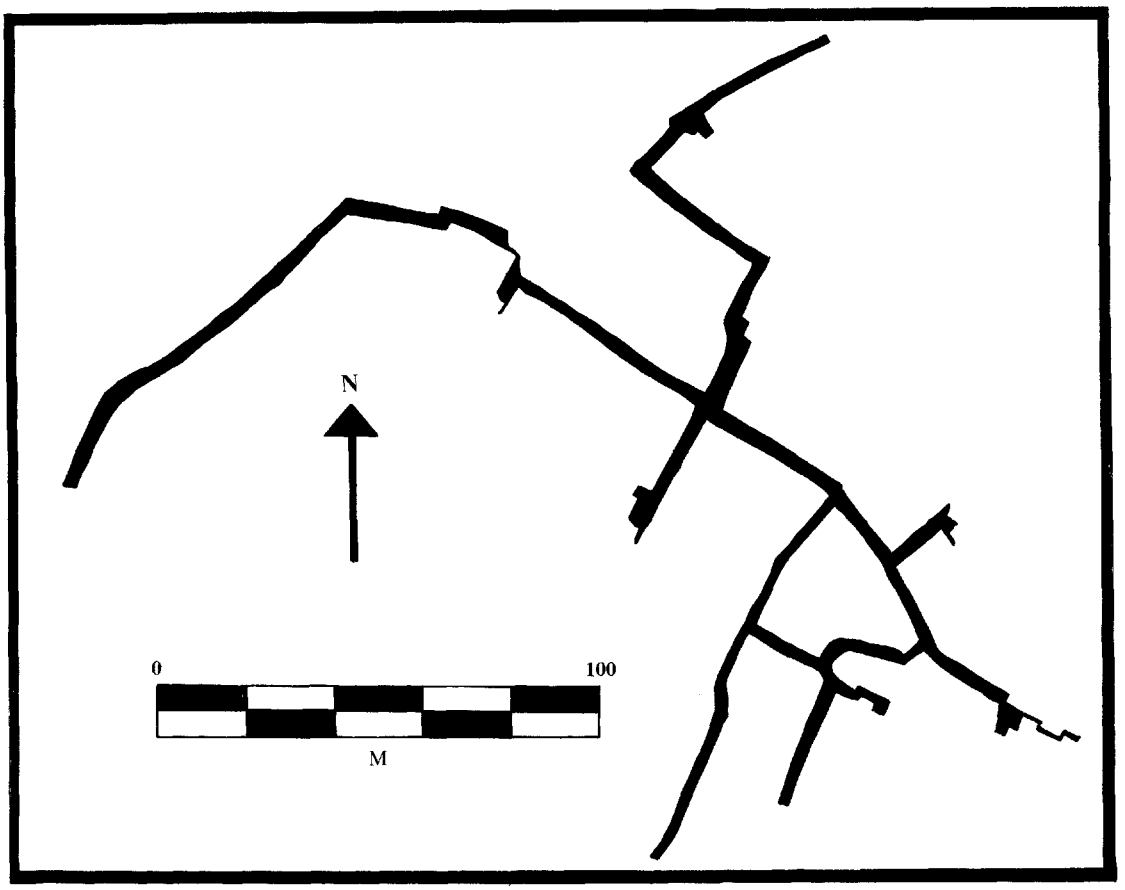

Figure 5.4 Open space diagram of Palaikastro.

just as Palaikastro is remarkable to modern archaeologists for the regularity, size and construction of its streets so too was it to its contemporaries. This street system is not simply an organic growth of space unoccupied by buildings, but has rather been specifically planned and created. In this sense, it can be said to belong to some other entity whether abstract (such as the 'polis') or discrete (such as the 'ruler'); an entity not represented by the agglutinated domestic buildings.

Such a street system would also facilitate the movement of non-residents through the settlement. Non-resident interaction and meaningful chance encounters have been linked positively to urban growth, safety, and even the success of research/development teams (see Hillier 1996: 188–194 and 255–271).

At Palaikastro we see:

- Intensive town planning with a regular street grid;
- A high degree of intelligibility;
- Houses with transitional spaces for interaction across transpatial (i.e. social) boundaries;
- An emphasis on the global as opposed to local access system facilitating movement through the settlement.

It might now be instructive to examine certain features that are conspicuously absent

from the current archaeological record at Palaikastro. One of these is storage. While there are storage spaces in the houses, probably to the extent of sufficing for the basic dietary requirements of the inhabitants of a particular house, the amount of space present for food storage is totally inadequate to provide for the surplus necessary to conduct the substantial economic transactions and public works evidenced at the site (see Knappett and Schoep 2000: 366 for their discussion of the importance of accumulation). The street system was almost certainly such a public work, and as mentioned above, the quarries at Ta Skaria are among the largest yet known for a Minoan site. That such activity was carried out voluntarily, or under coercion, by local families seems unlikely.

Secondly, the site displays significant signs of stress incurred when population density and settlement size approach certain thresholds of tolerance having to do with frequency of interaction and difficulty of communication (as outlined by Fletcher 1995). The placement of central rooms away from the street, the serial segregation of internal space, the street system, which would facilitate large scale communication, and the use of more durable materials (such as ashlar) all point to such stress. Indeed, the habit of rebuilding one or two walls, or even only portions of walls in ashlar is usually seen as a desire for prestige restricted by economic considerations, while the practical, functional aspects of such construction, namely that it blocks noise, heat, and smells more effectively, has been ignored.

Given these signs of stress and reactions to it, we can perhaps expect to see others. One of the predicted responses has to do with the need to project a unifying social message. This can perhaps be seen on an individual scale with the use of a common repertoire of elite signifiers. It is also one of the effects of an extroverted ritual space – the time needed to make (presumably regular and communal) pilgrimages to the peak sanctuary would serve as a bonding agent. Conspicuously absent, and expected (though of course not proven) is monumental public building, which likewise provides a clear isovistic message across the increasingly larger and more complex interaction-communication field (Fletcher 1995: 134–151).

Another missing element at Palaikastro is some form of administrative archive, and again given the evidence for economic activity indicated by the finds, and quality of the buildings, the scanty documents turned up so far in the houses themselves are clearly insufficient.

There is a decided lack of public open space suitable for group interaction at Palaikastro. Even in settlements where each domestic unit contains a large open courtyard, which is not the case here, such public interaction spaces are usually found. Given the iconographic evidence suggesting the importance and even ritualization of large public gatherings in Minoan civilization, one would expect to find such a space in a town as large and densely settled as Palaikastro. Another paradox of the site as excavated is the evidence on the one hand of social stratification (the presence of elite forms) without clear examples of some of the strata, especially at the very top.

One way to identify indicators or manifestations of social stratification is to look at relative building sizes. Of the 36 buildings clearly discernible, ranging from 48 to 486 sq m, 21 fall between 130 and 180 sq m; six are between 200 and 300 sq m and only four are less than 100 sq m (Driessen and Macgillivray 1989: XXVII; I use only the most securely identified houses). In terms of location the section of main street bordered by block M to the north and D to the south, which is the

widest section of the street and which was believed to have had ashlar facades on both sides, should be the 'best address' in town; however, Building 1, and Block X, located at the furthest reaches of town from this segment are both large ashlar buildings. Likewise Building 2, which though only partially excavated, shows an impressive facade of shaped limestone blocks. Other outlying houses, which do seem smaller, such as Blocks Y, S, K and L, produced bronzes, and in the case of Block S two ivory figurines.

As far as elite architectural forms go, we find represented at Palaikastro Lustral Basins (2 examples), Palaikastro Halls (3 examples), one example of a Minoan Hall, ashlar masonry (11 buildings), mason's marks, frescoes (10 buildings), cut door-jambs (found in at least 7 buildings) and pier and door partitions (3 examples) (Driessen and Macgillivray 1989: XXVI–XXVII; updated with figures from the recent excavations). Interestingly there is no one building at Palaikastro that stands out over the others, rather, these elite signifiers are spread through a number of structures of roughly equal apparent status.

In sum, though indications of elite status are widespread throughout the excavated remains, the suggestion is that what we have so far represents a fraction of the full extent of the town and specifically represents a fraction inhabited by members of an elite, though not ruling class. There is no indication that any of these houses and their inhabitants could individually or collectively represent the authority or administration needed to create and operate such a town. Even if the houses thus far excavated were home to a kind of oligarchic elite who ruled by council, one would still expect some sort of 'Bouleuterion'. Furthermore, many of the stress responses demonstrated in the excavated district are private – having to do with the structure and composition of the dwellings themselves. What representations or suggestions we do have of a ruling class or entity can be summarized as follows:

- Public works, such as the street grid, the quarries, the cult building on Petsophas, and perhaps the road system in the surrounding territory.
- Prototypes or primary examples of the elite symbols previously noted; in particular the Palaikastro Hall. Such a local innovation of a new elite architectural form strongly suggests that the original example or at least the largest and most ostentatious example remains to be discovered.

Since all of these indicators point to the existence of a central building at Palaikastro, almost to the point of demanding such a structure, we should perhaps consider what form it might take. Aside from the canonical palace, there are examples, notably Ayia Triadha, of central buildings that are not palaces. Furthermore, and particularly in the latter case, there is still the question of whether this building would likely be the location of a ruling 'agent' from outside (i.e. Zakros) or itself the seat of power for the town and territory around.

Synthesis

The three sites in consideration show marked differences in settlement patterns and spatial organization. All three show signs of organic or local development, evidenced by internally consistent growth patterns, with the exception of the palace at Zakros, which may indicate an instance of outside interference. Yes or no, it was certainly the most significant event at the site prior to the final LMIB destruction. This construction event happened no earlier than early LMIA and no later than early LMIB.

At Petras, although the palace is destroyed and rebuilt with modifications, there seem to be no changes of a scale comparable to the initial establishment of the palace and archive in MMII until, perhaps, its final destruction, also at the end of LMIB.

Though the LMIB period may have been one of vigorous activity and change at Palaikastro (Area/Building 6 was levelled, a wall put up around it and two new wells dug (MacGillivray *et al.* 1998: 226); part of Building 5 was converted into a shrine (MacGillivray, Driessen and Sackett 2000: 42); cult practice may have changed and new local pottery styles were developed) it certainly shows nothing like the Knossian connections of Zakros. Quite the opposite, in fact – the events at Palaikastro seem more consistent with a greater degree of autonomy or some internal shift.

If the establishment of the LMI palace at Zakros was a result of some Knossian intervention there is no sign that such an intervention had any effect on Palaikastro or Petras. The only possible sign of Knossian (or, in this case possibly Malliot) influence on such a scale at Palaikastro would be the Minoan Hall uncovered in Building 6. However, this feature is no later than MMIIIB (Macgillivray et al 1998: 255) at the end of which period the building is destroyed in an earthquake.

Not only is there no sign of either Petras, Zakros or Palaikastro wielding any sort of economic or political authority over each other, there is no indication that in the hypothetical case of Knossian control of one of these sites (for which the best case is of course Zakros in LMI) such control could have extended beyond the limits of that site's own immediate territory.

The evidence for divergence and diversity is clear. The similarities, which can be summed up under the general heading of 'minoanness', are also clear. There is a coherent sense of cultural identity inclusive of representations or demonstrations of status and power which is island-wide. A member of the elite, living in Palaikastro, Zakros, or Petras is fully versed in the architectural vernacular of power and able to imitate, elaborate, or innovate within what can be considered a Central Cretan or more precisely Knossian repertoire. The range of variation suggests certain freedom of room to maneuver within a nonetheless coherent framework of elite status indicators, whose overall coherence, stability and ubiquity indicate at least an 'ideological' state that encompassed the whole island.

We must seek new ways to characterize the interrelationship of sites on Crete and abandon previous notions regarding the nature of the link between the cultural and the political, as suggested recently by Knappett (1999) and Knappett and Schoep (2000). If Knappett is right, and 'ideology was at least as important as (political) economy in the initial emergence of states on Crete' then might this not have remained the case?

The organizational patterns examined above which show such divergence are primarily concerned with social production – control and distribution of assets, exploitation of natural resources and social and political organization at the local level. What of social reproduction? If social production is about the survival, growth and maintenance of individuals within a society, social reproduction is about the perpetuation of the ideological basis for defining that society. As Hillier states, 'Social reproduction, we might say, requires symbolic forms of space, social production instrumental forms of space.' (1996: 222). While the 'tools' used in each of the three territories to establish and maintain social cohesion and economic function were used in different ways and with different results, these 'tools' themselves seem to have all come from the same genotype. Knappett, picking up from Southall, introduces the concept of

'imaginary means of production' as opposed to material means of production (Knappett 1999: 619). I would suggest that in this distinction might lie one of the keys to a better understanding of both the nature and extent of a larger 'state' as it may have existed during the palatial period on Crete.

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6

Managing the Hinterland: The Rural Concerns of Urban Administration

Ilse Schoep

In the last two decades, a need to contextualize the Minoan 'palaces' has caused a shift from an archaeology of palaces and urban centres to an archaeology of their hinterlands. This shift is most clearly evidenced in the boom in intensive and extensive surveys of specific regions in Crete, which have now covered a considerable surface of the island (Driessen in this volume). This increasing interest in the wider social, political and economic landscape and more specifically in the relationship between centre and hinterland closely follows earlier developments in Mesoamerican and Near Eastern archaeology (Adams and Nissen 1972; Johnson 1973, 1987; Schwartz and Falconer 1994, Blanton, Kowalewski, Feinman and Appel 1981).

At the beginning of the Protopalatial period (c. 2000 BC), the construction of central buildings with monumental character directly testifies to the centralized mobilisation of labour, materials and construction techniques and indirectly to the emergence of a new form of sociopolitical complexity. Such central buildings were constructed in different parts of the island (Knossos, Malia, Phaistos and Petras) at approximately the same time and each seems to have exercised some form of influence over a hinterland (cf. Knappett 1999). These central buildings have long been labelled 'palaces', largely on analogy with the even more monumental Neopalatial structures which succeeded these 'first palaces' following their destruction at the end of MM II (around 1700 BC).

Although the 'first' and 'second palaces' seem to have functioned within different socio-political frameworks, their objectives seem to have been broadly similar, namely a concern with the accumulation of goods, the bureaucratisation which oversaw this accumulation and capitalisation or 'putting resources to work' (Knappett and Schoep 2000: 365–71). This paper will focus on two of these three aspects, accumulation and bureaucratisation. To oversee accumulation, the Protopalatial centres of Knossos and Phaistos were making use of regional administrative systems and it is no mere coincidence that the creation of the first effective writing systems on Crete is situated within the wider context of the emergence of the palaces (Schoep 1999: 268). Direct evidence for the accumulation of goods can be found in the administrative documents and the presence of storage space in the 'first palaces', while changes in settlement patterns and patterns of land-use in the hinterland may also provide more indirect evidence for exploitation by the centre.

By presenting case-studies from the Protopalatial (Knossos and Phaistos) and Neopalatial (Ayia Triada and Khania) periods, this paper will highlight two important changes in the application and distribution of writing for administrative purposes which occurred between these two periods: the first

involves a change from regionally located and differentiated administrative systems in the Protopalatial period to a single administrative system in the Neopalatial period. The second involves changes in the distribution of script and administration, which in the Protopalatial period was restricted to palatial centres but during the Neopalatial period became widespread over several administrative levels.

The Protopalatial centres at Knossos and Phaistos and their hinterlands

In the Protopalatial period, writing is almost exclusively found on archival[1] documents, which were spatially restricted to urban centres and more specifically to their central buildings, the so-called 'first palaces' (Figure 6.1). This spatial restriction of written documents makes the distinction between centre and hinterland or the rural and urban sector straightforward, a situation quite unlike that of the Neopalatial period. The administrative documents thus constitute a valuable source for an assessment of centre/hinterland relationships. Here, the main question to be addressed, is how and to what degree the hinterland was affected by the emergence of the first 'palatial' centres and more specifically the presumed need for agricultural surpluses to support both the ruling elite and

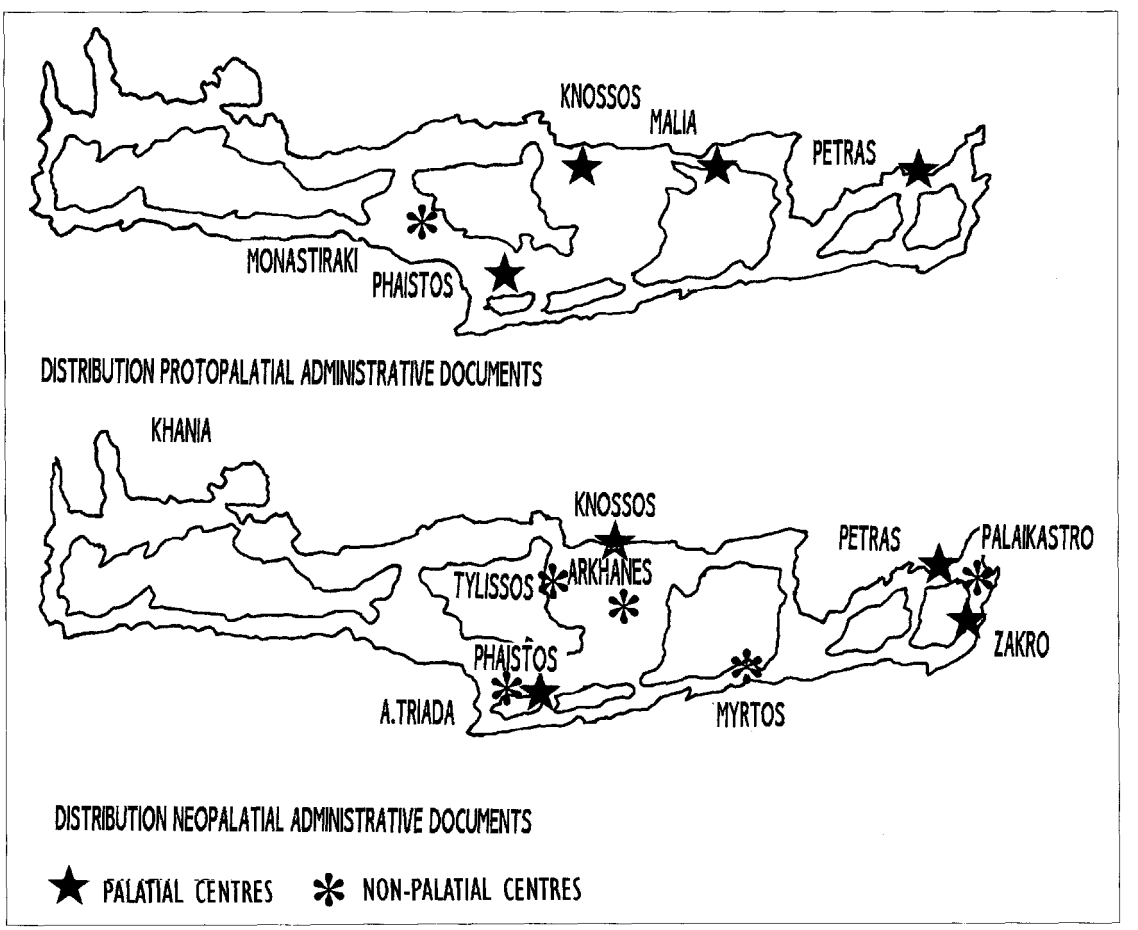

Figure 6.1 Find places of administrative documents in the Proto- and Neopalatial periods

other groups not directly involved in food production at the centre. Administrative documents provide a valuable window on the commodities in which the centres were interested, while changes in settlement patterns may reflect changes in the organisation of production (cf. Cherry 1984: 32), caused perhaps by the need to secure greater agricultural surpluses following the emergence of the 'palatial' centres. In this way the rural concerns of the administrations of Knossos and Phaistos will be explored and compared to relevant data from settlement patterns in their respective hinterlands, in order to define and compare the strategies used by these respective centres to accumulate and bureaucratize.

A View from the Centre: The Rural Concerns of the Protopalatial Administration

In the Protopalatial period, Knossos and Phaistos were using different scripts—respectively Cretan Hieroglyphic and Linear A—to keep track of incoming and outgoing goods. Not only are the script and possibly the languages different at these centres, but also the types of documents used to organize the administration (Schoep 1999: 266–68). The range of archival documents from Knossos includes four-sided bars, medallions and crescents, whereas those from Phaistos comprise direct object sealings (in their thousands), page-shaped tablets, roundels and hanging nodules (Figure 6.2). Although the total number of documents (102) from Knossos is much higher than the number of documents from Phaistos (61) (Olivier 1994), it must be kept in mind that the total quantities of documents involved are very small, especially in comparison with Near Eastern or even Linear B contexts. In the following section contextual analysis of the different ways in which documents were used in the Linear A and Cretan Hieroglyphic administrations at Phaistos and Knossos, will be used to explore the possiblity that the external differences between the administrations correspond to structural differences involving not only different bookkeeping procedures, but also different economic strategies.

Administration at Phaistos

The main document type attested at Phaistos is the direct object sealing, of which c. 6000 were found in a context which seems to constitute the remains of an archive (room 25) and which is either in situ, has fallen from an upper story or is part of a fill. The sealings were found with small numbers of other document types, such as tablets, roundels and direct object sealings. There seems to be no doubt that these documents had been kept for archival purposes, especially if one considers the absence of the storage containers, which the direct object sealings had been sealing, such as pithoi, wooden chests and other perishable containers (bags) (Fiandra 1968). Room 25 is not the only location where administrative documents were found, although it presents the largest number and variety. Direct object sealings were also found in other rooms (VIII, XXI, LV,VIII, XI, XXI, XXII, XXV, XXVII, LII, LV) (Sbonias 1995: 168–69), often in direct association with pithoi. In addition, a cache of flat-based nodules and roundels was found in room LI and isolated tablets occurred in rooms LIII–LV and XXVIII (Schoep 1995 [1997]: 38–43).

Although the majority of direct object sealings sealed door pommels and wooden chests, clay containers were also sealed (Fiandra 1968: 383–97, Militello 2000: 225). This pattern of sealing allows several inferences to be made. The direct object sealings seem to be connected with the checking and storing of goods in particular storage rooms as well as the overseeing of their distribution, on which occasion the sealing was removed

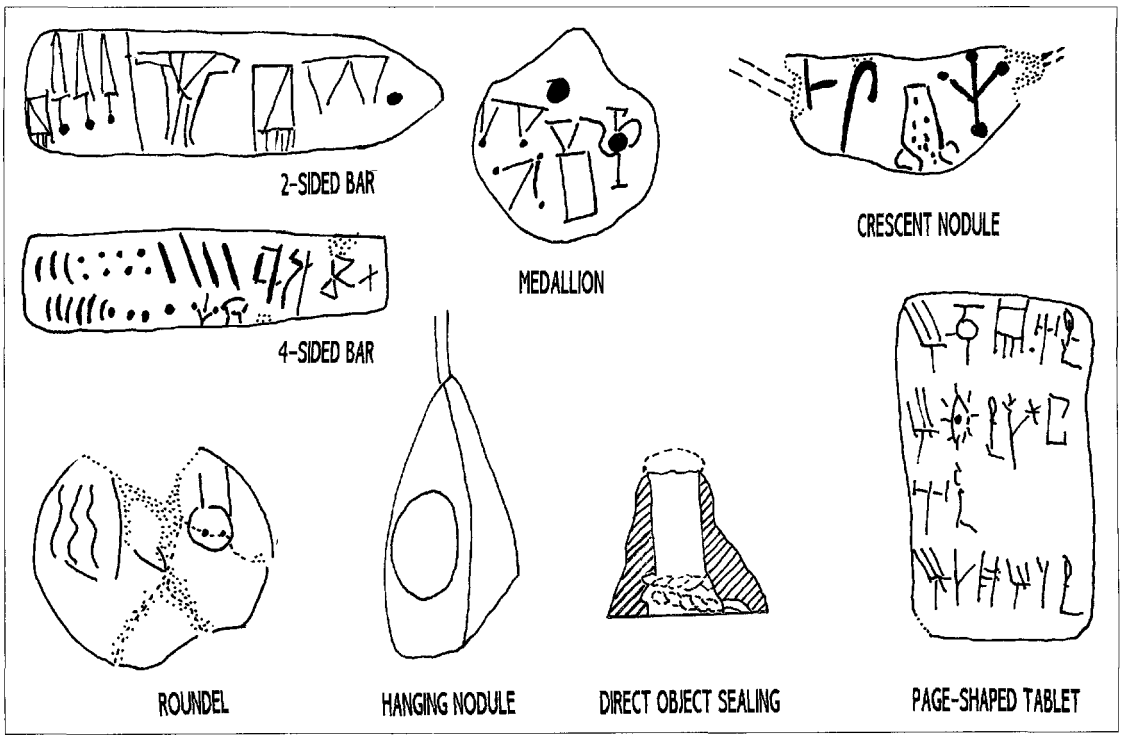

Figure 6.2 Range of document types used in conjunction with the Cretan Hieroglyphic and Linear A scripts

and kept for bookkeeping purposes (cf. Ferioli and Fiandra 1990: 222). Since the containers comprise both pithoi and wooden chests, it is not unlikely that agricultural commodities and non-agricultural commodities were involved (e.g. raw materials and manufactured goods). The system was straightforward and the number of seal-impressions per sealing could have indicated the quantities or the number of measures involved (Godart 1990: 147); however, it cannot be excluded that the quantities were standardized[2].

The seal impressions on the direct object sealings provide information about the numbers of seals that were in use and indirectly about the people involved in this activity. The sealing system at Phaistos is for the main part intensive, implying that the thousands of impressions were made by a small number of seal stones[3]. This pattern has been interpreted by Weingarten as reflecting resident seal-owners (cf. Weingarten 1994: 181) and from this it follows that the majority of the documents were sealed on the spot. The sealings from containers are therefore most likely to concern outgoing rather than incoming commodities (cf. Fiandra and Ferioli 1990: 222).

This system of direct object sealings seems to have been used in conjunction with documents written in Linear A. However, in contrast to direct object sealings, written documents never occur in contexts where bulk commodities were stored. This could suggest that they were administering a different type of transaction from the direct object sealings. Unfortunately, their low number and fragmentary state precludes an identification of the type of transaction, but the numerals could point to transactions involving small quantities of wine (PH 25) and perhaps a type of grain (PH 1) and thus

would suggest the distribution of these commodities rather than their collection (cf. Killen 1969, Schoep forthcoming 1). That written sealed documents were also administering non-agricultural products is suggested by a collection of roundels and flat-based nodules found together with raw materials and tools in a possible workshop context in room LI (Branigan 1987). In the same area of the palace, Rooms XXVIII and IL (PH 6 and PH Zg 47) may have functioned as general potter's stores, containing over 25% of all the vessels found in the palace (Branigan 1987: 245–249) and it cannot be excluded that these were also a subject of the administration[4].

Thus, although there is evidence for the distribution of commodities from palatial storage rooms in different parts of the palace at Phaistos, the administrative documents do not provide any information as to how these commodities were procured or where they came from[5]. Consequently, the administrative records at Phaistos do not seem to yield any direct information concerning the mobilisation of agricultural commodities from its hinterland. This conclusion is surprising, since the mobilisation of agricultural surplus is considered to be one of the main functions of the 'first palaces' (Branigan 1987; Halstead 1981)[6].

Administration at Knossos

Contextual analysis of the administrative documents from Knossos indicates quite a different picture from that outlined for Phaistos, since at Knossos the administrative documents do seem to provide evidence for the collection of goods[7]. The main sealed document type at Knossos is the 'crescent', a clay nodule shaped around a string (Figure 6.2). In contrast to direct objects sealings, crescents were attached *indirectly* to the object that was sealed and moreover exhibit a different sealing pattern, with many different seals making few impressions. This type of non-intensive sealing pattern has been identified with non-resident seal-owners (Weingarten 1996: 302, 308). The Cretan Hieroglyphic inscriptions on this type of document contain a wide variety of sign-groups and a number of different logograms, some of which can be identified as grain, olives and wine. The lack of any numerals or other such indication of quantity suggests that crescents were either attached to the goods or accompanied them in some other way. It is a fair assumption that the crescents fulfilled a similar function to the Linear B hanging nodules and represent goods brought in from the hinterland to the centre (Piteros, Olivier and Melena 1990). This would imply that goods, including agricultural produce, were mobilized from the hinterland, an action for which no administrative evidence is available at Phaistos.

Further indication of the *direct* involvement of the central administration at Knossos in its hinterland is provided by the (perforated) four-sided bars (Figure 6.2). The numbers on this type of document are sometimes very large, including hundreds and even thousands. Although the bars contain several entries no logograms are recorded, so presumably individual entries refer to the same commodity. As to what commodity can be booked on these bars, two possiblities may be suggested: 1) people: the omission of the logogram when booking a commodity in the later Linear A and Linear B administrations is most common in connection with the logogram for people (Schoep forthcoming 1); 2) sheep: the structure of the inscriptions on the four-sided bars bears resemblance to the Linear B sheep tablets (cf. Olivier 1994–1995: 266), in that they almost exclusively book even numbers. If people are booked this could suggest the existence of *census* records, which could have formed the basis for taxation, whereas if sheep are booked this could

indicate the existence of a specialized staple finance by the Cretan Hieroglyphic administration at Knossos. At any rate, irrespective of whether people or sheep are booked, the *presence* of these large numbers implies that the administration was concerned with a region of considerable size and thus testifies to the centralized exploitation by the centre at Knossos of its hinterland; It is perhaps worth noting that there is also abundant evidence for the presence of exotic materials and goods at Knossos in the Protopalatial period (Warren 1995), while at Phaistos these seem to be lacking (Branigan 1987, Carinci 2000).

To conclude, it may be noted that whereas the documents from Knossos provide indications for its direct exploitation of the hinterland, this does not hold true for the documents from Phaistos, where documents seem to focus primarily on the distribution of goods. This of course does not imply that Phaistos was not mobilising any goods, but it could suggest that this mobilisation was organized and administered in a different way. Surpluses may be mobilized in different ways, such as for example, tax, direct production and/or exchange (Halstead 1999). If real, these differences would seem to indicate that the administrations at Phaistos and Knossos may have exploited their hinterlands in different ways, which perhaps reflect different strategies of integrating the hinterland. If so, then one might reasonably expect these different strategies to find some expression in the settlement patterns of these different regions.

A View from the Hinterland: Settlement Patterns and Land-use

Phaistos and the Mesara

Although the administrative documents from Phaistos do not contain clear evidence for the large-scale collection of agricultural commodities, archaeological evidence for such a mobilisation is evidenced by the ample storage space in the 'first palace' and the construction of the kouloures, which are hard to interpret as anything other than storage for a specialized surplus (Strasser 1997, Halstead 1997). The Early Minoan I and II settlements in the Mesara are spaced equally (c. 8–10 km) and although the best locations were settled first, a filling-in of the space between the existing settlements can be noted during EM III/MM IA (Sbonias 1995: 13). This pattern seems to suggest that each village had a claim to the agricultural land immediately around it (cf. Murphy 1997: 27). It may therefore be assumed that during EM II and EM III/MM IA, agricultural production would have been organized at a local scale, with individual villages probably being largely self-sufficient when it came to food supplies. Other items such as seal stones, stone vases, daggers, pottery and perhaps a variety of other goods may have been procured through a wider exchange network.

At present, it remains unclear as to what degree the construction of the 'palace' at Phaistos in MM I affected this situation. The MM I-II period in the area to the west of Phaistos surveyed by Watrous *et al.* seems to be characterized by a growth in the number and size of settlements (Watrous *et al.* 1993) (Figure 6.3). However, in the Asterousia sites were abandoned (Branigan and Blackman 1977: 198), which would seem to suggest that at least here surplus production was not procured through capital investment in the improvement of marginal land (Halstead 1992; Manning 1994: 236). There is no evidence for the foundation of new settlements in the central Mesara in MM I-II and in general settlement growth may have been static (Branigan 1970: 127). Sbonias notes that in MM IB, competition between villages

appears to have diminished considerably (Sbonias 1995: 132–133). The static growth in MM I-II settlements in the central Mesara (Sbonias 1995: 16) may be contrasted with the apparent growth in settlements in the area immediately around and to the west of Phaistos. If this is real and not due to the different degree to which the two regions have been researched, it could suggest that the impact of the 'first palace' at Phaistos upon settlement patterns may have been limited. One might even tentatively suggest that patterns of land-use remained more or less the same and were not affected significantly by the need of the centre to mobilize agricultural surpluses. The continued distribution of farmhouses and small villages in the landscape would rather suggest the widespread continuation of intensive local agriculture, which need not have produced large-scale surpluses for the centre (Halstead 1992).

During this same period, nucleation has been noted for settlements such as Koumasa and Platanos and this may indirectly testify to some sort of extensification of agriculture (Halstead 1987: 83). However, since the number of abandoned settlements in MM I-II is quite low (Sbonias 1995: 16) and moreover, since the nucleation at sites such as Platanos and Koumasa predates the emergence of the palace in MM IB (Sbonias 1995: 32), any connection between a nucleated settlement pattern and the emergence of the 'first palace' at Phaistos is difficult to sustain and cannot therefore be used as evidence for the direct involvement of that centre in the extensification of local agriculture for the production of surpluses.

And so, if the differences in settlement patterns are real, it would seem that, following the construction of the 'first palace' at Phaistos, the westernmost part of the western Mesara fared differently from the area further east. The archaeological evidence does not suggest the direct involvement of the centre in the production of large-scale surpluses within an area to the east of Phaistos. The data available at present instead suggest continuity of local intensive agriculture, which could not have yielded such surpluses. If agricultural surpluses were collected from this area, they would have been restricted in quantity. There is, however, some evidence to suggest that the palace of Phaistos may have been more actively involved in extensive agricultural exploitation, in the area west of Phaistos. Also worth considering in this context is the site of Monastiraki in the Amari valley, which features a monumental central building with ample storage space and abundant links with Phaistos (Matz 1951, Kanta 1999: 387–93). Not only is the pottery very similar to that of Phaistos (Kanta 1999), albeit of a lesser quality than the finely decorated ware at Phaistos (Walberg 1983: 91), but also an administrative link is suggested by the hundreds of direct object sealings, some of which were impressed by sealstones similar or even identical to those at Phaistos (Godart 1999: 40). As at Phaistos, the sealing system is intensive and on present evidence, particularly the absence of written documents[8], it seems fair to argue that the administration at Monastiraki was secondary to that at Phaistos. The first phase at Monastiraki dates to MM IB/IIA (Walberg 1983: 89) and it may conjecturally be suggested that an expansionist strategy by Phaistos with the aim of securing a larger hinterland may have led to the establishment of this centre in the Amari. The absence of a developed settlement hierarchy in the Amari in the Prepalatial and Protopalatial periods would seem to corroborate this hypothesis suggesting that any expansionist plan by Phaistos would have met less resistance in this area than if it had been implemented within the Mesara itself[9]. Besides the possiblity for the mobilisation of

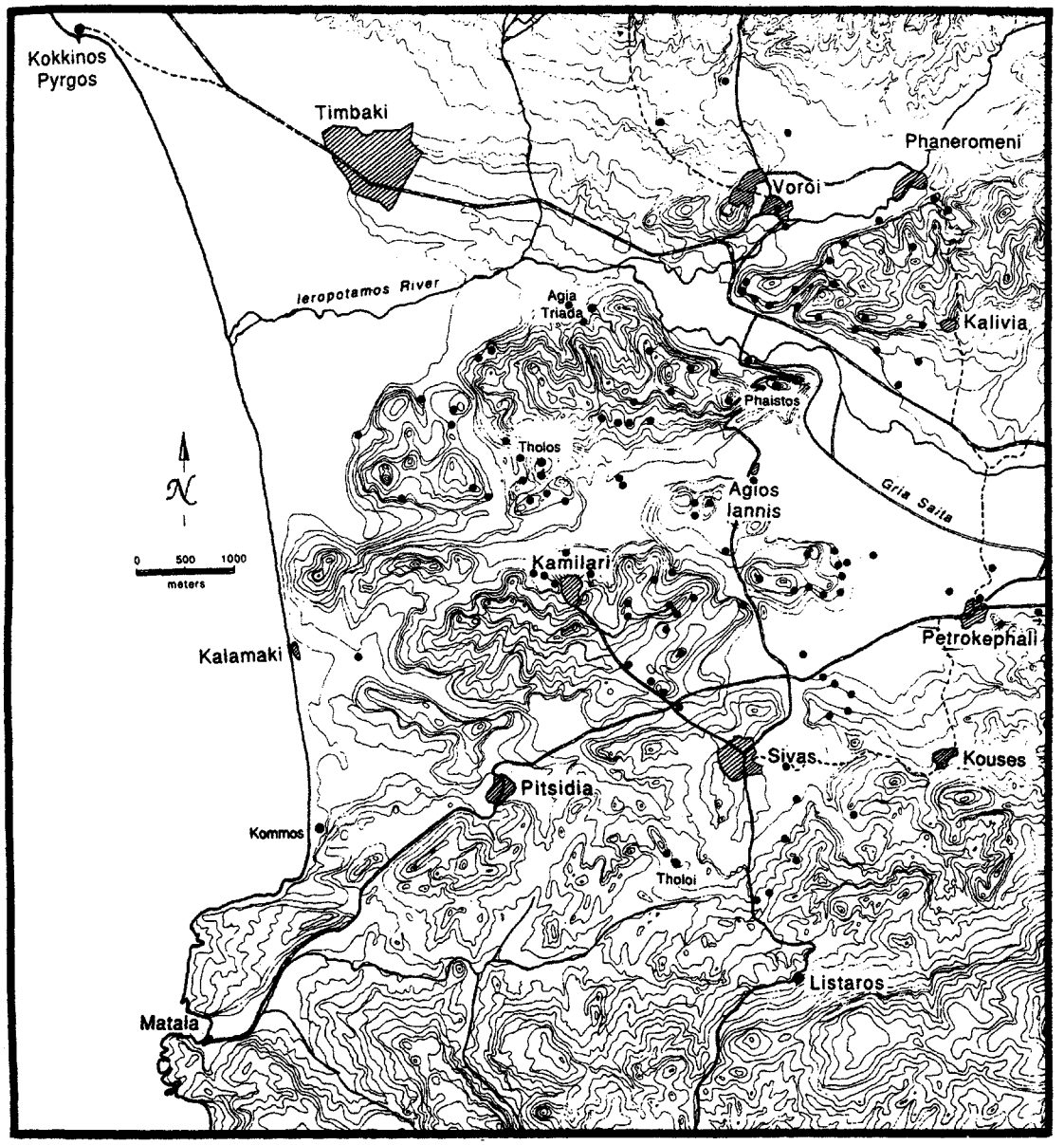

Figure 6.3 Area surveyed by the Western Mesara Survey (after Watrous *et al.* 1993, fig. 8)

agricultural produce, Monastiraki is also situated on a natural route to the north coast, which may have played a role in the movement of goods along this north-south axis[10].

Knossos and Central Crete

When one applies the same approach to the Protopalatial centre at Knossos, the results are less conclusive. Cadogan has tentatively reconstructed the hinterland of Protopalatial Knossos as stretching as far east as Gouves, as far south as Ayia Varvara and possibly as far west as Tylissos, including part of the Myloptamos district (Cadogan 1994: 66–68). Protopalatial Knossos itself has been estimated to cover c. 45 ha (Whitelaw 1983: 340) and it is

clear therefore that this centre was considerably larger than Phaistos and consequently required even larger agricultural surpluses to feed its population; this may also be implied by the larger size of the kouloures (Branigan 1987). Although the administrative documents from Knossos provide convincing evidence for the exploitation of its hinterland, the picture obtained from the settlement patterns in the presumed hinterland is at best vague. We are confronted in the first place by insufficient knowledge of the hinterland itself, which is mainly due to the small number of excavated sites (Figure 6.4). Furthermore, although Hood and Smyth (1981: 8–10) note that the extent of Knossos town expanded greatly in MM I-II, no surveys have been conducted in its alleged hinterland, with the result that it is unclear as to what degree MM I-II regional settlement patterns were affected by this. Known Protopalatial sites, which presumably lay in this hinterland are Poros-Katsambas, Skalani, Archanes, Vitsila, Ayios Myron, Kato Vathia and Dalia, Iouktas, Ayia Marina, Krousonas, Gouves, Amnissos, Skamni (area of Gonies Maleviziou) and Tylissos, however very few of these sites have actually been excavated. Excavations at Tylissos and Archanes have provided the best evidence, but the sketchy nature of the remains do not allow any definition of the nature of these Protopalatial settlements and their relationship to Knossos. The reservoir at Archanes dates to the Protopalatial period and the quality of its construction is unparalleled in the Phaistos hinterland. Functional differentiation between sites is perhaps more pronounced: Poros-Katsambas is already a harbour of Knossos and there are perhaps more specialized ritual sites, such as Anemospilia, Iouktas and other peak sanctuaries (Nowicki 1994: fig. 8)[11].

To conclude, the crescent-shaped nodules from Knossos seem to suggest that the collection of agricultural and perhaps also other goods was centralized, rather than decentralized. This centralized mobilisation of goods, presumably from what are different locations in the hinterland, indicates an important difference from Phaistos. It was suggested that because settlement patterns to the east of Phaistos seem to have changed very little in MM I-II, land-ownership and land-use are not likely to have changed significantly. Expansion into the Amari valley may therefore have been at least partly connected with the possibility that no large agricultural surpluses were acquired from the part of the Mesara to the east of Phaistos. If Monastiraki were indeed a secondary order centre of Phaistos, then this decentralisation contrasts sharply with the administration at Knossos, where all control may have been concentrated at the centre. It would seem therefore that external administrative differences between Knossos and Phaistos (i.e. script, document types) do also correspond to differences in the economic exploitation of their respective hinterlands.

The Concerns of Neopalatial Administration: the Cases of Ayia Triada and Khania

In contrast to the Protopalatial period, in the Neopalatial period written administrative documents are no longer restricted to the palatial centres, but now occur in settlements of varying sizes, in central buildings as well as in other contexts (Schoep 1996 [1999]). This implies that the clear administrative distinction, which could be made in the Protopalatial period between the urban and rural sector, becomes more complicated. At Ayia Triada, for example, although the Linear A tablets imply that the 'villa reale' was administering to a hinterland of some size (Schoep forthcoming 1), it is no longer clear whether the settlement was a rural outpost of

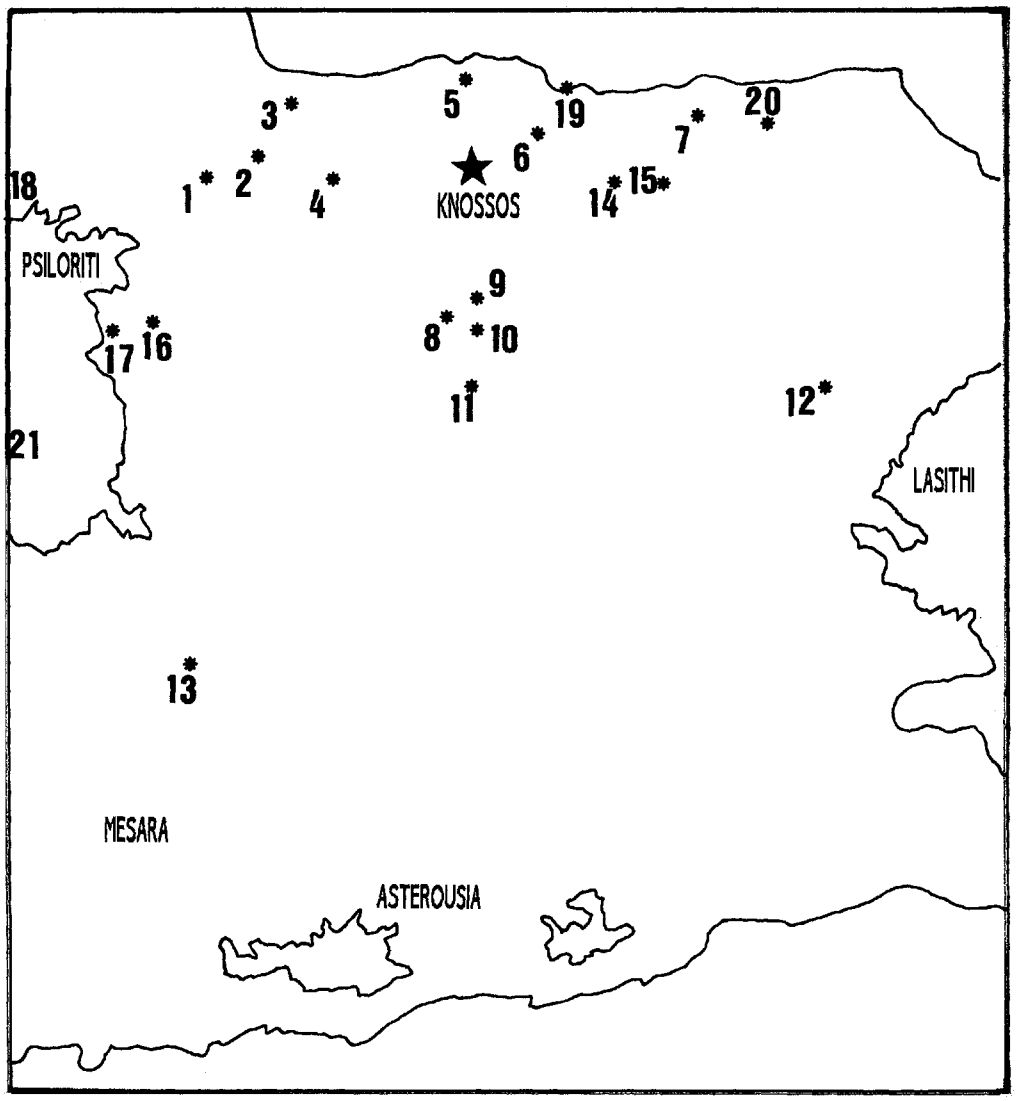

Figure 6.4 Map of Protopalatial Sites known in Central Crete (adapted from Cadogan 1994). 1. Tylissos, 2. Kavrochori, 3. Gazi, 4. Giophyrakia, 5. Poros, 6. Prassa, 7. Gournes, 8. Iouktas, 9. Archanes-Phourni, 10. Archanes village, 11. Vathypetro, 12. Kastelli (Vitsila), 13. Vorou, 14. Kato Vathia, 15. Anopoli, 16. Ayios Myron, 17. Krousonas, 18. Gonies (Skamni), 19. Amnissos, 20. Gouves, 21. Ideon Antron

a larger urban centre or whether it was an independent urban centre. In order to illustrate this increased administrative complexity, I will focus on the cases of Ayia Triada and Khania. Different criteria can provide information as to the nature of the administration conducted in a particular location: 1) the nature of the buildings in which documents were found, whether private, public or religious, 2) the types of document attested, 3) their contents and 4) their palaeography.

Private Administration and Central Administration

There seems to be little doubt that the 'villa' at Ayia Triada housed a central archive and

consequently the administrative documents found there provide a window on the relationship between a central administration and its hinterland. At Khania, however, a central building has so far not been excavated, although it is possible that the fill-layer found in the Odos Katre represents the remains of a discarded central archive (Hallager 1996: 50–51, Schoep 1995 [1998]: 50–52). At Ayia Triada, administrative documents were found in two locations, the central building of the settlement (the 'villa reale') and the 'Casa del Lebete', a small-sized house near the Neopalatial town wall. The pattern at Khania is very different: several houses, none of which can be identified as the central building, yielded evidence for administration. The houses at Khania were built around a small Plateia and were clearly private houses, containing store rooms, domestic areas and kitchens (Schoep 1996 [1999]: 82–83). In contrast, the architectural lay-out of the 'Casa del Lebete' and its location against the townwall, perhaps near an entrance into the town, suggests a specialized function. Furthermore, the fact that all 70 documents are tablets and that their contents and the scribal hands that created them invariably link them to those found in the villa, suggests that this might be a decentralized part of the central administration (Schoep forthcoming 2).

Administration in houses, which are not the central building of a settlement, may have been dependent on or independent of the central administration. Independent contexts could hint at the existence of private administration. At Khania, the wide scatter of documents over a number of adjacent houses, the absence of types of documents usually associated with central administration such as roundels and single-hole hanging nodules, their small numbers and the obvious domestic character of the houses would seem to point more towards independent private administration than centrally-administered units (Schoep 1996 [1999]: 82–83). Since LM IB Khania was clearly a larger settlement than Ayia Triada, this administrative complexity may reflect a greater degree of social complexity. Why private administration should have been organized is not clear, although perhaps it should be seen within the context of successful mercantile activities, possession of land and/or the higher status of some households. Since some of the Khania tablets from the houses deal with figs (KH 88) and other agricultural commodities (KH 91) in small, fractional and also larger quantities, it is tempting to suggest that these record the produce of small family holdings: the fractional quantities on KH 91 could, for example, suggest rations implying dependent labourers.

Ayia Triada and its Hinterland

Although the sign-groups involved in the transactions cannot be identified as the names of places or persons, their association with types of grain and other bulk agricultural commodities could suggest that they referred to persons or places located in the hinterland. The contexts in which these sign-groups occur on the tablets suggests that the central administration at Ayia Triada was mobilising agricultural surpluses from the hinterland (Schoep forthcoming 1). A good example is tablet HT 123, which deals with olives (AB 122) and an unidentified commodity (A 308): the presence of two contrasting transactional terms KU-RO 'total' and KI-RO 'deficit' on a single tablet could suggest that incoming goods were balanced against goods missing (Figure 6.5). Moreover, the proportionate ratio that exists between the quantities of these commodities could suggest that these contributions were fixed and perhaps tax-based. Other tablets on which KU-RO

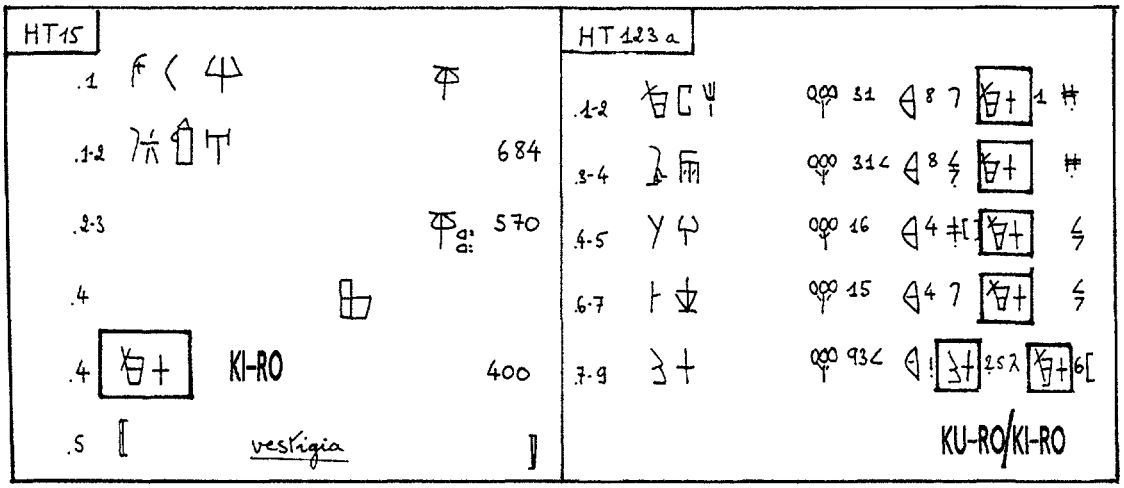

Figure 6.5 HT 15 and HT 123

and KI-RO are directly opposed deal with AB 120, which is either barley or wheat. On HT 15, a deficit of AB 120 is booked and the fact that the numerals '570' and '684' are multiples of '57' and 400 is one greater than a multiple of 57 (Figure 6.5), could suggest that this commodity was also taxed. (Killen 1969)

The existence of a type of tablet, on which incoming goods are balanced against outgoing goods, has important implications since it hints indirectly at the existence of target records for expected contributions for wheat or barley, olives and another unidentified commodity. Whether these reflect contributions from land owned by the central administration or land that was privately owned cannot be determined, but since the ratios between the numerals are suggestive of taxation, this could perhaps imply that the land was not owned directly by the central administration.

It is interesting to note that other agricultural commodities such as wine and figs, which also seem to have been collected at a large scale, are booked in a different contextual position. This would seem to suggest that they were acquired in another way or from a different source, such as, for example, land owned by the central administration (Schoep forthcoming 1). The fact that different commodities were booked in different administrative contexts, which are suggestive of another provenance or type of contribution, suggests that the interests of the central administration at Ayia Triada were selective and that the collection of large-scale agricultural surpluses was specialized.

The extent of the hinterland of Ayia Triada remains unknown and it is not clear what the relationship between Ayia Triada, Kommos and Phaistos was. The quantities of grain booked on the Ayia Triada tablets may provide an indication as to the amount of arable land needed for its production. It has been estimated by Palaima, using Halstead's figures, that the total of barley (AB 120) in the Ayia Triada tablets would have required 830 ha or roughly 8km^2 arable land (Palaima 1994: 319, Halstead1981), a relatively small area. With regards to possible evidence for the involvement of the centre in extensive agriculture in order to produce large-scale surpluses of grain, it is interesting to note that a hundred oxen (AB 23 BOS) are perhaps booked on a tablet from the villa (HT 34). The Ayia Triada tablets also testify to the

existence of a dependent workforce, part of which was receiving allocations of foodstuffs. The fact that they were receiving foodstuffs could suggest that they were employed by the central administration, perhaps on lands owned by the centre[12]. If these foodstuffs were leaving the magazines of the 'villa', this could suggest that these workforces were located at or very near to the centre. The tablets also seem to deal with people who were possibly located further away as some groups of people are associated not with rations but with large quantities of figs or wine, in contexts which could suggest contributions to the centre, and are thus likely to be located in the hinterland rather than at the centre (Schoep forthcoming 1).

Contextual analysis of Linear A tablets therefore suggests the existence of a hinterland administered by the central administration at Ayia Triada, which, according to the quantities of grain booked in the tablets, need not to have been very extensive. Unfortunately, since toponyms cannot be identified with certainty, the tablets do not provide any information regarding the extent of the hinterland of Ayia Triada. The sign-group PA-I-TO, which is the Linear B name for Phaistos, occurs on two tablets of which one books grain (HT 120) and another a group of people (HT 97). No written documents, which could shed light on the nature of the administration at Ayia Triada have been found either at Neopalatial Phaistos or Kommos. Despite the lack of information in the tablets, however, it is clear that Ayia Triada participated in a wider network of contacts, which extended beyond the Mesara. For example, a pithos from the 'villa' is inscribed with the sign-group AB 58–67–53–59/SU-KI-RI-TA, which is the Linear B toponym for Sybrita in the Amari valley. In addition, some nodules from Ayia Triada are thought to derive from non-local clays, which, if correct, would imply that documents were travelling from settlements to Ayia Triada (Hallager 1996: 212–13, Schoep 1999a: 214–217).

Summary

An assessment of the rural concerns of the urban administration at different centres forms an interesting perspective through which to consider the changing relationships between centres and their hinterlands. In the Protopalatial period, the distinction between centre and hinterland is clear with administration confined to central buildings. A comparison of the administrative documents from two different centres, Knossos in north-central Crete and Phaistos in the Mesara, suggests the existence of administrative differences between these centres involving different scripts (Linear A *versus* Cretan Hieroglyphic); and different typologies of documents; in addition these administrative differences appear to correlate with differences in economic strategies and spatially in the way in which each centre exploited its hinterland. This suggests that not all 'palatial' centres were structured in the same way. For the Neopalatial period, it is harder to assess centre-hinterland relationships because of an increasing administrative complexity, which is evidenced by the proliferation of Linear A at several levels, and because of the difficulties involved in relating this administrative complexity to settlement hierarchy. Urban-rural relationships now operated at different levels and scales, varying from the small-scale and possibly private, as suggested by the evidence from Khania, to the large-scale and public, as at Ayia Triada. Thus, whereas in the Protopalatial period, the presence of administrative documents is closely linked to

political supremacy, this cannot so clearly be argued for the Neopalatial period.

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Notes

1. Inscriptions on vases and seal stones are not archival because they were not intended to be kept in the archives, although they probably served an administrative function. It is noteworthy that inscriptions on vases and seal-stones were always in Cretan Hieroglyphic and occur mainly in the north-central and north-east part of the island. Only in the Neopalatial period was writing first used on a large scale for purposes other than administration, with inscriptions now occuring on a variety of supports, such as libation tables, architecture, metal objects etc.
2. It is interesting to note in this respect that in this period, conical cups were mass-produced in three sizes (large, medium and small) (Fiandra 1973).
3. Of these 327 different seals, 44 (or 13%) account for 70% of all sealings.
4. Tablet PH 6 does not contain any logograms and thus may not have dealt with agricultural commodities.
5. In Alalakh, the absence of documents concerning incoming commodities seems to have been due to the fact that these commodities were stored elsewhere (Magness-Gardiner 1994: 44).
6. One possibility is that the seal-stones, which have been used only once or twice (c. 283, cf. note 2), reflect a non-intensive sealing patttern, which could suggest non-resident seal-owners. It would be interesting to know whether these were sealing a specific type of support, which could point towards the collection of goods, such as bags or rush matting.
7. The absence of direct object sealings is striking, but it is not clear whether this is due to the hazard of discovery or whether some other document type, e.g. the medallions, fulfilled this function in the Knossos administration.
8. With the exception of the logogram for wine on a direct object sealing.
9. For a survey of the area around Apodoulou see Πωλογιώργη 1987: 125–160.
10. There has been some discussion about whether Kommos in the Protopalatial period was actively used as a harbour for trade with the East and Egypt (Shaw 1998). Carinci (2000) has pointed out recently that this is unlikely, considering the limited number of exotica at Kommos, Phaistos and all the sites in the hinterland. It must be noted that at Phaistos hardly any objects testifying to external trade have been found.
11. The distribution of Kamares ware seems to have been more widespread than assumed at first and the distinction made by Walberg between palatial and provincial Kamares cannot be sustained (Day and Wilson 1998: 352).
12. The generic logogram for people is ligatured to different signs, which seem to indicate administrative differences between different groups of people. It is therefore not unlikely that different workforces were employed by the central administration. Because of the resemblance of the ligatured sign which the logogram for people is holding, to a tool (e.g. hoe), it is tempting to interpret the logograms A 570, A 571 and A 571 as labourers on the land, but this of course must remain conjectural (Schoep forthcoming 1).

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7

Plotting Fragments: a Preliminary Assessment of the Middle Helladic Settlement in Boeotian Thebes

Anastasia Dakouri-Hild

Introduction

Thebes is portrayed by archaeological exploration as the largest prehistoric settlement in Eastern Boeotia. As such, it has received much attention in the context of urban nucleation. Previous work on the Early Helladic settlement (Konsola 1981; 1984; 1988) has demonstrated the advanced communal character of the proto-urban Kadmeia. Of particular interest is the extensive settlement of the earlier part of the period, which features outstanding buildings and possibly public buildings, as for example the presumably fortified 'Corridor House' (Aravantinos 1986). On the other hand, the archaeological record and the epigraphic evidence consistently testify to the role of Mycenaean Thebes as the administrative centre of the Eastern Boeotia state, in interaction with the region and beyond (cf. Aravantinos 1987). The combined application of Geographic Information Systems (GIS) and computer-aided design (CAD) verifies that the Late Helladic citadel accommodated more than palatial annexes, as much as it helps visualize the extent of the town (Dakouri-Hild, in preparation).

The vivid interest in the proto-urban and palatial settlement has been matched with regard to Middle Helladic Thebes. Yet, earlier endeavours to look beyond the fragmented archaeological record and make sense of remains dating to this period have been necessarily restricted to sites excavated up to the late 1970's (Konsola 1981; Symeonoglou 1985), while many more sites have come to light in more recent years. In this paper, I set out to evaluate the extent, character and organization of the Middle Helladic settlement according to the results of old and more recent excavations, because I feel this is crucial in considering the urban development of Thebes. My analysis is a rudimentary appraisal of the relatively random sample provided over the years by archaeological exploration within the modern grid. I do not quantify the excavated archaeological features themselves, the number of which is unfortunately not always disclosed, but the plots in which relevant features have been reported. Using the plot as a quantifiable unit (thereafter 'reported excavated unit'-REU), I undertake a locational analysis of frequencies of plots featuring certain categories of Middle Helladic remains. On average, the plots are comparable excavation units in terms of size across different topological areas. It is necessary to voice a few caveats however a better understanding of the Theban townscape in the Middle Helladic period depends and calls for the thorough publication of finds from each plot. In the future, this should also enable us to distinguish variations and changes within the Middle Helladic settlement (cf. Galanaki 2001) rather than treat it as a single entity. It is also the case that general

claims about the settlement must involve a degree of abstraction and be *generalizing*; this is imposed by the idiosyncratic and piecemeal nature of archaeological exploration, as well as a *hiatus* in the publication of preliminary reports between 1984–1992. I trust that the Archaeological Service has reported all substantial Middle Helladic remains, excavated before and after this period.

That said, I would like to start with a brief note on the Theban landscape, since the locational analysis of the data presupposes some familiarity with topological features of the Kadmeia.

Topography

The modern city of Thebes stands out from the surrounding low hills as a built-over, pear-shaped plateau, with the beds of Strophia and Dirke rivers running along the east and west foothills respectively (Figure 7.1). The insight that the original relief would have looked more rugged than today belongs to Antonios Keramopoullos, who suggested that the prehistoric Kadmeia comprised at least four distinct hills (Keramopoullos 1909: 107–10). To the south, Ag. Andreas features even today the highest elevation. To the west, the conical-shaped Pouros tou Kavallari may have been just as prominent before its top was levelled. A lower hilltop apparently existed east of Pouros; it is now razed and occupied by the modern town market. A deep ravine, that still demarcates the northwest edge of the Kadmeia (Gourna), separated the higher areas from two small knolls to the north (the archaeological museum site and the 'Ampheion'). A narrow ridge running just above the east slopes of the Kadmeia seems to have enabled access to the central part of Thebes from the north. We can envisage the main routes ascending from the east slope and south slopes. In the ensuing sections, I refer to a number of topological districts on the Kadmeia, which generally follow her morphology. Every effort has been made to classify consistently individual sites, although the areas serve as conventional analytical units, not as rigid compartments reflecting the structure of the settlement.

Extent and density

Most areas of the Kadmeia show evidence of domestic and mortuary use in Middle Helladic times: the north and northeast slopes of Ag. Andreas- thereafter 'Ag. Andreas' (Demakopoulou 1976a; 1979a, c; Aravantinos 1981; 1982a); the area east of Pouros (Spyropoulos 1970b; 1971a, b; Spyropoulos and Chadwick 1975) and southeast of Pouros (Touloupa *et al.* 1966b, c; Faraklas 1968b; Demakopoulou 1975a; Aravantinos 1982c; Andrikou 1994); the ridge over the east and south slopes (Touloupa *et al.* 1965b; Faraklas 1968c; Symeonoglou 1973; Demakopoulou 1975b; 1976b; Ioannidou 1973) and the slopes themselves (Touloupa *et al.* 1964; 1965a, c; Spyropoulos 1969a; 1971c; Demakopoulou 1979b; 1980; Sampson 1980; Aravantinos 1982b; 1994a, b; Andrikou 1993). A series of neighbouring plots along the northwest slope, above Gourna, have also preserved substantial evidence of Middle Helladic use (Touloupa *et al.* 1966a; Spyropoulos 1969b; 1970a; Demakopoulou 1973–4b).

Even the precipitous west part of the Kadmeia (Touloupa *et al.* 1966d) and the foothills within the area bound by the rivers, to northwest, northeast and southeast, were occupied (Faraklas 1968a; Demakopoulou 1973–4e; 1975c; 1978; Sampson 1981; Aravantinos 1983; Piteros 1983). Moreover, the excavations west of the museum have recently demonstrated that this area was used as a burial site

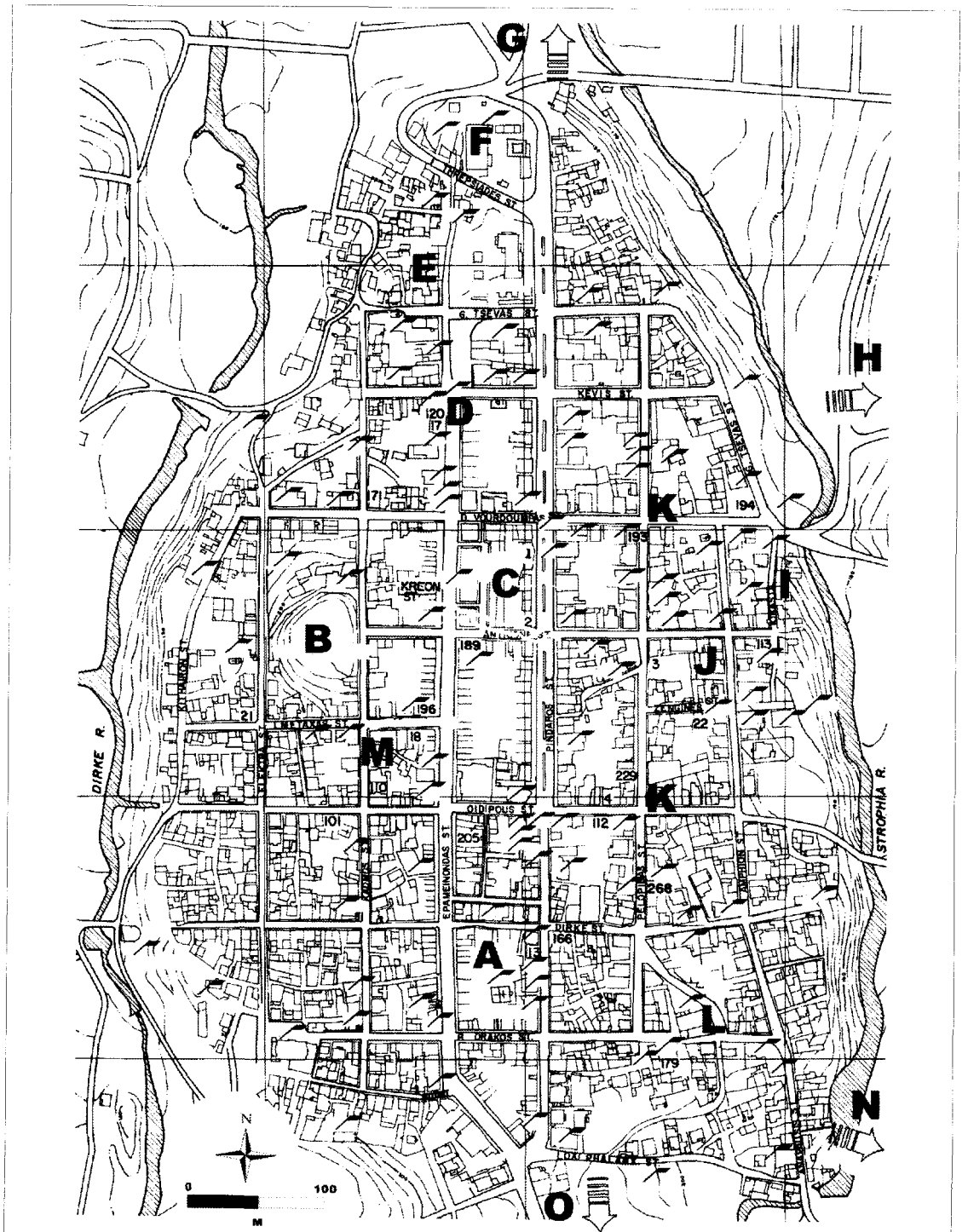

Figure 7.1 Topographical map of Thebes (based on Symeonoglou 1985). A. Ag. Andreas, B. Pouros tou Kavallari, C. Area east of Pouros (including the levelled House of Kadmos hill-top), D. NW slope, E. NW foothill (Gourna area), F. Museum area, G. Towards Ampheion knoll, H. Towards Kastellia, I. East foothill, J. East slope, K. East ridge, L. SE slope, M. Area S/SE of Pouros, N. Towards Ismenion, O. Towards Kolonaki-Ayia Anna.

(Aravantinos, pers.comm.). Previously, it was generally assumed that the entire north part of the Kadmeia was not used in this period. Although the new excavations demonstrate that this was not the case, it is striking that a single plot with Middle Helladic remains has been reported within the central block defined by Pindarou, Oidipodos, Epameinondou and Antigonis streets (Spyropoulos 1970b). Another *lacuna* in the southwest sector of the modern grid, i.e. south of Oidipodos and west of Epameinondou street, may reflect a steep extremity of the prehistoric Kadmeia. Very few prehistoric deposits have been reported there.

On the basis of domestic remains mainly, the extent of the settlement has been estimated to reach 8 ha (Symeonoglou 1985). This approximation rests on the assumption of a fortification, though, no trace of which has survived (see below). An updated distribution of REU's with domestic remains points to a higher figure, perhaps around 20 ha. This does not include more peripheral areas, for example the museum site and the northwest and east foothills; in addition, we should allow for the possibility that isolated dwellings existed beyond the Kadmeia, as a single, child burial near Kastellia might suggest (Demakopoulou 1973–4d).

If the distribution of excavated remains hints at the spread, it does not reveal much about the density of the settlement. A rough approximation of relative densities in various areas could be arrived at by examining differences in the number of REU's with Middle Helladic remains throughout the Kadmeia (percentages of overall REU's in each area, regardless of presence or date of finds). But we need to draw a distinction between areas representing a larger sample of excavated space on one hand (average overall REU=15.5 per area; Ag Andreas, southeast slope, the areas southeast, south and east of Pouros, the east and northwest slopes) and not so well sampled areas on the other (average overall REU=5.5 per area).

The uneven sampling of the Kadmeia prevents us from comparing frequencies of plots with Middle Helladic remains across these two categories. However, it allows us to make some inferences about the frequencies of plots with Middle Helladic remains within each category, in this case the relatively well-sampled areas. Definitive conclusions are, of course, contingent on actual densities of remains within individual plots. Let us focus on the areas where archaeological exploration has been more systematic (average overall REU=15.5 per area). Almost 60% of excavated plots along the central east slope of the Kadmeia have preserved Middle Helladic remains (Figure 7.2). Further, nearly 40% of REU's in Ag. Andreas and south/southeast of Pouros and 30% of excavated plots east of Pouros, at the east ridge and the east foothill have produced evidence for Middle Helladic use. About 20% of excavation units at the southeast and northwest slope, finally, have produced such evidence. I am not trying to suggest that these decreasing figures correspond exactly with the density of the Middle Helladic settlement in the given areas. The possibility of a very uneven preservation of sites by area should not be ultimately excluded but it is feasible that the highest percentages at the east slope, Ag. Andreas and south/southeast of Pouros reflect a denser occupation there.

I would like to proceed to an examination of *types* of use (domestic or mortuary) on the Middle Helladic Kadmeia, since this can enhance the resolution of the picture I have so far portrayed.

Spatial Analysis of Domestic and Mortuary Use

Comparatively more REU's, among those situated in the better excavated districts of the

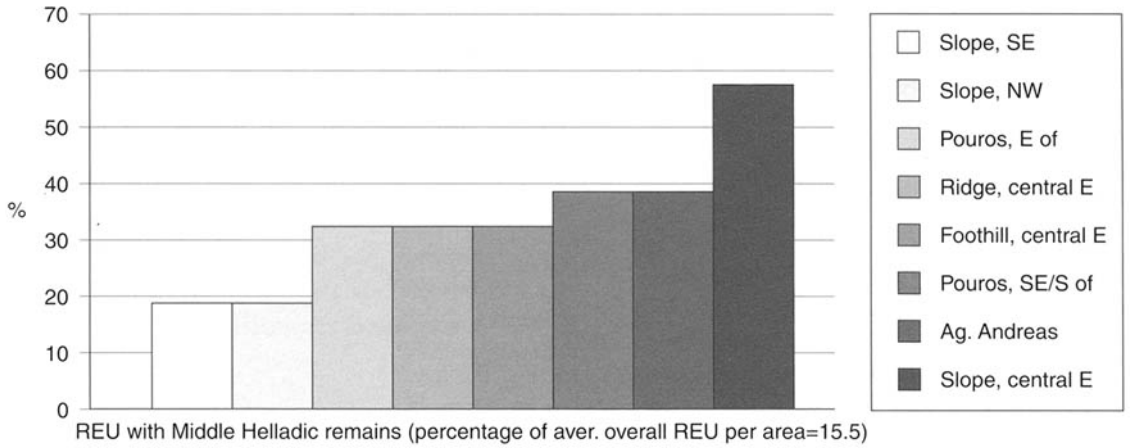

Figure 7.2 Survey of REU's with Middle Helladic remains.

Kadmeia, have yielded houses and domestic deposits along the east slope and south/southeast of Pouros. Ag. Andreas and the east ridge follow closely. Fewer such plots are known east of Pouros (near the centre) and the southeast slope, while even less excavations have produced domestic remains at the northwest slope (Figure 7.3). Houses and domestic deposits have also turned up in a few plots west of Pouros, the northeast slope, as well as the

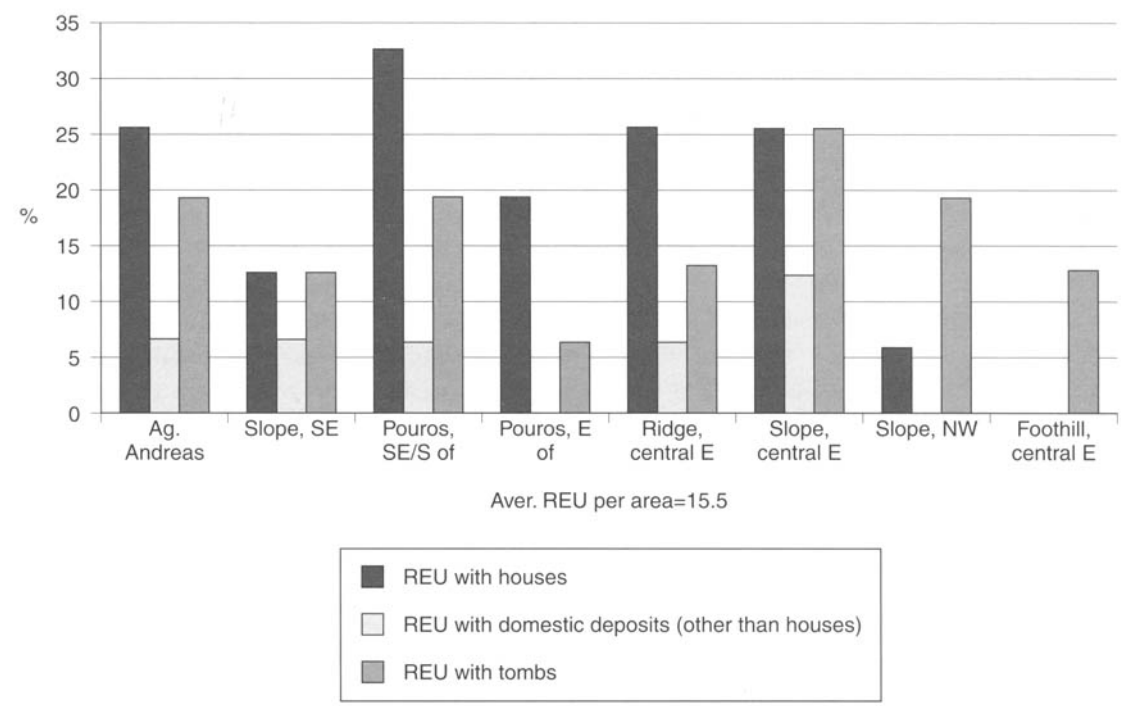

Figure 7.3 Survey of REU's with houses, domestic deposits and tombs.

northeast, northwest, and the southeast foothills. Their small number seems to be congruent with the fewer excavations undertaken there by the Archaeological Service, although it is likely that these extremities were not as densely inhabited as other areas further uphill.

Most REU's with Middle Helladic tombs are located at the east slope, a pattern which corresponds to the attested frequency of domestic use there (Figure 7.3). The area south/southeast of Pouros and Ag. Andreas follow; comparatively plots with tombs have been less frequent. Plots with evidence of mortuary use have been frequent at the northwest slope, where those with domestic remains have been rare. The frequency of REU's with tombs at the southeast slope, the east ridge and east foothill is lower, and in the case of the east ridge, it is again in contrast with the occurrence of plots with domestic remains. The same applies to the area east of Pouros, where tombs have been reported rather infrequently, unlike houses and domestic deposits. In short, both plots with domestic remains and tombs have more frequently turned up southeast/south of Pouros, along the east slope and at Ag. Andreas. It might not be irrelevant that, as I have argued above, these areas may have been more densely occupied. Tombs have, of course, been reported in the not so well-sampled areas too, and at Kastellia. Interestingly, 'pre-Mycenaean' sherds have been found in a couple of chamber tombs at the Late Helladic cemetery of Kolonaki-Ayia Anna, *c.* 200–600 m south of Ag. Andreas (Keramopoullos 1917: 146, 196).

With the exception of the east foothill and Kastellia, tombs have come to light in the vicinity of houses. Does this suggest that domestic space was undifferentiated from burial space in the south and central part of the Kadmeia? To be able to approach this question, it is important to attain a better understanding of the relationship between tombs and houses where these features seem to coexist. In this respect, it is beneficial to see which parts of Middle Helladic Kadmeia have yielded domestic burials. It is important to stress that the distinction between 'intramural' and 'extramural' tombs does not apply, since no trace of a Middle Helladic circuit has ever come to light (see below). Thus, when I speak of 'domestic burials', I mean the tombs associated with houses regardless of their location.

Houses

Most REU's with domestic finds (aside plots with deposits only) are known to contain buildings showing rectangular or trapezoidal plans (Figure 7.4). Apsidal houses have also come to light (Touloupa *et al.* 1966a; Demakopoulou 1973a; 1976a; Andrikou 1994), sometimes side-by-side to rectangular buildings.[1] REU's with apsidals seem to be comparatively more common in Ag. Andreas. This might be again the result of a denser occupation or simply preservation. Plots with non-apsidal houses have also been cited along the northeast, northwest and southeast foothills of the Kadmeia, west of Pouros and at the northeast slope. On the other hand, traces of 'wattle-and-daub' huts have been erroneously reported near Ag. Andreas (Filippaki *et al.* 1967).[2]

The published excavation data give us a rough idea about building standards in Middle Helladic Thebes. The foundations built on stereo or Early Helladic strata, can be quite deep (Symeonoglou 1973). The socles are of unworked rubble or slabs, their width ranging between 0.55–0.80 m, and support a mudbrick elevation. They can be clay-coated (Aravantinos 1983). Trodden earth floors are quite common, but red or white clay floors are not unusual (Touloupa *et al.* 1966b; Demakopoulou and Konsola 1975; Andrikou

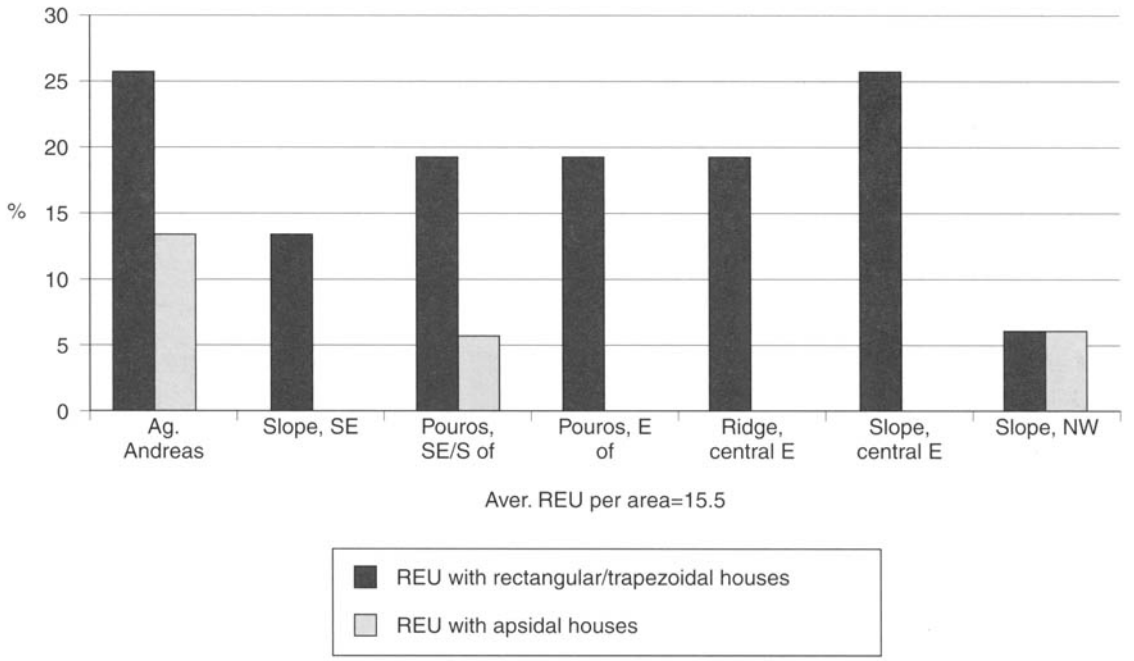

Figure 7.4 Survey of REU's with types of houses.

1993; 1994). Storage clay-lined pits and smaller refuse pits are located inside or outside the domestic units. The roofing material seems to have included timber logs (Faraklas 1968c). Hearths and ovens must have been more frequent than cited (Faraklas 1966; Demakopoulou and Konsola 1975; cf. Konsola 1981: 113).

Graves

It can be asserted that REU's with rectangular cists are in general more common compared to plots with burial pits or pithoi. They are frequently reported in most parts of the Kadmeia, especially along the east and northwest slopes (Figure 7.5). They are also present at the southeast ridge and foothill, the northeast slope and the museum area. In most cases, the cists are stone-lined, covered with slabs and have floors of pebbles, clay or stereo. A more refined version appears at the end of the Middle Helladic and spans the transition to the Late Helladic period. Built of monolithic slabs, it can be quite large (Touloupa *et al.* 1964; Faraklas 1968a; see below).

Likewise, plots with burial pits are more common along the east slope, but not as much as those with cists (Figure 7.5). Apparently, the spread of REU's with burial pits over the Kadmeia is more limited, though Middle Helladic pits have been reported at the southeast and northwest edges of the citadel. Construction-wise, the pits are opened in stereo or earlier strata, their walls lined with mudbricks or clay plaster (Demakopoulou 1978; Sampson 1981). They are covered with soil or stone slabs (Demakopoulou 1975b; 1980). Further, plots with burial pithoi have been more common at Ag. Andreas. Although they have been reported rather infrequently, their presence at the northeast and northwest extremeties and Kastellia (Spyropoulos 1970a; 1971c; Demakopoulou 1973–4d) may reflect a more widespread use than the one attested.

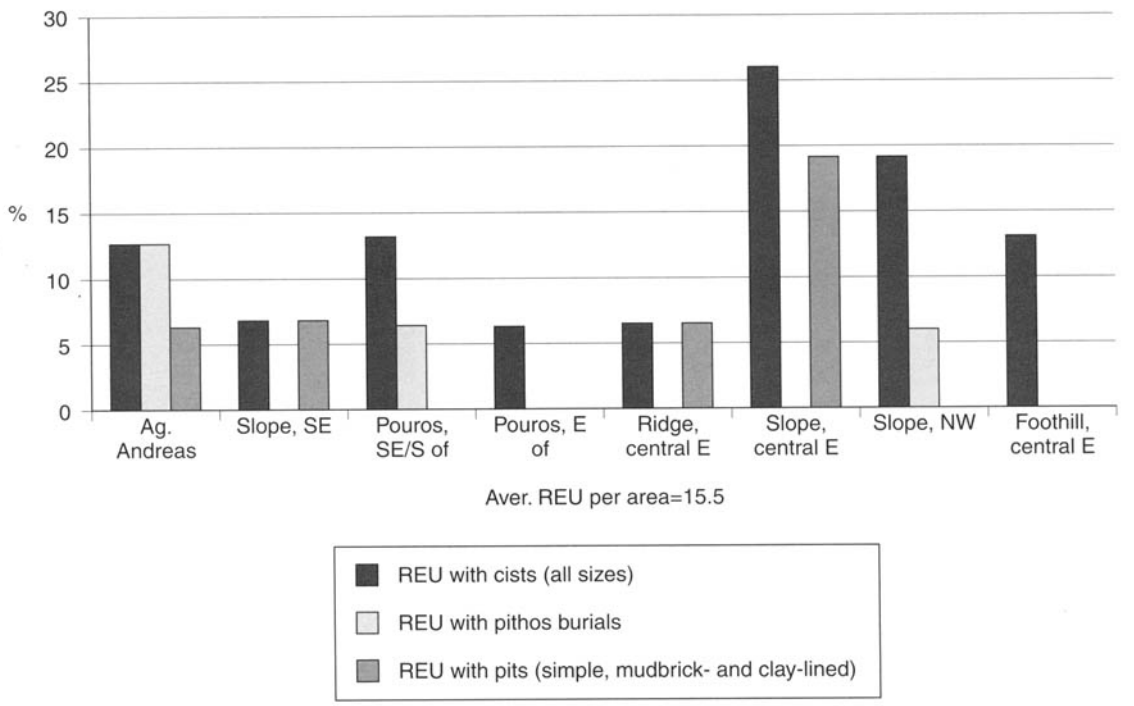

Figure 7.5 Survey of REU's with types of graves (form).

Housing the living and the dead

A survey of REU's with types of burials across the Kadmeia (Figure 7.6) indicates that plots with children burials only are more frequent closer to the centre of the citadel, namely Ag. Andreas, east ridge and the area south/south-east of Pouros. Plots with both adult and children burials are seemingly not confined to specific areas. In addition to the areas included in Figure 7.6, they have also been reported at the northwest and southeast foothills (Demakopoulou 1978; Piteros 1983). It should be mentioned that tomb types can generally be correlated with the age of burials; while cists can be used both for children and adults, pits and pithoi tend to accommodate children burials, though there are exceptions (Piteros 1983).

REU's with tombs only, have been reported in all well-sampled areas, but relatively higher frequencies occur at the east and northwest parts of the Kadmeia; they form a rather distinct batch towards the right part of Figure 7.7, culminating at the east slope. It is difficult to know for a fact whether single tombs are 'non-domestic' burials, instead let the focus be on the occurrence of evidenced domestic burials as specified previously. The distribution of REU's with domestic burials is quite widespread on the Kadmeia. Aside from the districts included in Figure 7.7, they are also reported at the southeast and northwest foothills (Demakopoulou 1978; Aravantinos 1983). Clearly, though, they occur more frequently southeast/south of Pouros.

Domestic burials are not reserved for children and infants. This probably accounts for the fact that a correlation between tomb types and domestic burials is not manifest (since, as I have suggested above, there is a trend to

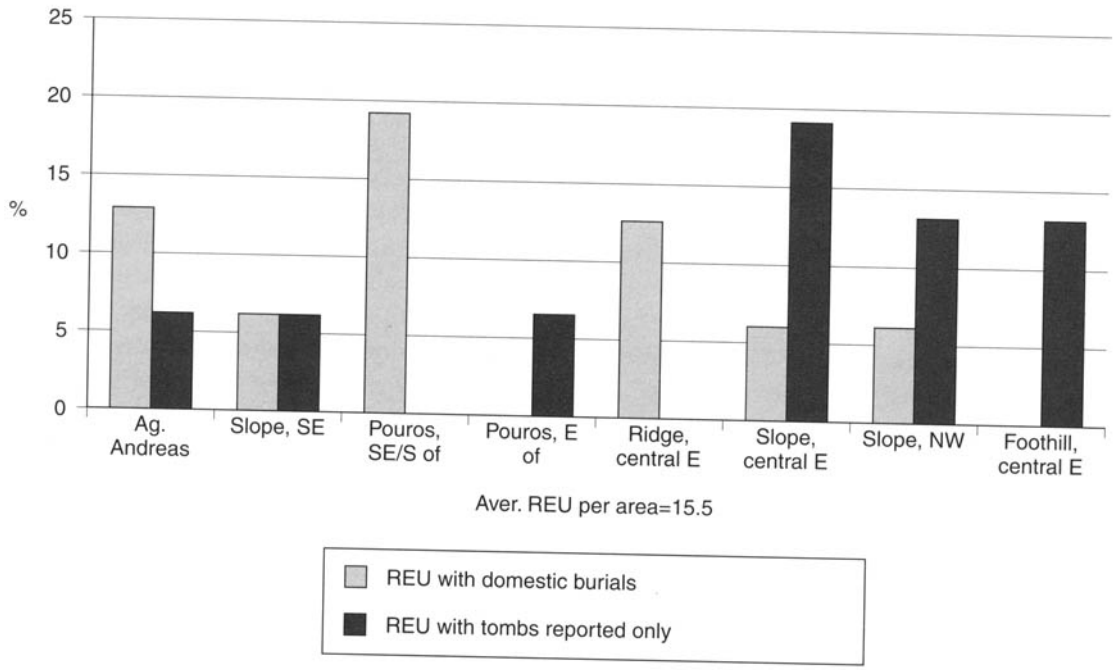

Figure 7.6 Survey of REU's with types of burial (age).

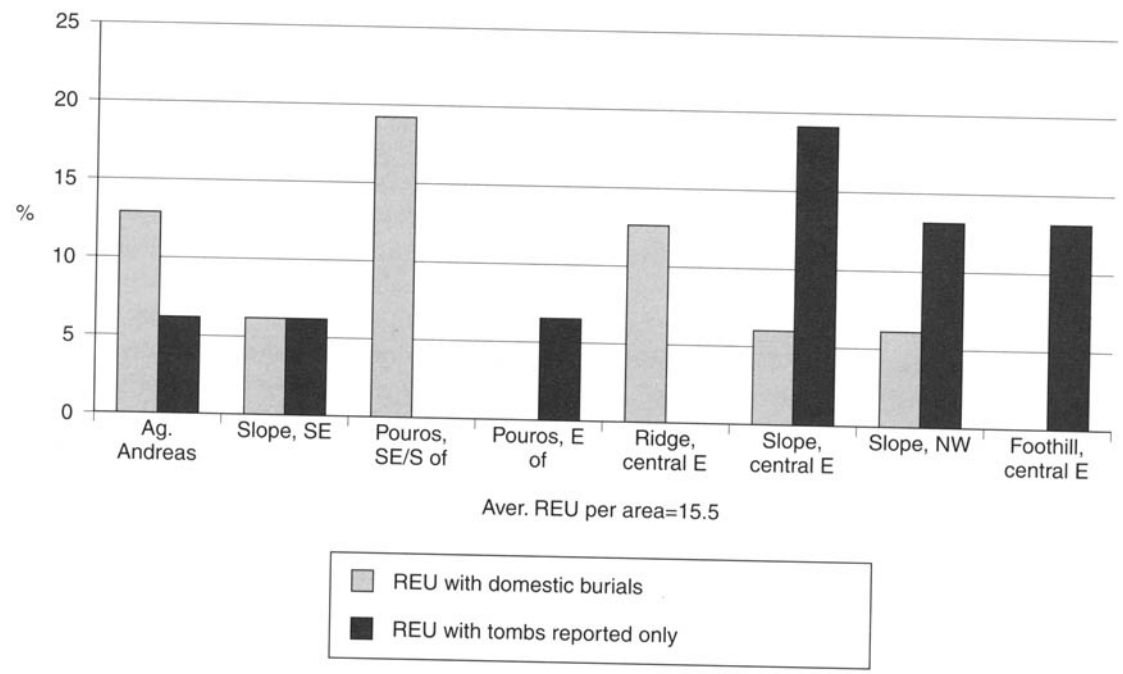

Figure 7.7 Survey of REU's with domestic burials.

associate certain types of tombs with children burials). Domestic burials are indiscriminately placed in cists, pits and pithoi. All three known types have been located under floors (Symeonoglou 1973; Demakopoulou 1973–4a; 1975b; Aravantinos 1983) and between houses (Demakopoulou 1975a; 1978). An infant's cist is reportedly encased in a house wall (Symeonoglou 1973).

Turning to a brief discussion of the nature of burial concentrations on the Kadmeia, it is worth mentioning that the distinction between domestic and non-domestic burials does not necessarily imply the absence or presence of graveyards respectively in certain areas. For example, a dense graveyard has been unearthed between and underneath dwellings, which are contemporary with the tombs, at the northwest foothill (Demakopoulou 1978). The overlapping graves are compressed between the houses and suggest a combined domestic/mortuary character over a substantial span of time. It is likely that such 'domestic cemeteries' were intended for families, resident in the nearby houses. The concentration of tombs between them might represent land tenure and/or religious beliefs pertaining to the deposition of the dead.

On the other hand, the east slope of the Kadmeia could tell a different story. Although plots with both domestic and mortuary remains are quite frequent there (Figure 7.3), they rarely show an association between houses and tombs (Figure 7.7). A cemetery comprising at least twenty-two sizeable and well-built cists (thirteen depicted in Figure 7.8), with monolithic cover slabs, is located under the palatial complex of the Late Helladic period (Touloupa *et al.* 1964; 1965a, c; Demakopoulou 1973–4c; 1980; Aravantinos 1994a, b). Similar cists, have been excavated further to the east along the feet of the Kadmeia (Faraklas 1968a; cf. Sampson 1981). Most tombs in this cemetery share roughly the same orientation (east-west, Figure 7.8) and are more spaced apart, compared to the 'domestic graveyard' mentioned earlier. It is possible that the east slope cemetery, which spans the end of the Middle Helladic period and the transition to the early Late Helladic, constitutes a new development, known to have occurred at other Mainland sites in this period (Dickinson 1977: 33, nt. 23). Whether the result of a booming town on the Kadmeia, a growing investment in mortuary display, or sanitary/religious considerations, the gradual segregation of the settlement from burial sites must have been under way in late Middle Helladic Thebes; remoter burial sites (i.e. the Kolonaki-Ayia Anna chamber tomb cemetery) were evidently in use already as early as the Late Helladic I period.[3]

Communal Works?

To date, there is no preserved evidence of large-scale terracing or community projects of this kind. The assumption that the settlement was surrounded by a mudbrick enceinte (Symeonoglou 1985) is grounded on the distribution of domestic remains versus burial sites, excavated up to 1973; also, by a "continuing proximity" of the settlement to Ag. Andreas and Pouros, presumably imposed by defensive considerations.

Symeonoglou made a good case for the density of occupation near these hills, based on the number of sites that were known to him at the time. Yet, a preoccupation with defence may not have been the sole factor determining the location of the settlement (Dickinson 1977: 32); a denser occupation near Ag. Andreas and Pouros need not have been the effect of physical constraint caused by a fortification.

Moreover, new excavation data do not always conform to the clear-cut distinction between domestic 'intramural' sites and burial 'extramural' sites (the assumption

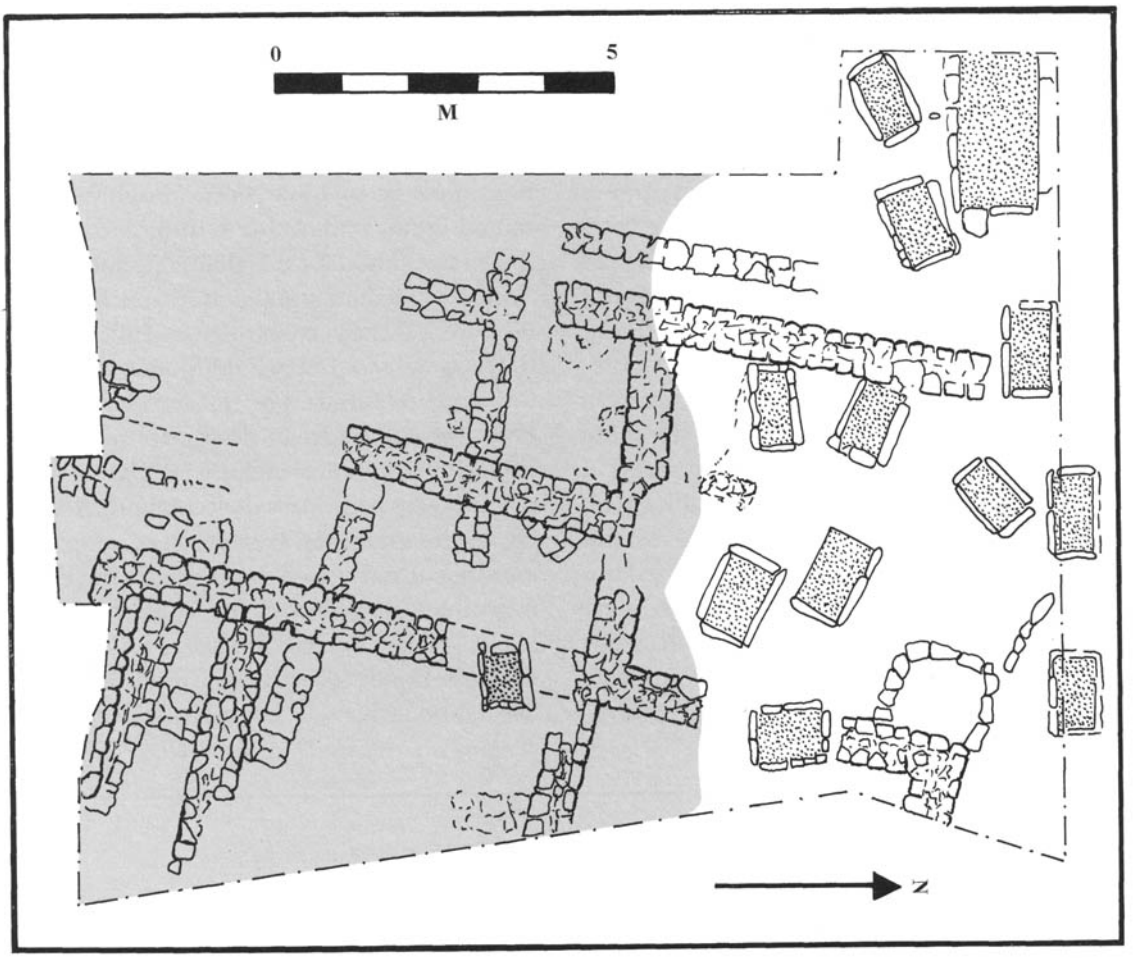

Figure 7.8 Part of the cemetery at the east slope of the Kadmeia, in Pavlogiannopoulou plot (after Touloupa *et al.* 1965a).

being that 'intramural' burials are usually of children). For example, fragmentary houses have been more recently come to light close and beyond the conjectured east fortification line (Demakopoulou 1980; Aravantinos 1982a; 1983; Piteros 1983; Andrikou 1993). If we exclude the neighbourhood at the remote northwest foothill (Demakopoulou 1978), it is not clear what the criteria are for drawing a dividing line between 'intramural' and 'extramural' houses at the east part of the Kadmeia.

On the other hand, the location and content of graves does not suffice to trace the contour of a missing fortification. I have shown that plots with children burials only have been more frequent at Ag. Andreas, the east ridge and the area south/southeast of Pouros (Figure 7.6). But, it is also the case that 'domestic' burials, designated as such on the basis of context rather than a preconceived 'intramural' location, are not reserved for children.

'Big Houses', Monumental Tombs and Prestige Goods

Finally, I move on to consider possibilities of social differentiation in Middle Helladic

Thebes. In accord with other Mainland sites, pronounced qualitative differences in domestic architecture and household goods are not apparent. It is towards the end of the Middle Helladic period and the transition to the Late Helladic that more elaborate dwellings appear.

The date and nature of fragmentary 'pre-Mycenaean' structures under the House of Kadmos (Keramopoullos 1909) is dubious.[4] Nevertheless, the excavations in Tzortzi plot east of Pouros have brought to light a noteworthy dwelling (Faraklas 1966; Figure 7.9). It is situated partly underneath the Late Helladic palatial complex, (not in itself a compelling argument for its significance). The surviving, rectangular plan is of the megaron type and comprises two axially arranged rooms; the west one seems to be larger (9 × 5.5 m). The house is quite well-built with thick stone socles (0.70 m) and occupies in its present state 72 m^2. According to the excavator, it is associated with a large, stone-built structure (reportedly a double hearth) situated just a few metres to the east. The orientation and layout of the 'megaron', which dates to the transitional period probably, appears to have been roughly determined by an underlying building, dating to the end of the Middle Helladic period.

Other dwellings stand out, not so much because of their construction, but because they contained household goods made of imported materials. For instance, an apsidal house at Ag. Andreas, dating to the Middle Helladic II period, yielded a plaque with diamond-shaped, incised decoration. According to the excavator, it is made of ivory (not mere bone) and served as a furniture inlay. This is an interesting find in the light of the Late Helladic inlay industry in Thebes and the palatial interest in ivory and other exotic materials. On the other hand, a bone object, probably a

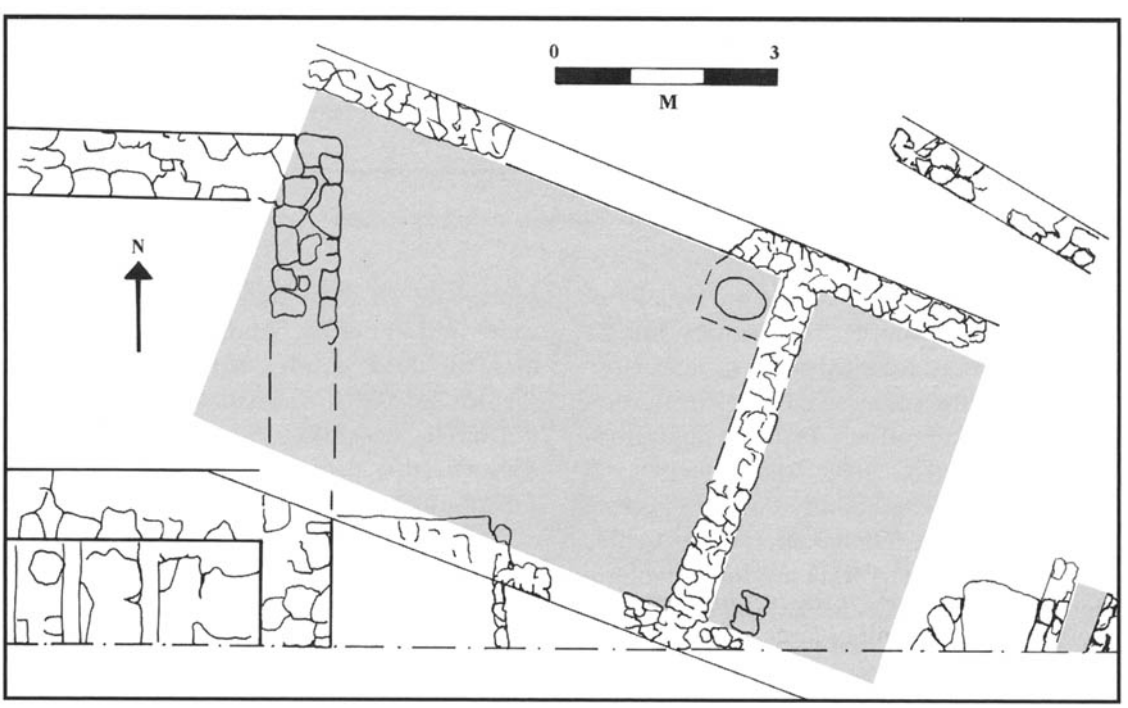

Figure 7.9 The 'megaron' at Tzortzi plot (based Faraklas 1966).

pommel or furniture accessory, originates from the same plot, though it is unstratified (Demakopoulou 1973–4a; Demakopoulou and Konsola 1975; cf. Konsola 1981: 138). Another house at the northwest foothill yielded bone ornaments, namely a perforated inlay and a key-shaped pendant (Demakopoulou 1978).

In most cases, prestige goods originate from mortuary contexts, and date from the end of the Middle Helladic onwards. Graves with such artefacts can be of Middle Helladic II date, however (Demakopoulou and Konsola 1975). Gold (Touloupa *et al.* 1965a) and bronze jewellery (Spyropoulos 1969b; Demakopoulou and Konsola 1975), glass and carnelian beads (Touloupa *et al.* 1965a), weapons in a combination of materials (Demakopoulou 1980), have been reported in cists at the east slope, Ag. Andreas and the northwest slope. Adornments in gold, silver, amethyst, sardium and faience are known to have accompanied pit and pithoi burials at Ag. Andreas (Demakopoulou and Konsola 1975; Demakopoulou 1979a; Aravantinos 1982a). In a similar vein, the more elaborate tombs in terms of construction and size date from the end of the Middle Helladic period onwards. As I mentioned earlier, the east slope cemetery mostly comprises well-built and sizeable cists. Other such examples have been excavated elsewhere (Faraklas 1968a; Demakopoulou 1973–4b, c; Demakopoulou and Konsola 1975; Aravantinos, pers.comm).

The partly man-made 'Ampheion' hill seems relevant in the context of increasing mortuary elaboration. A prehistoric tumulus of sun-dried, rectangular mudbricks would have stood at least 2 m high on top of the natural outcrop of soft stereo. A single grave is situated in the centre of the tumulus; over 2 m long, the cist is built of large conglomerate slabs and features a massive limestone cover. Levelled stereo forms the floor, at the south part of which two rectangular pits exist. The tomb was looted, presumably in antiquity. An ellipsoid shaft above it, a possible result of this operation, contained mixed Bronze Age pottery, human bones and four gold pieces of jewellery with papyrus and spiral decorations, as well as gold beads and a gold rounded ornament (Figure 7.10). The disturbed fill of the tomb itself yielded a gold bead, whereas gold wire was found during early soundings (Faraklas 1967; Spyropoulos 1972; 1973; 1981; cf. Demakopoulou and Konsola 1981: fig. 26; Faraklas 1998: 193–205). A proposed Early Helladic date (Spyropoulos 1981) has not been well-received, though the site was apparently used in Early Helladic times. The current consensus is that the megalithic cist dates to the Middle Helladic period (Demakopoulou and Konsola 1981: 23, 56; Symeonoglou 1985). Its construction is congruent with this notion. The pieces of gold jewellery find parallels at the Mycenae Shaft Graves (Dickinson 1977: 97–8) and suggest a late/transitional Middle Helladic date, if we accept that they originated from the tomb.[5]

Conclusions

Middle Helladic Thebes emerges as a more extensive settlement than previously suspected. My analysis adduces support to the notion that the south and east parts of the Kadmeia would have been more densely occupied (cf. Konsola 1981: 168). This has been interpreted, more or less, as the effect of a fortification, but I have tried to show that the criteria for tracing the postulated circuit become increasingly hazy as the ongoing exploration of the Kadmeia brings to light new evidence. The contrast between domestic and burial space need not have been as pronounced, at least not in the early and middle part of the period. Domestic burials were

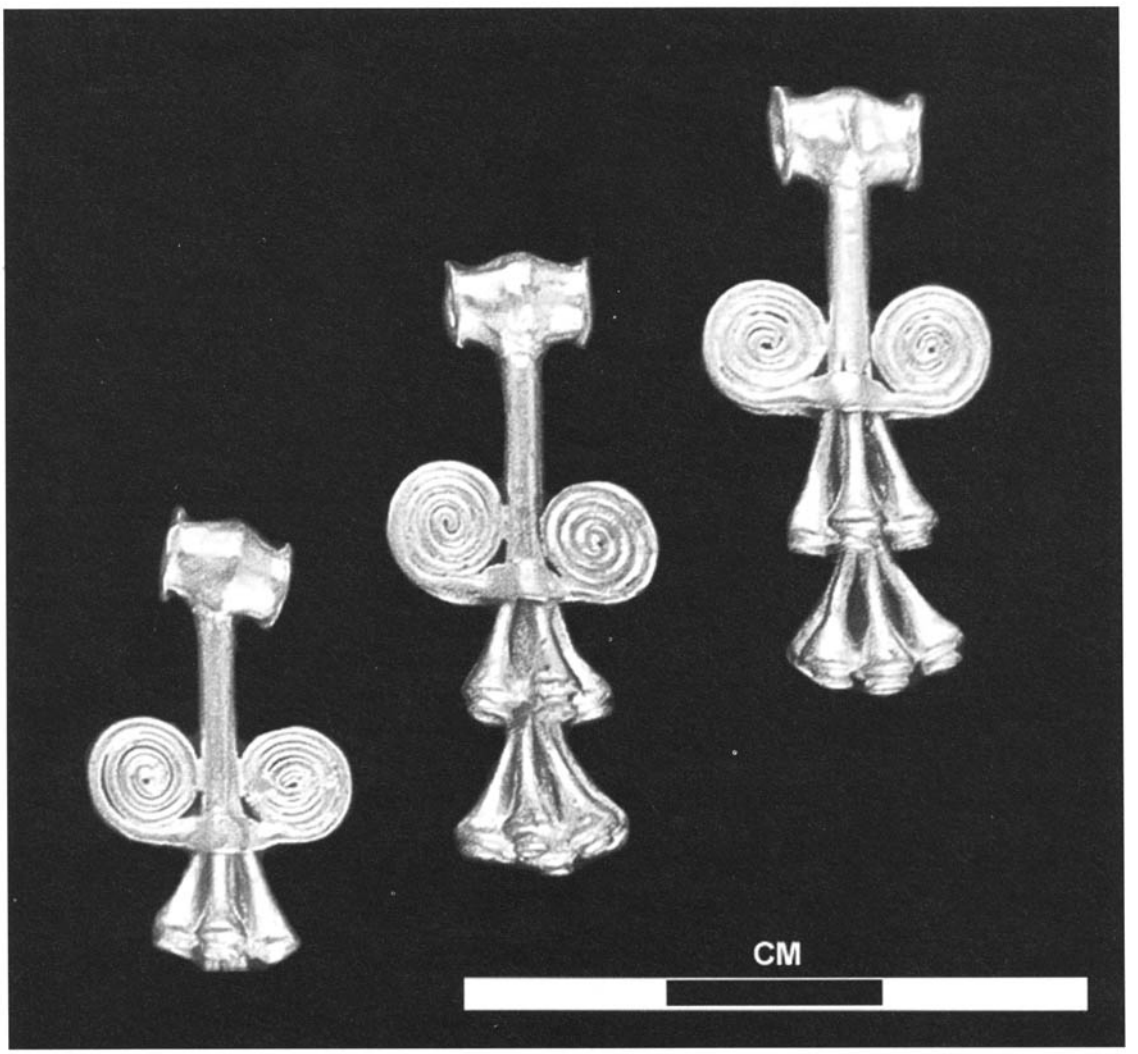

Figure 7.10 Gold jewellery from the Ampheion (adapted from Demakopoulou and Konsola 1981).

widespread on the Kadmeia and were not reserved for children. They can form extensive clusters in direct association with dwellings. It is towards the end of the Middle Helladic period that more discrete graveyards seem to come into sight, a development which forecasts the establishment of remote, dedicated cemeteries in the Late Helladic I. These discrete graveyards did not necessarily constitute the 'first organized cemeteries'. It is not in the presence of organization (a common 'urban essential') that they differed from domestic graveyards, but in the nature of organization. It is perhaps through the gradual transformation of kin-based identities to community based ones that we should seek to explain changes in the Theban settlement. The increasing mortuary deposition of wealth and the appearance of salient burial and domestic structures are remniscent of changing social

strategies of display and identity as recognized in other Mainland sites and seem to mark this transformation.

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Notes

1. The exact temporal relationship between apsidal and rectangular dwellings within the Middle Helladic period is unclear.
2. It was later pointed out that these remains should have been dated to the Early Helladic period, because the Middle Helladic pottery associated with the structures was intrusive (Symeonoglou 1985: 241; cf. Demakopoulou and Konsola 1975: 45, nt. 3).
3. Three Late Helladic I vessels from tomb 2 at Kolonaki-Ayia Anna are currently on display at the archaeological museum of Thebes (cf. Demakopoulou and Konsola 1981: 48).
4. However, the site has produced unstratified Minyan pottery originating from the terrace fills and the mud-brick elevations (Dakouri-Hild 2001).
5. D. Konsola (1981: 140–41) does not exclude the possibility that jewellery is of Early Helladic date, drawing parallels to the Poliochni treasure.

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8

Empty Space? Courts and Squares in Mycenaean Towns

William Cavanagh

Introduction

Whilst much has been written about open spaces in Minoan architecture (Indelicato 1982), such as the Central Courts (e.g. Davis 1987, Graham 1969: 73–83) and the West Courts (Marinatos 1987) and complexes such as the Agora at Mallia (H. and M. van Effenterre 1969, H. van Effenterre 1980: I 189–95 with further references), open spaces in Mycenaean architecture have not attracted much comment. The distinction between the Minoan Central Court, a sacred space, and the Mycenaean court, a means of approach (Lawrence 1983: 93) or a busy thoroughfare (Taylour 1983: 93), has become almost a *topos*, but somewhat to the detriment of the Mycenaean. It may be that the study of Mycenaean courts received a fatal blow early on with Schliemann's notion that Grave Circle A represented an Homeric agora, like that depicted on the Shield of Achilles (Schliemann 1880: esp. 125–29, 338–39, Il. xviii 497–508, he ascribes the idea to Paley). Although sceptical of the value of the Homeric precedent for explaining Mycenaean practice, I believe that there is a useful general point that can be illustrated from the poems: that those in power need to be seen to act before the people. On the Shield the elders decide openly and before the people. Odysseus makes much the same point a little later (Il. xix 172–4)

... τὰ δὲ δῶρα ἄναξ ἀνδρῶν Ἀγαμέμνων
οἰσέτω ἐς μέσσην ἀγορήν, ἵνα πάντες Ἀχαιοὶ
ὀφθαλμοῖσιν ἴδωσι ...

Urban open space is an arena for political action and, arguably, an analysis of the arrangement of courts and squares in Mycenaean towns might throw light on the relationship between ruler and ruled. Thus, to quote a parallel even more remote from Bronze Age Greece, the articulation of public and private space in medieval cities was a material expression of the political conflict between town governance and private privilege (Heers 1984). For example wealthy mercantile families could express patronage and earn rents from letting pitches for market stalls in 'their' squares (Rayerson 1997) but their right to such spaces was challenged by the town's administration, which required access and demanded control. It is not entirely out of the question that sectors or blocks of Bronze Age towns were under the wing of (rival) leading families. Müller wrote in terms of 'Kavalierhäuser' (1930: 168), and Kilian has recently proposed the theory that the Lawagetas' residences can be recognized in buildings subsidiary to the main megaron (1987a). At the same time we can point to associations of the tombs of more and less powerful (Mee and Cavanagh 1990: 234), perhaps reflecting in death social alliances that had been important in life. Indeed

tombs and houses are curiously intercalated at a number of Mycenaean settlements. But our knowledge of the configuration of houses and open space in what excavators often call the 'lower' towns, outside the citadels, is frustratingly limited. All the same, putting aside the rather special case of Gla, there is no indication in mainland Greece of paved squares contemporary with the Piazzale dei Saccelli or the large court in front of the Great Stoa at Ayia Triadha, on Crete. The latter follow Minoan antecedents and thus belong to a different cultural tradition.

There are, naturally, fundamental differences between the medieval and Bronze Age towns, for example the sort of market exchange crucial to the medieval town does not apply under the bureaucratic administration centred in the palaces to be discussed here (though it would be a mistake to rule out commercial exchange from Mycenaean Greece see, for example, Wiener 1987, the papers in Gale 1991, Shelmerdine 1997: 567). Nevertheless Heers has stressed that the monumentalization of the grand piazzas in the Italian cities was an expression of civic polity, and quite distinct from the provision of markets. Indeed there are many cases from different cultures where expenditure lavished on the religious/political centre was not matched in the markets: recall, for example, the ritual precincts in the Aztec sites of Tenochtitlan and Tlatelolco with their massive monuments, and beside them the huge but simple markets.

Here the more specific question is asked how are we to understand the courts and open spaces in Mycenaean palaces. Political assembly, religious procession, military muster, economic transaction, organisation of labour, supply and circulation might all form part of the answer. What can archaeology tell us?

An approach to the study of courts and squares

The analysis to follow attempts to draw from the design of squares inferences about their role. This approach is open to objection. People do not always behave as architects and planners would have them. Thus on the planned high-rise estates of the 1960s (AD) spaces envisaged by their architects as friendly, communal, social areas, are today said to be stalked by crime and violence, and shunned by residents. In a similar vein note that important assemblies can gather in any open space, it need not be enclosed by walls or clearly demarcated within a town (though the Homeric agora, as it happens, was quite formalized, see Wees 1992: 29, and agoras of the 8th century BC have been recognised at Megara Hyblaia and Dreros, see Vallet 1973 and de Polignac 1995: 8–11). In response I would say that here the theme is not the everyday interaction of individuals, but the meeting of ruler and ruled, always a formal occasion, and usually one that is stage-managed. To anticipate, the Mycenaean courts were the result of an evolution, which shaped them to their end, and they were an expression of a self-conscious idiom aimed at providing an architectural set for the exercise of power.

As a means of broaching the question it is proposed to look at the following characteristics:

- access
- size
- orientation
- focus
- perspective
- visibility
- appointment
- frontage

These terms are jargon and require some attempt to turn them into English. *Access*

raises the question of how easy or difficult it might be for an individual to enter the court. Thus Wright (1994; cf. Kilian 1987a, 28 'Megaron als Endglied einer architektonischen Steigerungskette') has emphasized 'centredness' as an organising principle in Mycenaean settlement form, and the importance of monumental entrances marking a progress through a series of boundaries to the innermost seat of authority. *Size* can set a limit to the capacity of a square and reflects its monumentality. *Orientation* and *focus* are characteristics of the shape and sense of direction given to the space. Is it broad, or long and narrow? Is it directed towards an obvious focal point? *Visibility* and *perspective* mean, in the first place, is someone standing in the space easily seen by others, and in the second, does someone standing in the space have a clear view of their surroundings. *Appointment* can include furnishings, such as an altar or a podium, and decoration, such as painted plaster. *Frontage* refers to the buildings which look onto the space.

The Great Courts

The Development of the Great Court

The Great Courts (those fronting the megara) at Mycenae, Tiryns and Pylos are creations of the thirteenth century BC (cf. Kilian 1987a: 33: 'die grossräumigen Megara eine Bauform, die erst in der SH IIIB-zeit hinzukam'; Shelmerdine 1997: 558–59). The Palace at Pylos was built as a single unit, perhaps at the beginning of LH IIIB (Blegen and Rawson 1966: 422). The Court at Tiryns belongs essentially with the megaron and the lesser propylaea to LH IIIB. Müller established that the floors stratified below the Court were not levels of its earlier phases, but belonged to other structures: they were associated with walls on a different orientation, and they did not extend so far as the Court did (Müller 1930: 134). Indeed, although he eventually rejected the hypothesis, Müller entertained the theory that the west portico was part of an earlier construction, later incorporated into the Great Court when that was first laid out. This theory makes good sense, and Müller's arguments for rejecting it are not overwhelming. The south and east portico would seem also to go with the winding corridor, 36, itself an integral part of the East Wing at Tiryns, now dated to the later LH IIIB phase (Kilian 1987a: 28). Finally the Great Court at Mycenae also seems to be approximately contemporary with the other two, and replaced some earlier disposition. Thus Wace observed that traces of an earlier north wall implied a different arrangement which preceded the megaron and Court (Wace 1921–23: 195). The date of the formation of the Court at Mycenae is bound up with the construction of the Grand Staircase (Wace 1921–23: 179–86). Indeed a massive conglomerate threshold (unfortunately displaced in the nineteenth century) marked the passage from the 'anteroom' (Mylonas 1966: 66 suggests that the 'anteroom' was an unroofed court), at the top of the Staircase, to the Court. The creation of the Staircase involved the *de*struction of the Pillar Basement. Now the *con*struction of the Pillar Basement was no earlier than LH IIIA2, to judge from the sherds illustrated by Wace (1921–23: pl. 31 j–o; though there was clearly some later disturbance of these levels). This in turn gives a *terminus post quem* after LH IIIA2 for the building of the Grand Staircase (Iakovidis places the destruction of the Pillar Basement in LH IIIB: 1983: 61). Wace thought there was an earlier wooden staircase, which preceded the Grand Staircase, associated with the Great Court and the megaron, in which case they would have been built towards the end of LH IIIA. A case could be made for the

Grand Staircase and the Great Court going together, and in that case they would date to LH IIIB. Perhaps the earliest clear example of a court in front of a megaron (it measures c. 14 × 14 m = 196 m²; Atkinson *et al.* 1904: 55–58), is that at Phylakopi. The megaron has been dated to LH IIIA1 (Barber 1992: 19), but the court has a different orientation from the building, and may belong to an earlier phase, perhaps to the underlying Minoan edifice; the well in the court at Phylakopi, if contemporary, hints at a very different usage from that of the Great Courts. At Ayia Triadha, although the Piazzale dei Sacelli was repaved at (about) the time the megaron was built, in LM IIIA2, the area immediately to the east of the megaron was occupied by a stoa, which effectively blocked the open space in front. It appears that megaron P, also LM IIIA2, opened onto the Agora, but, of course, this open space mainly serves the Stoa. In addition to the other reasons put forward (Catling 1976–77: 29), perhaps Mansion II at the Menelaion was reoriented in H IIIA1 also to take advantage of the top of the knoll to form a large courtyard in front of it. Unfortunately the remains on the summit were too eroded for us to get a clear picture of the arrangement of the court there. The SW Building at Pylos, unlike the megaron, was not preceded by a symmetrical enclosed courtyard, and court 16 at Tiryns, before the smaller megaron, is also quite different in disposition. In brief, then, on present evidence the Great Courts were new in LH IIIB, and stand at the end of a long evolution.

Design of the Great Courts

The main *access* at both Pylos and Tiryns was through propylaea, double and single columnar respectively. These command and regulate the approach to the courts. The positioning of the propylaeum at Mycenae some 50 m to the NW of the Court makes the approach there more circuitous and the effect in some ways less bold. Indeed Wace saw the main entrance to the Court as marked by the massive conglomerate threshold in the SW corner ('T' on Figure 8.1), as mentioned above. This would link the primary approach, via the Grand Staircase, with the lower extension to the citadel, and probably with the Cult Centre. The route from the Lion Gate evidently led through the propylaeum to the West Entrance to the South Corridor (45/40), then probably by way of a dog-leg passage to corridor 49 and thence into the Great Court (Figure 8.1: routes indicated by arrows; Iakovidis 1983: 57–60; Kilian 1987b: 103 underlines the uncertainties due to poor preservation). In all cases access was closely regulated; a double door closed the 2.86 m wide opening at Tiryns. The approach at Mycenae was particularly labyrinthine. In all three the entrances are deliberately off-axis to the megaron.

Neither at Mycenae nor at Pylos was the Great Court accessible to wheeled vehicles, and the same was probably true of Tiryns. The new evidence for a fortification wall at Pylos (Zangger *et al.* 1997: 606–13; Blackman 1998: 54–55) is probably to be linked with the early fortifications, and not relevant to the LH IIIB palace. Even so this most open of the Great Courts may be thought, like the others, to have stood at the centre of a sequence of protected entrances (cf. Wright's comment above; Blegen interpreted the collapsed masonry to the south-west of the propylaeum as the remains of a gate-way, see below). At each barrier, we may assume, entrance was ever more restricted. In all three cases there are minor, indirect ways into the Court, not to mention access from the Megaron itself, but these were subsidiary.

The *size* of the unroofed area of the Courts varies: Tiryns (approx. 15.2 × 20.3 = 308 m²),

very roughly twice the area of Mycenae (approx. 12 × 15 = 180 m²) and Pylos is just over half that again (7.3 × 12.9 = 97 m²). This range, combined with the evidence for restricted access, argues that their capacity was not the important consideration, but monumentality. In all cases the main *focus* is the megaron, which faces one as one enters the Court. Hirsch (1977: 45) has pointed out how the grid pattern of the painted floor at Mycenae would have had the effect of drawing the eye along the main axes of the square. There is evidence that ceremonial was conducted in the porch of the Megaron (see below) which also, of course,gave entrance to and from the centre of power. But the *orientation*, with the Court's longer axis at right angles to the megaron's, has the effect of crowding the view. The façades of the megara, two storeys high, must have measured a good

Figure 8.1 Plan of the palace at Mycenae (after Kilian 1987: 102 fig. 1).

eight–ten metres, and at no more than 11–15 m from the viewer would have towered above them. Again there was a conscious aim to overawe. The dominant, almost claustrophobic crowding of the viewer's perspective is confirmed by the 'isovista' of someone standing on the threshold at the entrance into the Court. The angle of view subtended from the façade of the megaron (anta to anta) is at Tiryns 30°, at Mycenae 45° and at Pylos 50°. Moore has observed that 'Visual perception changes at 18 degrees, when an object first takes on monumental nature, 27 degrees when it fills the viewer's range of vision, and 45 degrees at which details are visible' (Moore 1996: 100–101 and fig. 3.4, quoting Higuchi 1983). The fact that the Courts are oriented so as to more than fill the viewer's range of vision is no accident, but a deliberate psychological device on the part of the architects who designed the buildings.

The effect was intensified by the enclosed space. On entering the Court one's *perspective* was restricted, indeed Wace thought it strange that the magnificent views of the plain of Argos, visible today from the Great Court, should have been shut off in the Mycenaean period (Wace 1921–23: 189; 1949: 75; Mylonas 1966: 63–64; Iakovidis 1983: 60; even if one restores a balustrade to the south, the view is still effectively blocked by the Grand Staircase). The same applies to Tiryns and Pylos, one cannot look out from the court. Thus whilst modern sensibilities might require a room to have a view, the Great Courts are designed precisely not to have one. If one effect of enclosing the space by surrounding it with buildings was to reinforce focus on the main edifice, another was to make the square an arena overlooked by spectators, what I have termed *visibility*. The porticoes around the square can demarcate the space so that, on occasion, the onlookers standing within the colonnade view those in the open participating in any action. Mycenae is exceptional in having no portico, and probably no propylaeum. However, Wace pointed out that the indent in the north wall of the Court at Mycenae probably marked a window, looking from the adjoining corridor out onto the court. Indeed, on the basis of three conglomerate column bases, which had fallen into the court, he suggested that there may have been a gallery in or above the South Corridor (Kilian 1987b: 103 with n. 20 appears sceptical). This would effectively parallel the ground floor porticoes lining the Great Courts at Tiryns and Pylos. Indeed more generally he observed 'into it looked windows from the apartments and corridors on the west, north and east ...' (Wace 1921–23: 189). At Pylos, on Blegen's restoration, a gallery above the porch looked onto the Court (connecting on the interior with the balcony above the throne). This is entirely compatible with the iconographic evidence of Aegean art. Spectators, often women, are frequently shown looking down onto events as varied as the marine procession, in the Thera Ship Fresco, and the battle scene on the Silver Siege rhyton. They look out from windows, balconies and roof terraces.

In their *appointment* of the Great Courts the builders aimed at refinement. Wace had reason to praise the high quality of the cement which formed the floor at Mycenae and at Tiryns, whilst the stucco at Pylos consisted of four successive coats (Blegen *et al.* 1966: 64). At a late stage this was covered at Mycenae, all over by a layer of painted stucco, with decorative motifs set in squares bounded by red lines; the squares were coloured yellow, blue or red. Although preserved only by the north wall it is clear that the whole surface of the Court was thus painted (Wace 1921–23: 192–94). The grid pattern painted on the floor would have the effect of drawing the eye

along the main axes of the square (Hirsch 1977: 45). Similar painted floors were found in various rooms and corridors at Pylos, Tiryns and Mycenae, not least, of course, in the megara themselves; and outside the palaces only in the mansions at Gla. Moreover the fine ashlar masonry at Mycenae was plastered and painted with a rosette and triglyph design similar to the NE corner of the megaron porch, and reminiscent of the gypsum and glass relief from the porch at Tiryns (Müller 1930: 139–43). Blegen noted traces of plaster on poros blocks facing the court at Pylos (Blegen *et al.* 1966: 63, 65 the anta to the megaron painted). In these cases the refinements characteristic of the most important interiors were lavished on a courtyard. Certainly the floor fresco must have been even more subject to wear through weathering than those on interiors (note Rodenwaldt's observation that painted floors can hardly have had a long life (1912: 235 n. 2), and needed constant renewal). The altar in the Great Court at Tiryns is unique, and may go some way to explain the larger size of that square. However Papadimitriou noted the presence of an alabaster slab and low rounded altar in the porch of the Megaron at Mycenae, probably used for libations (Papadimitriou 1955: 230–31; Hägg 1990: 180; Shelmerdine 1997: 578).

Outer courts

The Forecourt at Tiryns is entered through the Great Propylaea (Figure 8.2: 3), whose width rivalled that of the megaron itself, and which marked a grand entrance into the palace precinct. Indeed the gateway evidently formed the major *focus* for one standing within the court, and the *orientation* was dictated less by the forecourt's (irregular) shape and more by the axis between the Lesser and Greater Propylaea, emphasized by the angled alignment of the latter (Figure 8.2: 2). Thus, although the court measures approximately 21 × 31 m maximum, the effect is rather of a processional way crossing the open space. The *perspective* from within this larger space may have been less claustrophobic than within the Great Court, and it is possible that on 'state occasions' people would congregate in the southern part of the square. On the other hand there is little to suggest that the square was overlooked by windows: evidently the north wall of 45 was blank, whilst the portico, 39, tucked away to the south of the Great Propylaea seems to be a minor feature, with no clear view. The Court quite probably served other functions, for the movement of goods into the palace stores and workshops. Indeed the single rooms set between the two Propylaea, and opening onto the Forecourt are reminiscent of Rooms 7 and 8 and Room 57 at Pylos. They may have served similar functions as guardroom and archive (though there are other possible candidates at Tiryns, such as the group of rooms 38).

Access into the Outer Court at Tiryns, as into all those we have considered thus far, was restricted, even if it did not form part of the palace proper (Müller 1930: 167). Although rather different in size (approximately 24.1 × 11.1 m), shape and arrangement the Outer Court is, in fact, similar to the Forecourt both in that the dominant *focus* was the Great Propylaea and because its orientation was essentially linear, following the processional way from the Propylaea to the defended entrance system. The exact restoration of its eastern side is far from certain (Müller 1930: 74). The portico normally suggested would have provided, as in the other courts, a sheltered area from which any procession would be visible. Evidently, the galleries were also reached from here, and produce to be stored in

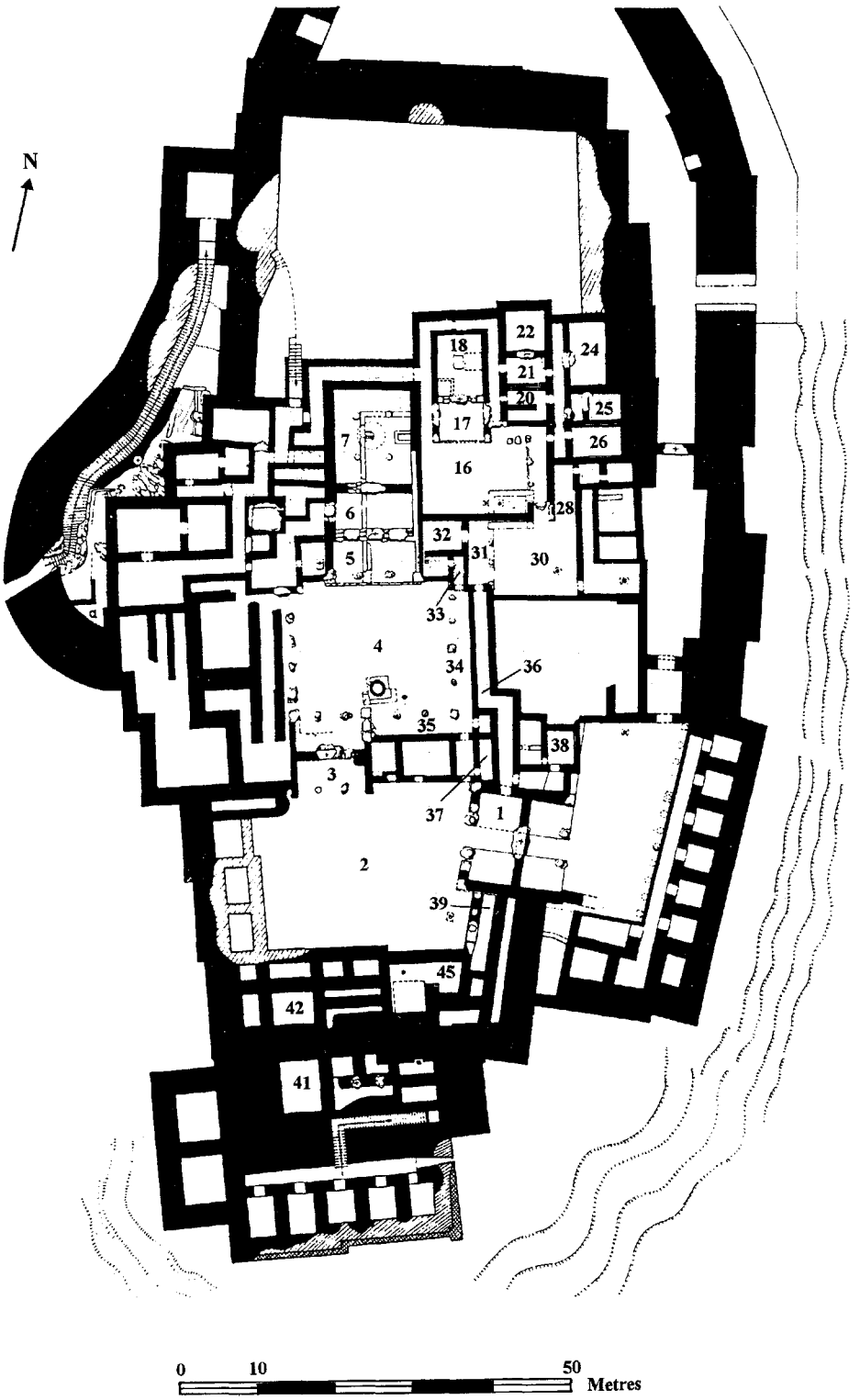

Figure 8.2 Plan of the palace at Tiryns (after Müller 1930).

them could have been unloaded in the court and manhandled down.

This combination of the ceremonial and the practical is also to be found at Pylos. Court 58 (the outer court: Figure 8.3, 58) was paved with plaster for a distance of at least 7 m (Blegen *et al.* 1966: 227–28). The ashlar façade and propylaeum of the palace would have certainly acted as a *focus*, whilst the poros foundation built onto the SW façade of the palace may have formed 'a rostrum ... or reviewing stand, where royalty could sit to observe ceremonies on gala occasions' (Blegen *et al.* 1966: 229; Figure 8.3 just above the caption 'Main Building'). Blegen also reports fragments of a circular marble table, half a meter in diameter and originally with inlaid decoration, found fused with the court's stucco floor, beside the sump which drained the court (*op. cit.* 229–30, figs. 217.4, 272.3–4). In terms of appointment it is tempting to identify this table as an altar and link it with the circular altar in the Great Court at Tiryns (also located by a drain) and with the altar in the porch to the megaron at Mycenae. Unfortunately the areas to the south and east of the palace were severely eroded, and consequently characteristics such as orientation, perspective and visibility cannot be analysed. Nevertheless Blegen found slight evidence for a colonnade to the south-west, and he suggested a mass of collapsed masonry to the south-east may have formed a gateway (Blegen *et al.* 1966: 228). Wright has put together a powerful case that a number of

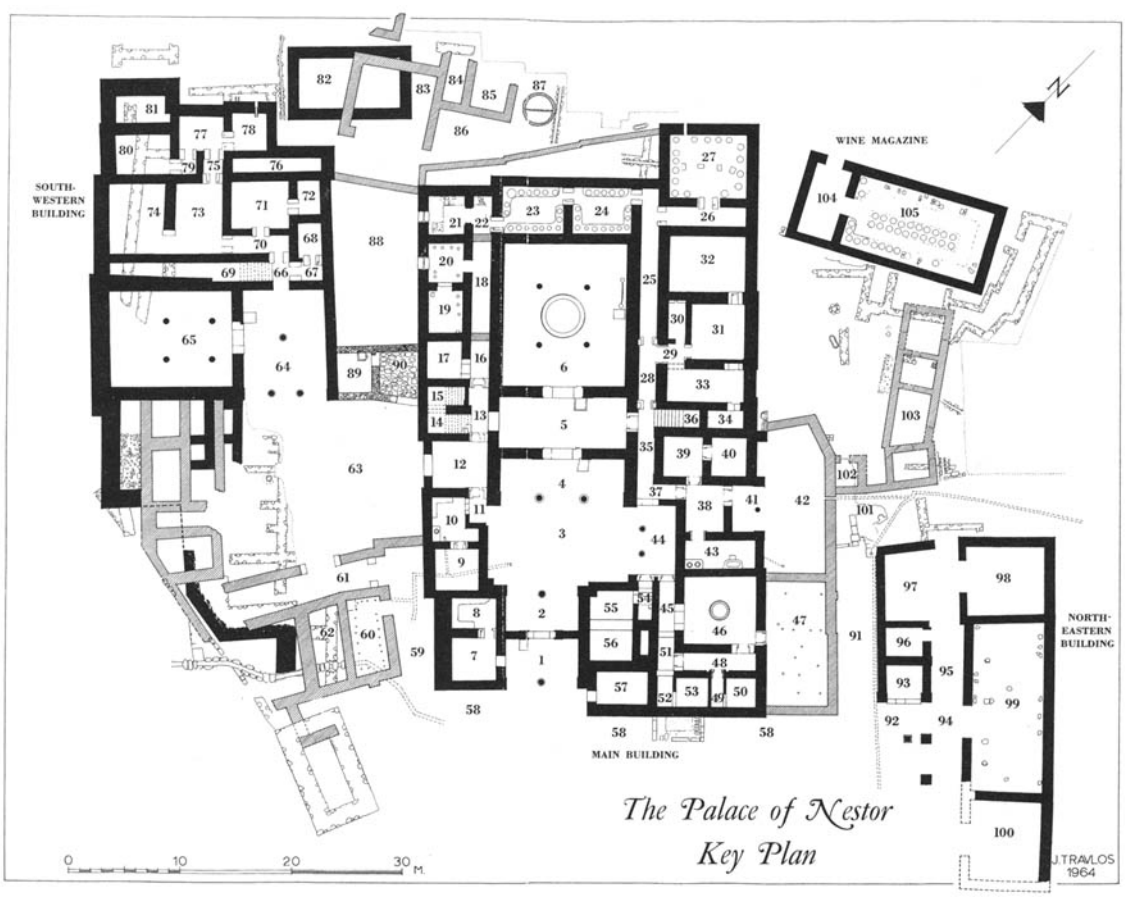

Figure 8.3 Plan of the palace at Pylos (after Blegen and Rawson 1966).

changes towards the end of the life of the palace at Pylos, increasingly closed off access (Wright 1984, though with an emphasis on economic rather than ceremonial reasons). The recent cleaning under F. Cooper, on behalf of the Minnesota Pylos Project, has revealed a monumental stepped entranceway, filling the south quadrant beyond the SW Building. This has two phases, the earlier had a flight of shallow broad stone steps, built of slabs. The later phase consisted of a stucco ramp and a more elaborate L-shaped stairway. The approach therefore was indirect and would involve a zig-zag course to reach the propylaeum (Blackman 1998: 55–56, figs. 78–79). A broad similarity with the outer court at Tiryns seems not implausible. In both cases the areas undoubtedly served ceremonial, as the care lavished on their appearance makes clear, and their articulation through a sequence of entrances suggests that the ceremonies were processional, with more static moments marked by the altars and 'reviewing stand'.

Lesser courts

Kilian has argued that the three following buildings are to be identified as the official residences of the Lawagetas: the Lesser Megaron at Tiryns, the South-West Building at Pylos and the House of Columns at Mycenae (Kilian 1987a). Dickinson has expressed reservations (1994: 154). Can an analysis of their courts, according to our criteria, shed light on their public aspect? Of course so restricted an inquiry passes over other very important considerations, but, as will be seen, the courts of these complexes do not show that degree of similarity we have found in the design of the Great Courts.

Court 16 at Tiryns almost mimics the Great Court nearby, but with significant differences. The north and south porticoes echo the *frontage* of the main court, its proportions (ratio of length to width: 9.2 × 13.5 m) give a similar *orientation* and its *size* (124 m^2) is not inconsiderable, though much smaller than the Great Court. Moreover the progression from Court 30 to Court 16 imitates that from 2 to 4. However, the main *access* is very different (following an indirect passage down the long, dark, winding corridor 36), and may argue that the public functions of the Great Court played no part in the role of Court 16. It has, if not a true propylaeum, a door set *in antis* (Müller 1930: 160); but the door gives onto the east portico, so that the *focus* of one entering the court is distracted from the megaron's façade by the portico's columns and ceiling. Once standing in the court one's *perspective* is, as usual, closed off; perhaps even more than the Great Court this is a space one looks into, rather than out from. The scaled-down symmetry is, therefore, probably a reflection of relative status rather than parallel function.

Our understanding of Court 63 at Pylos is complicated by the uncertainties surrounding the phasing in this part of the site, a question which is currently under investigation. The comments here are more than usually hostages to the fortunes of future research. The main hall complex (Rooms 64–65) together with Court 63 represent an original feature. Evidently, earlier buildings were demolished when the Hall and Court were laid out. In a later phase, after their construction, there were alterations and extensions: a staircase added to the NW side and a complex, including a room and a 2m terrace, apparently impinged onto what was originally a larger Court 63 to the SE (Blackman 1997: 50). Blegen's Key Plan marks the entry system into the court, defined by Rooms 60–62, with hatching, suggesting that this too was a secondary feature added after the original layout. The recent discovery of a multiphase staircase to the south and

evidently partly below Rooms 60–62, makes it even clearer that there is a long, complex history to development of this part of the site. It would appear that there was a period when *access* to Court 63 was more open, both from the south via the newly recognised staircase, and from the SE, from Court 58; though the superstructure of the staircase must still have enclosed the ramp up from Court 58. The indirect approach, via Ramp 59 and Corridor 61 seem to mark a reconstruction which aimed to enclose 63 and cut off any view from outside the Court of the open hall 64. Not quite as impenetrable as Court 16's at Tiryns, this indirect *access* is comparable. Unfortunately Rooms 89–90 (of Iron Age date) have obliterated any trace of the *frontage* to Court 63, but it would seem the Court although enclosed was not colonnaded. Thus, rather in contrast to Tiryns 16, the emphasis is less on *visibility*, those outside the court looking onto those within it. On the other hand the deep Hall 64 is the only *focus* from the Court, if not equally visible from all parts of it. The shape of 63 is irregular, and less clearly *oriented* than the others we have considered, but its *size*, approximately 225 m^2, is impressive, especially as Hall 64 can almost be added to it and 88 may well have been open too. The suggestion that the open space here was used for banqueting (Davis *et al.* 1998: 84), makes excellent sense of the context and lay-out of this area.

The House of Columns at Mycenae (Wace 1949: 91–97) presents us with even greater problems of interpretation because of its poor preservation. It is plain that the main doorway gives onto a dark passage which opens into the west colonnade. Again in some ways similar to the access to Tiryns 16. Wace restored a megaron on the north side of the central court, which places the main focus and orientation of the court out of sight to anyone entering. The court measures just over six metres by about seven and a half: a fraction of the size of the courts considered up to now. Thus the court of the House of Columns differs very considerably in approach and access, size, focus, orientation and appointment from the Great Courts. Evidently there were similar small courtyards in the southern part of the citadel at Tiryns (Müller 1930: 126, 'zwei in sich geschlossene Baugruppen lagen, von denen jede ihren eigenen Hof haben musste, also offenbar Wohnungen, und zwar gewiss von Leuten, die zur Hofhaltung gehörten.'). Domestic courtyards are, of course, not considered here, as we are interested in the public areas of palaces.

In brief, there are certain features which link Tiryns 16 and Pylos 63, particularly their large size, focus and (lack of) visibility, and are sufficient to suggest that the Tiryns court merits consideration as a candidate for a banqueting area. The House of Columns, on the other hand, does not meet the argument nearly so well, and to that extent fits Kilian's hypothesis linking the three buildings less effectively. It may be that the 'Lawagetas' House' at Mycenae was located on the brow of the acropolis hill, an area whose eroded and fragmentary remains still defy a definitive reconstruction (see, most recently, Kilian 1987b).

Grave Circle A

Even though Schliemann's enthusiasm for Paley's hypothesis was misplaced his instinct that this space was designed for gatherings is surely correct. Indeed Gates has recently revived the idea (1985, esp. 271–72; for reasons which will become apparent, I do not think it was a place of political assembly). Since Wace's pioneering analysis, the history of the Grave Circle has been made clearer thanks, in particular, to the work of Pelon (1976), Gates (1985) and Laffineur (1987, 1990). In almost every detail it differs markedly from the

Courts discussed above. Controlled through the Lion Gate, nevertheless *access* to the Grave Circle was more direct than to most of the other courts we have considered. On the other hand when the circle of slabs was first erected, in LH IIIB, there was no entrance at all (Gates 1985: 270, Laffineur (less certain) 1990: 202–203); and rather later in its history the way into the entrance was obstructed by an extension to the Granary. Inside the slabs it measures 25–26 m across (Pelon 1976: 117), so the Circle encloses roughly 500 m^2, in *size* larger than any of the Great Courts. Its perimeter was, probably, dictated by the original circle of graves (see the careful discussion in Laffineur 1987, though note the dissenting view of Gates 1985), but quite a large number of people could congregate there. Whilst, on the standard reconstruction, the grave stelai would have stood prominent within the Circle, they did not form a single *focus*, and the circular shape imposes no clear *orientation*, as even the entrance is not especially prominent. The *perspective* from within is much more open. Although we cannot be certain how high the cyclopean circuit wall reached, the fine view, so missed by Wace from the Great Court, could be enjoyed from Circle A. Ceremonial conducted inside Circle A was *visible* from the walls, the roof of the Granary, the Ramp and buildings beyond, but in a rather casual fashion in marked contrast with the 'arena' of the Great Court above. Evidence for the essentially cult usage of the Circle comes from the large numbers of phi and psi figurines found by Schliemann (1880: 129, cf. 71–74 and 88; cf. Wace 1921–23: 104–105).

Conclusions

This essay started with the hypothesis that open spaces within Mycenaean towns would act as places where those in command might exercise their authority, or at least make a show of their power in public. It is plain that the Mycenaeans were masters of the architecture of power (cf. Wright 1987). The Great Courts were the culmination of a tradition which saw its ever more sophisticated expression. But the Great Courts very emphatically were not public: access was carefully controlled and their capacity was limited. Certainly there was, in the citadels, a conscious articulation of the courts and open spaces, but one that was very different from that found in, say, the Central Courts and the West Courts of Minoan Crete. In both cases there was a hierarchy, the peak of which is the palace itself. In the case of the Mycenaean palaces the megaron lay at the centre, the hub of political power, and the place where the business of state was formally conducted, before a very restricted audience. Thereafter one seems to pass through a series of concentric circles. Certain, at least ceremonial, activities would take place in the only slightly larger arena of the Great Courts: to judge from the altar at Tiryns, this might include sacrifice. Beyond this, in the outer courts at Tiryns and Pylos access was still controlled, but less strictly than in the inner circles. Evidently economic transactions, the storage of produce and craft activities would also be found in these areas. Whereas the more ceremonial aspects of royal power seem to have concentrated on a processional progress, rather than a static display. Such an interpretation is suggested in the first place by the focus, for example at Tiryns, on the gateways which regularly mark the route of the processional way. In the second place this argument helps explain the exception of Mycenae, where forecourts such as those at Pylos and Tiryns, have not been located. At Mycenae the two functions, the processional and the redistributive, were separated. Storage areas (for example the Granary, by the Lion Gate, and the magazines by the Postern Gate) and

craft areas (such as the workshops to the west of the House of Columns Iakovidis 1983: 63–64) were distributed in various parts of the site. The ceremonial progress from the Great Court proceeded either by way of the Grand Staircase to, among other destinations, the Cult Centre, or, by way of the Propylaeum ultimately to the Ramp and the Lion Gate (Wace 1921–23: 209–13).

The search for a public meeting place, where populace and rulers might come together, has failed. Almost certainly future research holds surprises for us, and in particular the very imprecise picture we have of the 'lower towns' associated with the great citadels leaves great scope to find important squares or other public places. Nevertheless I would like to hazard a view which suggests an alternative interpretation. What has come through very clearly from this discussion is the emphasis and focus on procession. In particular, as Wright has already pointed out, the series of monumental gateways, which form such a marked sequence through the Mycenaean palatial complexes, seem to give a rhythm and emphasis to the progress from Megaron to the outer world (and vice versa). Procession is also a constantly repeated theme in Mycenaean wall painting, indeed Immerwahr has identified the procession of all female votaries or priestesses as a Mycenaean innovation, distinct from the Minoan, and reflecting a change of religious emphasis (Immerwahr 1990: 114–5). Likewise Shelmerdine has recently underlined the procession as an important aspect of Mycenaean religious observance (Shelmerdine 1997: 577–80). At times procession on the walls seems to accompany the processional way, at least there is a notable example from the vestibule to the megaron at Pylos (more generally on this see McCallum 1987 (non vidi)). There were processions on foot and there were processions by chariot, to judge from the female charioteers in the Tiryns Boar hunt, and the frequent chariot scenes on pictorial kraters, whose iconography was probably borrowed from wall painting. Crouwel has written 'Unlike the wall paintings from mainland Greece, the numerous Mycenaean vases with Dual chariots rarely, if ever, show the vehicles in a military setting. From their earliest, relatively accurately drawn, representations onwards the chariots are usually depicted as taking part in processions of some kind, moving slowly and often accompanied by human figures on foot' (Crouwel 1981: 133, see also 135–39 on the civil uses of dual chariots, and 142 on civil uses of Rail chariots and chariot racing).

Moreover, one thing we can say about the lower town at Mycenae is that it was traversed by built roadways, which then continued out into the surrounding countryside (for a collection of recent references see Appendix 2). It has been argued traditionally that the roads were constructed for chariots (Crouwel 1981: 29–31 summarizes earlier views; see also Jansen 1997 5–8 for a discussion of the military theory), but whilst one purpose might be military, they could also have served other purposes: Lavery (1990: 1995) and Jansen (1997) have pointed to their importance for the movement of grain, in particular, and of building materials, and here I wish to point up their significance for processions. Jansen has, in a similar vein, suggested that the network of roads from Mycenae acted as a sign of the political reach of the citadel. Great monuments, such as the Lion Gate and the Treasury of Atreus, look onto the major routes and would themselves have formed points on a route where the populace could gather. I should not wish to build an edifice of inference beyond what the evidence can bear. If, however, the procession and the royal progress are accepted as an important, perhaps the important way in which rulers and ruled came together in Bronze Age Greece,

then we should underline how different this is from the Homeric examples cited at the beginning. In the Homeric ἀγορή the assembly of people participate in political actions, to approve a 'straight' judgement, or to witness recompense and political reconciliation. The procession does not lend itself to such acts. On the contrary it polarizes even more markedly the two sides: those who process and those who look on. In this I would suggest it expresses the hierarchical nature of the Mycenaean state. Of course, like all such public manifestations of power, the theory need not coincide with the reality. The elite who processed were probably not the single united body behind their leader that their participation was meant to convey (I write as one who has taken part in processions of academics). And the people could barrack as well as cheer.

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9

Not the Palace of Nestor: The Development of the 'Lower Town' and Other Non-Palatial Settlements in LBA Messenia

John Bennet and Cynthia W. Shelmerdine

The goal of this contribution is to summarize recent work by the Pylos Regional Archaeological Project (PRAP) in the vicinity – both immediate and further afield – of the Bronze Age palatial centre at Ano Englianos, commonly referred to as the 'Palace of Nestor' (Davis *et al.* 1997; Zangger *et al.* 1997 [extensive preliminary reports]; Davis *et al.* 1999; Davis 1998). The first section explores the 'suburban' archaeology of the site, charting the growth of the so-called Lower Town around the central palatial structures themselves. The second section draws comparisons with the growth of nearby settlements, suggesting possible implications for relations between these sites and that of Ano Englianos. Because much of our discussion has appeared elsewhere, we have restricted it to a minimum.

Bronze Age Pylos

The Englianos ridge was one of the prime targets of PRAP's programme of prehistoric research in the area. Our major goal was to elucidate from surface remains the extent of the Late Bronze Age 'town' that was known to exist around the palatial structures (e.g. Blegen *et al.* 1973: 3–68). The area was tract-walked in 1992 to determine the extent of the densest material, while in 1993 and 1994 total artefact collections were made in 468 20-m grid squares over the area of highest density (Davis *et al.* 1997: 403–404, 427–30). From the study (chiefly by Cynthia Shelmerdine and Sharon Stocker) of the over 35,000 ceramics collected we were able to chart the site's expansion through time (Davis *et al.* 1997: 429, fig. 12; Bennet 1999: 12, fig. 2.3).

There was virtually no Early Bronze Age material in the immediate vicinity of the palace. Indeed the earliest material on the Englianos ridge seems to have been confined to the Deriziotis Aloni site that belongs to the latest phase of the Early Helladic (EH) (Blegen *et al.* 1973: 219–24; Stocker 1995). Within the Middle Helladic (MH), the site expanded considerably, reaching a maximum size in terms of the presence of diagnostic MH material within collection units of 5.48ha. By Late Helladic (LH) I-II, the early Mycenaean phase, datable material was present over 7.08ha. Within the following LHIII phase, we ran into some difficulties in narrow chronological definition. Definitively LHIIIA material was distributed over 2.36ha; definitively LH IIIB material over 4.6ha. Although this might give the impression of a decrease in size in these periods, in fact material that could be defined generally as LHIII (and therefore likely to contain both LHIIIA and IIIB) extended over 12.4ha, a significantly larger area than that of the LHI-II period. On this basis, we suggest that the total area of the site in LHIIIB, including the

palatial structures themselves (c. 2ha) was perhaps 14–15ha.

We are constantly reminded that 'size matters' but, in attempting to understand the expansion of a complex site like that at Ano Englianos, structure is perhaps more significant. It is easy to view the changes in size documented by PRAP from the point of view of the end product, the final palace and town. In such interpretations, growth is constructed teleologically towards this end, the inevitable progress of Bronze Age Pylos to become the largest site in Late Bronze Age southwest Messenia.

We would like to make three points in relation to such a 'story'. Firstly, the overall site represented by the densest surface material does not merely comprise undifferentiated habitation, but contains an important sequence of burial structures that were situated in different locations relative to the settlement centre in different periods (Bennet 1999: 13, fig. 2.4). These are the so-called 'Grave Circle' constructed in late MH to the southwest of the area of the later palace centre; Tholos IV constructed in early LH I (perhaps one to two generations later) to the northeast; and Tholos III constructed in LHII nearly a km distant along (i.e. to the southwest) the Englianos ridgetop at a location called Kato Englianos.

Secondly, a wall was constructed around the highest point of the citadel, apparently in late MH/early LHI, with its gateway aligned on Tholos IV, implying a relationship between whatever the wall encircled and the tomb at roughly the same time (Blegen *et al.* 1973: 4–18). Between the wall and the tomb, it appears, was open space (Blegen *et al.* 1973: 64–68; Zangger *et al.* 1997: 604–605), perhaps a plaza of sorts, associated with funerary display when the tomb was in use. It is possible that PRAP has traced the wall further, if it is represented by a geophysical anomaly to the southwest of the palace structures (Zangger *et al.* 1997: 606–13, esp. fig. 40).

Thirdly, because we know (or think we know) that Bronze Age Pylos ended up as the centre of political and economic power in the area, we tend to take its earlier development for granted. It is worth reminding ourselves, first of all, that the overall site has a long and complex history. Even the central palatial structures changed substantially from early to late LHIIIB, with perhaps three phases (Shelmerdine 1997: 545, summarizing recent investigations by F.A. Cooper and M.C. Nelson). These were not just changes in form, but also in approach (Wright 1984: figs. 1 and 2; cf. Davis and Bennet 1999: 110). Similarly, the direction of approach to the site might have changed, as the overall topography and the discovery of a monumental stairway to the SW building suggest (Blackman 1997–98: 56, fig. 79). In addition, areas changed function through time. It seems, for example, that the 'Grave Circle' went out of use early and may have been overrun by settlement, unlike the monumentalized open space in front of Tholos IV. Perhaps the construction of Tholos III at some distance from the palace was prompted as settlement grew still further, although it may also have facilitated funerary display, now focused on the palatial elite, for whom, it seems, the tholos was the exclusive preserve by LHII.

Pylos and its Neighbours

We should also bear in mind that, at the end of MH, Bronze Age Pylos was one of a number of communities of roughly comparable size. Two other PRAP sites in particular offer an instructive comparison with each other and with Pylos itself (see also Bennet 1999: 13–17; Shelmerdine 2001). After Bronze Age Pylos, Koryfasio *Beylerbey* (I1) and Gargaliani

Ordines (K1) are the two most substantial sites in the PRAP study area. In LHI-II, Pylos was already the largest in area of the PRAP sites, but it was just one of several substantial communities in western Messenia. The growing success of these early Mycenaean powers is measurable in several ways, such as settlement expansion, the construction of elite tombs, and a marked increase from MH in the amount of datable pottery (Bennet 1999; Shelmerdine 2001).

Table 9.1 PRAP statistics for Pylos, Beylerbey and Ordines (after Bennet 1999; Shelmerdine 2001)

Site				**Area in ha**
	EH	*MH*	*LHI-II*	*LHIII*
Pylos		5.48	7.08	12–14
Beylerbey		1.64	3.32	3.52
Ordines		0.6	0.92	2.1
Site				**Datable potsherds**
	EH	*MH*	*LHI-II*	*LHIII*
Pylos	33	671	2251	8052
Beylerbey	5	98	656	266
Ordines	12	33	95	152
Site				**Potsherds per ha**
	EH	*MH*	*LHI-II*	*LHIII*
Pylos		122.5	288.6	575.6
Beylerbey		59.8	197.6	75.6
Ordines		55	103.3	72.4

At both Pylos and Koryfasio *Beylerbey* (PRAP site I1), the presence of a noticeable amount of MHIII and LHI ceramics indicates the timing of this growth spurt more precisely than at other sites within the PRAP study region. A tholos tomb was constructed at the same time (late MH) at each site, the earliest examples in Greece of this new elite monumental tomb form. The one at Pylos is the so-called 'Grave Circle' (Blegen *et al.* 1973: 134–76), while Beylerbey is probably to be associated with the Osmanaga tholos tomb (Hope Simpson and Dickinson 1979: 130–31 [D5]; Lolos 1987: 172–78). Fine and coarse ware ceramics are of comparable number and quality at the two sites, adding to the impression that they were both full and flourishing settlements, though Beylerbey is perhaps only half the size of Pylos (3.32ha) by LHI-II (Bennet 1999: 14). The LHI-II pottery at Beylerbey is concentrated in the centre and northeast parts of the site, as the MH material had been. Because of the difficulty in distinguishing early Mycenaean from Mycenaean coarse wares, however, it is not possible to be clear about the relative proportion or placement of these during early Mycenaean.

In the LHIII period Beylerbey grows little in area, but the amount of pottery decreases by nearly two-thirds. It is also diffused over a larger area of the site, though still predominantly across the center. Other finds are few and help little in defining the nature of the settlement. Twenty nine chert and eight obsidian lithic artefacts were scattered around much of the site, particularly in the east-central part where LHI-II and LHIII ceramics predominate, but, as surface finds, few could be dated. A human figurine fragment (SF 0018: Davis *et al.* 1997: 453) and a sealstone of Younger's Mainland Popular Group (SF 0091: Davis *et al.* 1997: 453, pl. 90f) are certainly LH IIIA-B, and a grinding stone and a spindle whorl/dress weight (Davis *et al.* 1997: 446, fig. 16: 6, 453) complete the MH-LH picture. The decrease in pottery from LHI-II to LHIII is a notable feature of the site's history. One can argue that it suggests a diminution of the settlement's importance, perhaps reflecting its demotion from competing power to second-order center, after Pylos emerged as the dominant center of the region, as it appears to have done in LHIIIA. Despite its apparent diminution in the LHIII period, Beylerbey remains the only site known in this vicinity with a comparable presence to that of Bronze Age Pylos. This

fact, along with its geographical position south of Pylos and its coastal perspective, suggests that it could be the location of *a-ke-re-wa*, a taxation center and coastal lookout point attested in the Pylos tablets (Davis *et al.* 1997: 424–27, fig. 11). As noted above, such a guess depends on whether size does matter. It seems likely that it does, and also that higher concentrations of finds go along with higher degrees of importance. The usual *caveat* must however apply, that assumptions based only on surface material can carry only limited weight (cf. Zangger *et al.* 1997: 575–76).

Another site with a different but equally interesting history in relation to Pylos is Gargaliani *Ordines* (PRAP site K1), which lies a little way inland from the coast on the high southern edge of the Langouvardos River gorge (e.g. Bennet 1999: 11, fig. 2.2). This is the only site within PRAP's study region apart from Pylos itself to exhibit steady growth from Neolithic/EH to LHIII. It is also the only known Mycenaean site north of the palace with a coastal view. Ordines is always much smaller than Beylerbey, covering 0.92ha in the early Mycenaean period and doubling to 2.1ha in the Mycenaean period (Bennet 1999: 16–17). LHI-II pottery is found all over the site, while in the LHIII period the heavier concentrations are in the southern part. Lithics are numerous (69 chert, 11 obsidian, 1 quartz), especially in the northern part, with a heavy cluster of obsidian and especially chert in the northwest sector. Six MH-LH grinding stones (saddle querns) were found in the south-central part of the site, two at least of LH date (Davis *et al.* 1997: 453). The only other Bronze Age find is a LH IIIA-B clay spindle whorl or dress weight. The prominence and strategic location of this site are unmatched in this vicinity, and it is a good candidate for the taxation center *pe-to-no* in the northern part of the Hither Province (Davis *et al.* 1997: 424–27, fig. 11).

Implications from Textual Evidence

Despite their discrepancies in area, Pylos, Ordines and Beylerbey are the only PRAP sites where numbers of potsherds are in triple digits during the Mycenaean period; other sites became or remained smaller still, and those immediately to the east of Mt. Aigaleon, which we have followed Chadwick in recognizing as the provincial boundary of the polity, are virtually abandoned in this period (Davis *et al.* 1997: 423–24). If the identifications of Ordines and Beylerbey with taxation centres are valid, one could speculate that Pylos, as the controlling administrative authority, was able to encourage certain sites to flourish at the expense of others. The incentive would be to create a Network of Preferred Providers, as American insurance companies call it, a network we see in the tablets as the nine 'taxation centres' of the so-called Hither Province. The continuing growth of Ordines might indicate that it was one of the settlements that emerged in the Mycenaean period as beneficiaries of the palatial administrative system. Beylerbey, though larger than Ordines in area, is reduced to a comparable density of ceramics per ha. This too could have been a direct result of the concentration of authority at Pylos, and perhaps even a desire on the part of the centre to limit the strength of its former competitor and current subordinate.

An important implication of this view of sites as 'taxation centres' is that the references on Linear B documents, particularly to the nine places of the Hither Province, are not to districts, but to place-names representative of districts. It is tempting to see these as the chief settlements within the Pylos polity. However, if we look behind the specific documentary mentions, then some inconsistencies emerge. In the first instance, not all such place-names are of equal status. Some, notably in the Further Province list of seven or eight places

appear to be explicitly district rather than settlement names (e.g. *a-te-re-wi-ja*, '*Atrewia*', 'the land of Atreus': PY Ma 244 [see Ruipérez and Melena 1990: 115; Melena 1994–95: 274]). Equally, some names appear to be interchangeable, as in the case of *ro-u-so* (PY Jn 829.10) which alternates with *e-ra-to* (PY Cn 608.9; Vn 20.9), or the name **e-ro* (PY Jn 829.19) which is apparently 'replaced' by the district names *a-te-re-wi-ja* (Ma 244) and *e-sa-re-wi-ja* – also based on a name, either a title or a personal name (Ma 330). More significantly, those texts that deal with 'taxation centres' deal only with a selective range of commodities, no doubt those generally available across the polity and not subject to micro-regional variation, notably in the standard suite of commodities, including a basic cloth type (**146*) and animal skins (**152*), assessed in the Ma tax documents.

It is interesting to compare the mentions made of some place-names in contexts beyond their listing in the standard range of assessment or contribution texts. The 'residue' of references are not equivalent and might tell us something about different functions or different relationships between them and the palatial centre. For example, *pe-to-no* only occurs in assessment or contribution texts, while *a-ke-re-wa* enjoys a range of additional mentions (including personnel, land, and livestock). One can argue that these references are consistent with the identifications suggested above relating to the sites of Ordines and Beylerbey: Ordines (if it is Linear B *pe-to-no*) appears to acquire significance only within the LHIII period, whereas Beylerbey (if it is Linear B *a-ke-re-wa*) appears to have a more complex history and therefore relationship with the palatial centre. A similarly complicated situation appears to arise in the case of the place-name *pa-ki-ja-ne*, clearly an important cult centre, probably close to the palace, perhaps in the vicinity of Hora *Volimidia* (e.g. Chadwick 1972: 109), but also a 'taxation centre' in the assessment and contribution texts. It is also not clear that 'taxation centres' are always significant settlements. For example, in the case of one such place-name, *ro-u-so*, we have the document that gives the total assessment for its district (PY Ma 365) and another giving the breakdown of contributions of the type of cloth denoted by the logogram **146* for it and the eight other place-names in its district (PY Mn 456: Killen 1996). *ro-u-so* contributes a smaller amount of **146* than others within its area, something that goes against our expectations, if such 'taxation centres' are major places within their districts. We should note, however, that *ro-u-so* clearly has an importance in the palace-organized manufacture of textiles from its mention in the Pylos Aa / Ad records, which suggest a female workforce of 86, second only to Pylos itself in the Hither Province (Chadwick 1988: 85).

If we are reading the variation in archaeological prominence of sites correctly, then the shifting pattern of relations with the centre that it implies and the possibility suggested by the Linear B data that sites of apparently lesser status become the focal points for tax collection, then a possible implication is that relations between the centre at Englianos and other sites were mediated through individuals. These would either be anonymous officials (such as the *ko-re-te* and *po-ro-ko-re-te* explicitly identified as responsible for acquiring the bronze mobilized in PY Jn 829) or named members of the elite. In this interpretation, therefore, Pylian expansion would be less about bounded territorial gain than about the negotiation of relations with key individuals at sites that came to have a strategic importance in the centre's strategy of mobilizing commodities to support its political economy.

In the broader context of urbanism in the Aegean Bronze Age, we hope to have

suggested ways in which detailed archaeological data can be brought into dialogue with textual data to outline the overall development of power relations among settlements through time in the Pylos region. Just as it seems that not all sites within the LHIIIB Pylian polity had identical histories, we would like to suggest that comparative research into the particular histories of other regions dominated by Mycenaean centres might well reveal differences that have implications for our conception of the Mycenaean world as a unity.

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10

'Under the Sceptre of Agamemnon': The View from the Hinterlands of Mycenae

John F. Cherry and Jack L. Davis

Among Aegean prehistorians, there has been a long-term interest in urbanism that seems to be traceable to the impact of Gordon Childe's writings concerning the 'urban revolution' in the Near East, and to the corollary belief that comparable processes of urbanization must have been part and parcel of the rise of complex societies in the Aegean. We are hesitant to apply the term 'urban' or even 'proto-urban' to any place, at any period of Aegean prehistory (except, perhaps, in Crete). The point has been made often enough before: but size does matter, and questions of scale are significant. Even if the calculations require substantial recalibration (see Branigan and Whitelaw, this volume), one of the most striking illustrations in Renfrew's *The Emergence of Civilisation* (1972: 236–44, fig. 14.8) still retains much of its force—the one displaying plans of some of the most important Minoan and Mycenaean sites alongside their Near Eastern counterparts, showing that many are tiny by comparison, and some even of a different order of magnitude altogether. The word 'urban' conjures up for the modern reader a set of notions and preconceptions that are largely irrelevant or inappropriate for many ancient world contexts, with the result that there is often something of a semantic mismatch between conceptual terminology and empirical data (e.g. for Aegean prehistory, Konsola 1984; Hägg and Konsola 1986; Cosmopoulos 1998).

In a volume devoted to urbanism in the Aegean Bronze Age, then, of what relevance is the present paper about the countryside and, specifically, the rural hinterlands of Mycenae? Anthony Snodgrass provided the justification, in his closing remarks to the 1992 Corfu conference on Rural Structures and Ancient Societies. He wrote, 'I think it is a point that cannot be stressed too much that the word rural is meaningless except in the context of an urban counterpart. There is no such thing as rural settlement until there is urban settlement. The two are logically counterposed' (Snodgrass 1994: 483). Turning this around, it is difficult to see how one can study urbanism as a phenomenon, without taking on board the disposition of population, settlements, and resources within the wider region that helped sustain such highest-order central places, and over which they presumably exercised some measure of political authority.

This paper, thus, concerns the Argolid in the Mycenaean era; and its focus is not the site of Mycenae itself (whether or not we choose to apply to it the term urban), but rather some of the lands which—in Schliemann's (1878: 28) memorable phrase—probably lay 'under the sceptre of Agamemnon'. In this regard, there is an obvious, but nonetheless useful distinction to be drawn between three distinct spatial frames of reference:

(1) Study of the central place itself (i.e. the nature, size and functions of Bronze Age towns).
(2) Study of the peri-urban, peripheral, outer zones, or suburbs.
(3) Study of the urban centre's rural hinterlands (which might well shade off into exploitable territory beyond its direct political control, as with the *eschatia* on the fringes of the *chora* of a colonial Greek city).

In the case of Mycenae, the first of these has been the primary focus for investigations since the 1870s. It could fairly be claimed that we now have a reasonably sound understanding of the site's development and internal organization, if not necessarily of all its functions—let alone how it was experienced by those who ruled or resided or worked there, or who visited it from elsewhere, or what it symbolized (for provocative suggestions about these latter aspects, see especially Wright 1987).

Whether the Cyclopean fortification walls bounding the citadel represent the most appropriate division between the core and peri-urban areas is not clear, but this is a question on which some light may be shed by the as-yet-unpublished Mycenae Survey, begun in 1991 by Elizabeth French with Spiros Iakovides, under the aegis of the Athens Archaeological Society. This was not a survey in the usual sense of the word, but rather a detailed, computer-based sites-and-monuments record within the 'Greater Mycenae' core area, resulting in the precise mapping of both old and hitherto unrecorded cultural features—over 200 tombs, many hundreds of other structures, traces of roads, quarries, etc. (for preliminary accounts, see French 1992: 16–17; 1993: 18; 1994: 16; Tomlinson 1995: 12). This work was avowedly an attempt to produce a cyber-age version of Steffen's renowned map of the Mycenae area more than a century ago (Steffen 1884), and it will be invaluable in much the same way that the Knossos Area Survey helped fill out the urban and peri-urban context of the palatial structures at its core (Hood and Smyth 1981). So far as we are aware, however, no detailed and systematic counting, collection or mapping of the density and distribution of artefacts of different dates was attempted as part of the Mycenae Survey, which seems to us a missed opportunity, considering the success of large-site surveys of this sort in other recent projects, notably in Boeotia (Bintliff and Snodgrass 1988; Snodgrass and Bintliff 1991), the Corinthia (Alcock 1991), the Cyclades (Cherry *et al.* 1991: 199–216, 265–84), and Crete (MacGillivray and Sackett 1984; Moody *et al.* 1998; Whitley *et al.* 1999). Thus it is at present only in Messenia, from new work undertaken around the Palace of Nestor and along the Englianos ridge (Davis *et al.* 1997: 427–30, fig. 12; Bennet 1999; Bennet and Shelmerdine, this volume), that we have any possibility of assessing changes in the size or nature of the community at a site which developed later in Mycenaean times as a central place with a palace.

An interesting aspect of the Mycenae Survey has been the renewed attention paid to the surviving (but fast disappearing) traces of the system of several roads which provided the essential link between the citadel and the adjacent built-up areas on the one hand, and on the other the open country of its sustaining rural hinterlands (Figure 10.1). There are significant differences between the maps of this road network as proposed by Mylonas (1966: 86–87), Hope Simpson (1981: 15–17, fig. 2, pls. 2b, 6), Lavery (1990), and Jansen (1994; 1997), and we must also take account of the re-survey of the roads that run through parts of the area studied by the Berbati-Limnes Survey (Wells 1996: 130–33, figs. 4–10; Wells *et al.*

1993: 57); Crouwel (1981: 29 n. 5) surveys Late Bronze Age roads that are known in a number of other areas of Greece. Three of the four routes for which well-documented traces survive, especially within the peri-urban zone close in to Mycenae itself, lead to the north—presumably heading for various points in the southern Corinthia. One, in particular—Jansen's Highway 3—originating at the Lion Gate, runs directly north along the western flank of Mt. Profitis Elias, using Cyclopean bridges to cross a number of ravines, before descending into the upper reaches of the Argive Plain, thus leading into the Tretos and Kelossa passes, which provide access to the Phliasian Plain, and the Nemea and Kleonai valleys (Jansen 1997: 4, map 1).

This area north of Mycenae has always seemed rather empty of traces of Mycenaean settlement (Figure 10.2). One very striking feature is the total absence of tholos tombs and other built graves in this area, both in Early Mycenaean times and at the acme of Mycenaean power in LH IIIA-B; even chamber tombs are scarce (Cavanagh and Mee 1998: figs. 5.1, 5.2, 6.1, 6.2, 6.3). Extensive-

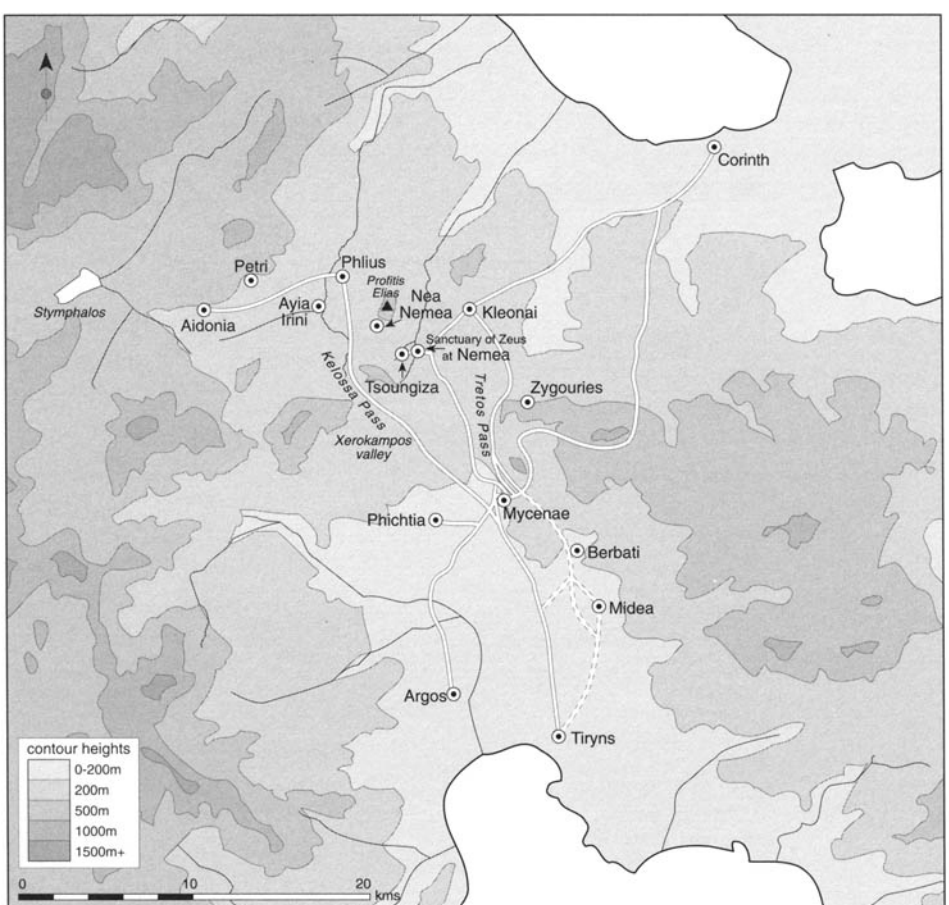

Figure 10.1 Argolid and Corinthia with major sites and reconstructed courses of Mycenaean roads; dashed lines indicate roads in use before LH IIIB, solid lines roads in use in LH IIIB and LH IIIB/C. (Drawing by Rosemary J. Robertson; course of roads after Lavery 1990; 1995.)

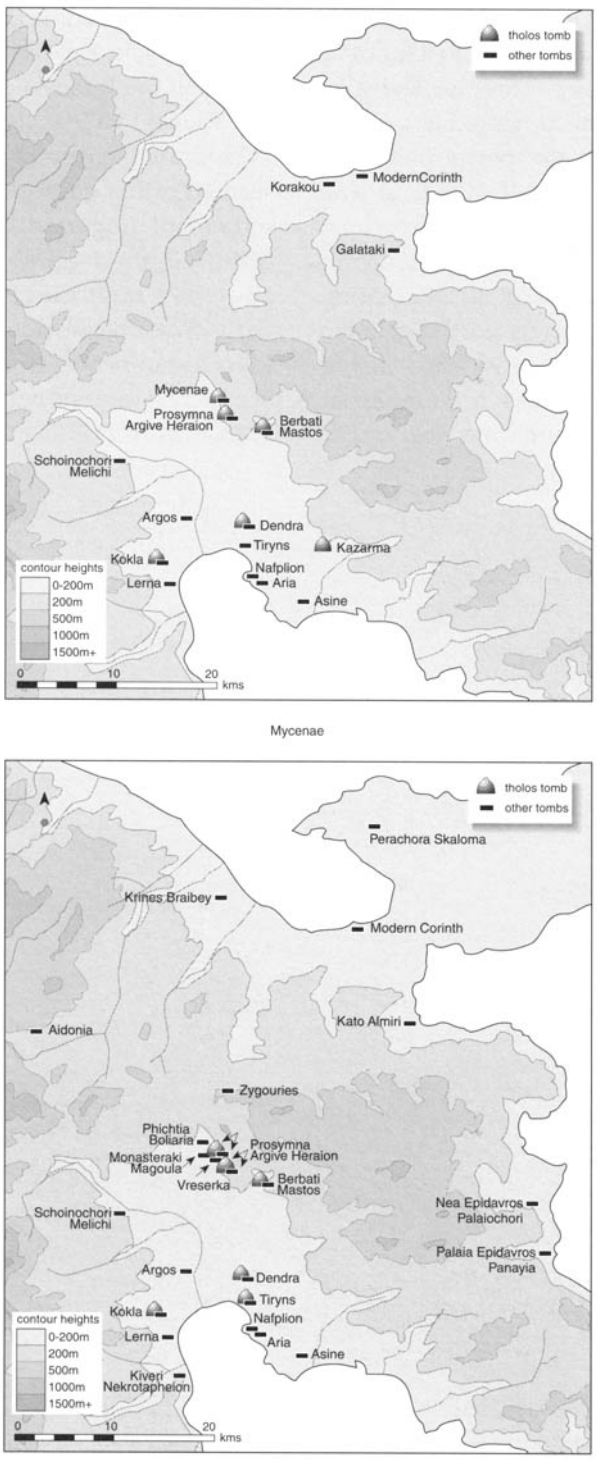

Figure 10.2 Tombs in the Argolid and Corinthia in the early Mycenaean period (top) and LH IIIA/B period (bottom). (Drawing by Rosemary J. Robertson; data for burials from Cavanagh and Mee 1998.)

style reconnaissance throughout the Corinthia in the 1960s and 1970s turned up very little (Wiseman 1978). Zygouries, in the valley of Kleonai, about 7 km north-northwest of Mycenae, is a well-known site, but it is no Mycenae (Blegen 1928). What was going on in these northern hinterlands—which Bintliff, for one, thinks fell squarely under the political authority of Mycenae (Bintliff 1977: 91–93, fig. 15B; cf. Hope Simpson and Dickinson 1979: maps 3, 4, A)? Might we not expect to be able to monitor the process of the formation of the kingdom centred on Mycenae also in its rural hinterlands? Surely, the reverberations of Mycenaean power would be felt in the countryside too?

One ambition of the Nemea Valley Archaeological Project (NVAP), which took place between 1983 and 1989, was precisely to conduct an intensive survey which could provide information on the size, density, nature, and distribution of both early and developed Mycenaean settlement for one strategically located valley system near Mycenae (Figure 10.3). In fact, the southern boundary of the survey area lies at the edge of the Argive Plain, on the very doorstep of Mycenae, only c. 4 km further to the southeast. Yet within this region of some 85 sq km Hope Simpson and Dickinson reported in their gazetteer only two Late Bronze Age sites (1979: 67–68, sites A70 and A71) —Tsoungiza (since re-excavated by NVAP: see Wright *et al.* 1990: 618–38) and Phlius (with just a single kylix stem and a steatite whorl); a third site (A72, Agia Irini), which has some material of late MH/early LH date, lies just outside the survey area, on the east-

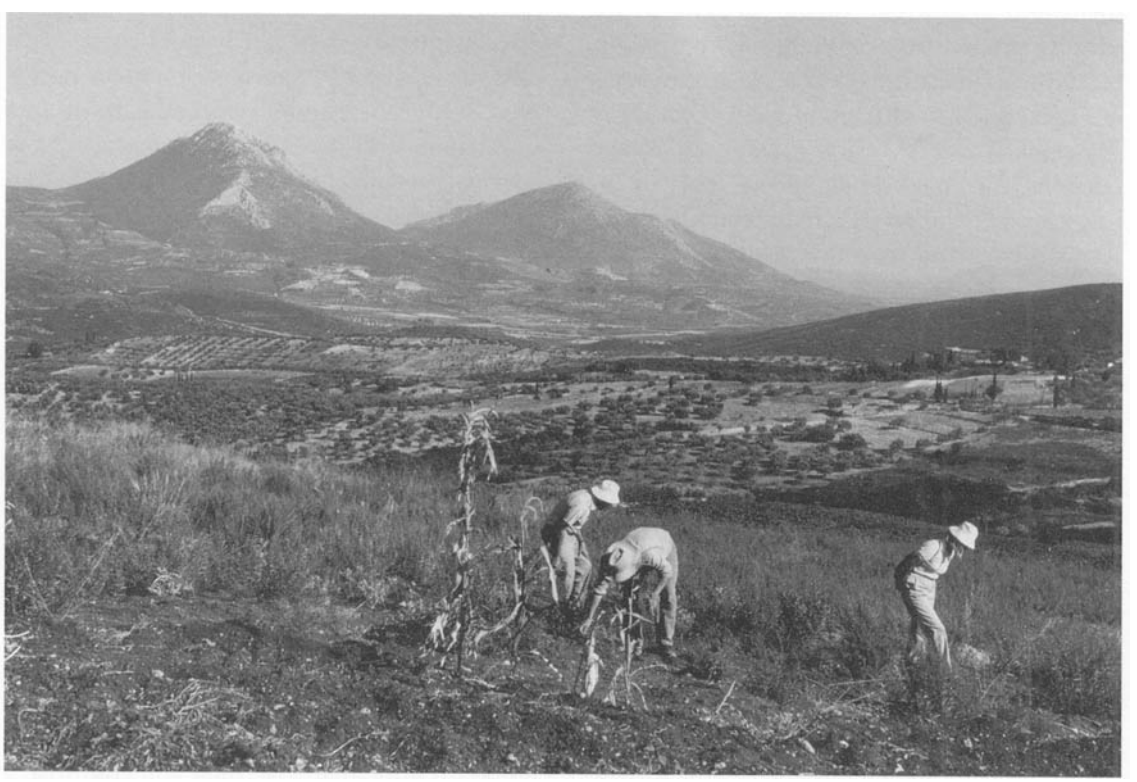

Figure 10.3 A view towards Mycenae from near the southern boundary of the NVAP survey area.

ern edge of the Phliasian Plain. The only other Mycenaean material previously known in this region is that from Stephen Miller's excavations in the Sanctuary of Zeus at Nemea, although in no place has a pure Mycenaean stratum yet been encountered there (Klein 1987). The Nemea survey has filled out this picture considerably, and in what follows we present an outline sketch of the results, as they pertain to the later Bronze Age. (For an earlier study of Neolithic settlement within the area of the NVAP survey, see Cherry *et al.* 1988; for an overview of the project and of all periods in this survey, see Wright *et al.* 1985; 1987; Wright 1990; Cherry *et al.* n.d.)

At the time, this was perhaps the first fieldwork, conducted in a reasonably systematic and intensive manner, to produce detailed information about the pattern of rural settlement and artefactual 'offsite' activity in the vicinity of a centre of Mycenaean civilisation. Since then, others have taken place, and some are even published in final form (notably in Messenia [Davis *et al.* 1997; Davis 1998] and Laconia [Cavanagh *et al.* 1996])—part of the huge spurt of regional survey activity in the Aegean over the past two decades or more (Cherry in press; in prep.). These surveys are now making it possible to look at regional and inter-regional settlement trajectories and paths to complexity in some interesting new ways. This can be at a relatively gross level—for example, Alcock (1993) for Hellenistic and Roman Greece as a whole, Halstead (1994) on the north-south divide in the prehistoric period, or Bintliff (1997) on the long-term shift of demographic and political focus from southeast to northwest. Or it can be at a more intermediate scale, such as 'between areas such as Messenia, Laconia, the Argolid, Boeotia and Central Greece, where the landforms and productive potential are comparable, and where differences are more likely to be a consequence of historical and political variation' (Cavanagh 1995: 81). A number of recent studies have used survey data productively in this way to consider inter-regional variation in the prehistory of the Peloponnese (e.g. Cavanagh 1995; 1999; Mee 1999; Rutter 1993: 747–58, table 1; Shelmerdine 1997: 550–54, table 2; cf. the earlier, largely pre-survey regional comparisons of Dickinson [1982]), and of Crete (e.g. Watrous 1994: 698–99; Driessen 1999; this volume). What is most relevant for present purposes, however, is that—in a few areas—the amount of survey effort has been sufficient to start building up a local regional picture based on several sets of survey data, albeit collected at different times, by different teams, with different goals in mind.

This is at last beginning to be the case for Mycenae's hinterlands (Figure 10.4). Here we have, in addition to the Greater Mycenae Survey, published or partly published intensive surveys of the Nemea region to the northwest of Mycenae, and the Berbati-Limnes area immediately to its east and northeast. New surveys are currently under way by J. Maran in the Phliasian Plain, adjacent to the EH and LH sites at Petri and Aidonia, and by T. Gregory and others in the eastern Corinthia. A good deal of work has been done in and around the Argive Plain itself, especially by H.-J. Weisshaar (1990) and the late K. Kilian, for which Zangger's (1993; 1994) extensive geoarchaeological studies provide a useful context. Farther afield to the south and southeast lie the areas of excellently conceived regional projects on Methana (Mee and Forbes 1997) and in the southern Argolid (Jameson *et al.* 1994), though whether these areas fell within the ambit of Mycenae's direct, or even indirect, control remains a debatable point. When the results of all of this work are fully available, they will comprise a vast databank of information for studying

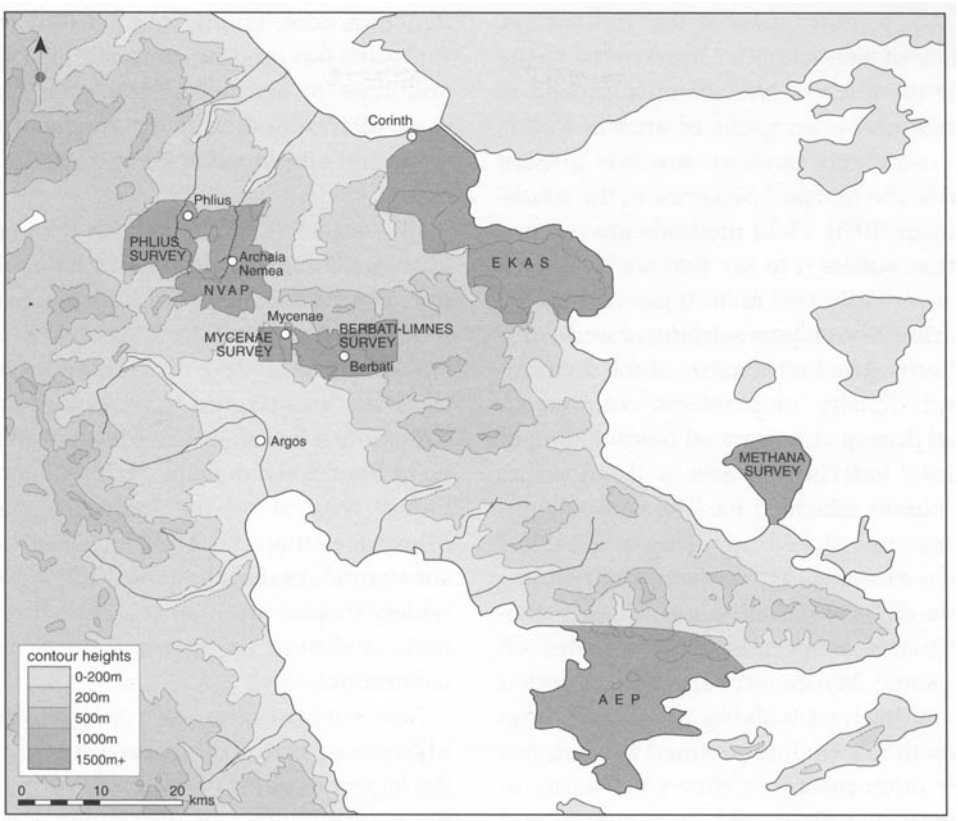

Figure 10.4 Archaeological surveys in the Argolid and Corinthia; NVAP (Nemea Valley Archaeological Project), EKAS (Eastern Korinthia Archaeological Survey), AEP (Argolid Exploration Project). (Drawing by Rosemary J. Robertson.)

relations of different types and scales, and as they changed over time, between the centre at Mycenae and outlying zones.

In the remainder of this paper, we can touch only briefly on several relevant topics. First, we provide a summary of the data from the Nemea survey for early and developed Mycenaean settlement and landuse patterns. The interpretation of these data engages directly with some recent claims that the surviving surface archaeological record for any of the prehistoric periods in Greece seriously under-represents the density and distribution of sites that once existed; and so, secondly, a few comments (again drawing directly on information from Nemea) are warranted in this regard. Third, we consider, albeit very sketchily, in what respects the Nemean data conform to, or differ from, the picture presented by some of the other nearby projects just noted. Finally, some preliminary and tentative suggestions will be offered about the possible nature of the connections between the emergent centre at Mycenae and these outlying areas.

Mycenean Nemea

Work in the valley of Ancient Nemea and adjacent areas during the 1980s resulted in virtually total high-intensity survey coverage

of the valley itself, parts of the Tretos Pass, the valley of Xerokambos/Tourkovrisi to the south of the town of New Nemea, as well as the whole of the acropolis of ancient Phlius on the west, and territory towards ancient Kleonai to the east and Mycenae to the south-east (Figure 10.5). Field methods are not our focus here: suffice it to say that we have generated essentially two main types of data for considering Mycenaean settlement and land-use patterns. The first consists of the distribution and density of artefacts counted or collected during close-spaced fieldwalking of some 5,400 individual tracts, with a median area of almost exactly 1 ha. The second comprises material picked up, using a variety of collection systems, at locations defined, on the basis of local variations in artefact density, as 'places of special interest' or sites. Of course, some Mycenaean artefacts collected during initial tract-walking are in fact from locations that were later defined as sites; but in many other instances, they were found in very small quantities and in isolation, and thus may not have anything to do with settlement at the locations where they were found. This might also be true of cases in which just a few Late Bronze Age (LBA) artefacts were collected on sites where the vast majority of finds belong to other (usually, later) periods. Making sense of the overall patterns of Mycenaean material thus demands care, taking into account not only findspots (on- and off-site), but also quantity and type of artefacts, the spatial extent of their distribution, and the mode of surface collection employed. We return to this point below.

LBA artefacts (mostly pottery) were found at about 25 sites, in addition to Tsoungiza and the adjacent Sanctuary of Zeus, as well as in much smaller quantities at several dozen off-site locations, widely distributed throughout the study area (Figure 10.6). At many of these sites, only a few sherds of Mycenaean pottery were found—a density, that is, not much higher than at off-site locations producing Mycenaean material. Eight sites yielded more substantial material (Table 10.1): they are widely dispersed, all at relatively low elevations, and most on or near natural routes of communication.

Not surprisingly, sites where the most Mycenaean material has been found are also the largest in terms of the area over which the Mycenaean finds are distributed—but since virtually all 100 or so sites defined in this survey are multi-component, overall site size is an unreliable basis for estimating the size of a site in any specific period represented among the finds from it. Without going into the details of how we have estimated the area over which finds specifically of LBA date were recorded, nor of why we think the estimate of

Table 10.1 NVAP sites with significant quantities of Mycenaean material.

Site	El. (m)	Setting	Min./Max. size	Collection method	Phases represented
3	374	knoll	–/0.84	transects & grabs	LH I, LH IIIB1, LH IIIB/C
205	300	knoll	–/0.60	transects & grabs	LH II, LH IIIA2/B1
209/213	260	bluff above Tretos Pass	–/0.50	modified transects & grabs	LH I, LH II, LH IIIA2, LH IIIA2/B1
400	440	knoll in pass	0.32/1.96	20 m grid	LH IIIA2
503	428	knoll in pass	0.30/0.30	10 m grid	LH I, LH IIB, LH IIIA, LH IIIA2/B1, LH IIIB, LH IIIC
922	345	knoll	0.28/1.50	20 m grid	LH
923	280	interfluve	1.7/1.7	20 m grid	LH I, LH II, LH IIIA/B, LH IIIC
925	400	ridge	–/4.24 ?	field middle & grab	LH IIIA/B

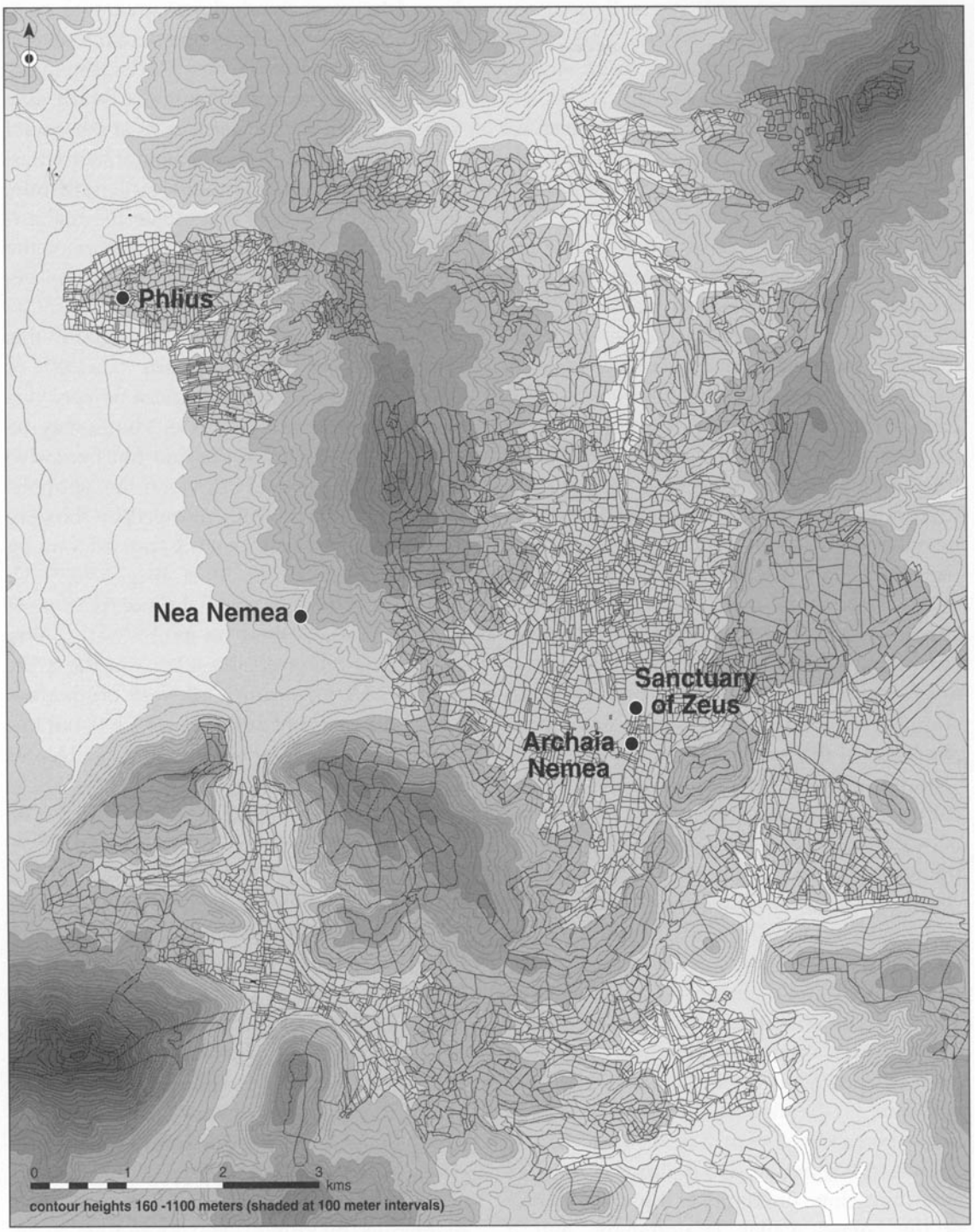

Figure 10.5 Topographic map of the Nemea Valley, with tracts defined by the Nemea Valley Archaeological Project superimposed. (Drawing by Rosemary J. Robertson.)

size in one case (site 925) is greatly exaggerated, the conclusion is that all these Mycenaean components seem to be smaller than 2 ha, some much smaller still.

None of them rivals Tsoungiza. Here we have the combined evidence from tract-walking around that site's periphery, from gridded surface collections, and from our excavations, to estimate its size, conservatively, as c. 7.5 ha—clearly much larger than any other site we know of in this region (Wright *et al.* 1990; Cherry *et al.* n.d.). There exists other evidence, too, suggesting that the dominant focus of Mycenaean settlement was at this southern end of the Nemea valley. Mycenaean finds have been found in substantial quantities in three different parts of the Sanctuary of Zeus, though never in pure strata and generally heavily worn; topography alone precludes the possibility that all these finds eroded from nearby Tsoungiza, and nothing about them supports the suggestion that a Mycenaean cult place preceded the later historical sanctuary. It is also striking that tracts producing off-site Mycenaean finds are much more abundant at the head of the valley—south of Tsoungiza and the modern village of Archaia Nemea, and east and northeast of the Sanctuary of Zeus—than in any other part of the survey area (Figure 10.6). The evidence could well suggest something like an artefactual 'halo' built up around Tsoungiza, quite possibly as a result of local short-term activities, in-field manuring, dumping, erosion, and no doubt numerous other factors besides.

There exist other interpretative difficulties too (see below); but what emerges from all this evidence is the notion that in Mycenaean times there existed a fairly clear size-hierarchy of sites in this region. Tsoungiza and the area in its immediate proximity at the southern end of the Nemea valley is dominant, and it appears to be at least three or four times larger (perhaps more so) than any of the sites in the 2 ha or less category, which in turn are far more conspicuous in the landscape than the several dozen other locations where Mycenaean material is scanty, but at least some of which may very well reflect rural settlement at the lowest level, and other non-residential activities. Assuming (as seems virtually certain) that the site of Mycenae itself represents the highest-order level of settlement in this part of the northeastern Peloponnese, there thus appears to be a four-level hierarchy.

About sites comparable to Tsoungiza in this northern and northwestern chunk of Mycenae's hinterland we cannot be very certain. Zygouries must be one. Phlius may be another, judging from the thin but pervasive scatter of MH and LH finds on the acropolis ridge and in its foothills revealed by the very systematic, large-site survey carried out by Alcock (1991: 458, fig. 12; cf. Blegen 1925: 32; Vermeule 1987: 134); but the overburden of historical strata there is problematic. Ayia Irini, a low hill on the west bank of the River Asopos 2.5 km west-northwest of modern New Nemea, is not as large (c. 1.5 ha), but has produced substantial material of LH IIIA and IIIB date (Miller 1990: 53). And further afield across the Phliasian Plain lies Aidonia, with its rich chamber tombs (Demakopoulou 1996); but such wealth, at this spatial remove from the centre, may well indicate a political rival, rather than a subordinate, of Mycenae—at least in the period before the zenith of Mycenae's power in LH III.

This brings us to chronology, and here the evidence is striking. MH finds from survey are extremely rare in the Nemea area, at least before the late MH/LH transition (i.e. Shaft Grave times; for this period in the Argolid as a whole, see Dietz 1991). That this is not just a surface ceramic visibility problem of the kind highlighted by Rutter (1983) is indicated by the excavations at Tsoungiza, which seems actually to have been abandoned after EH III until

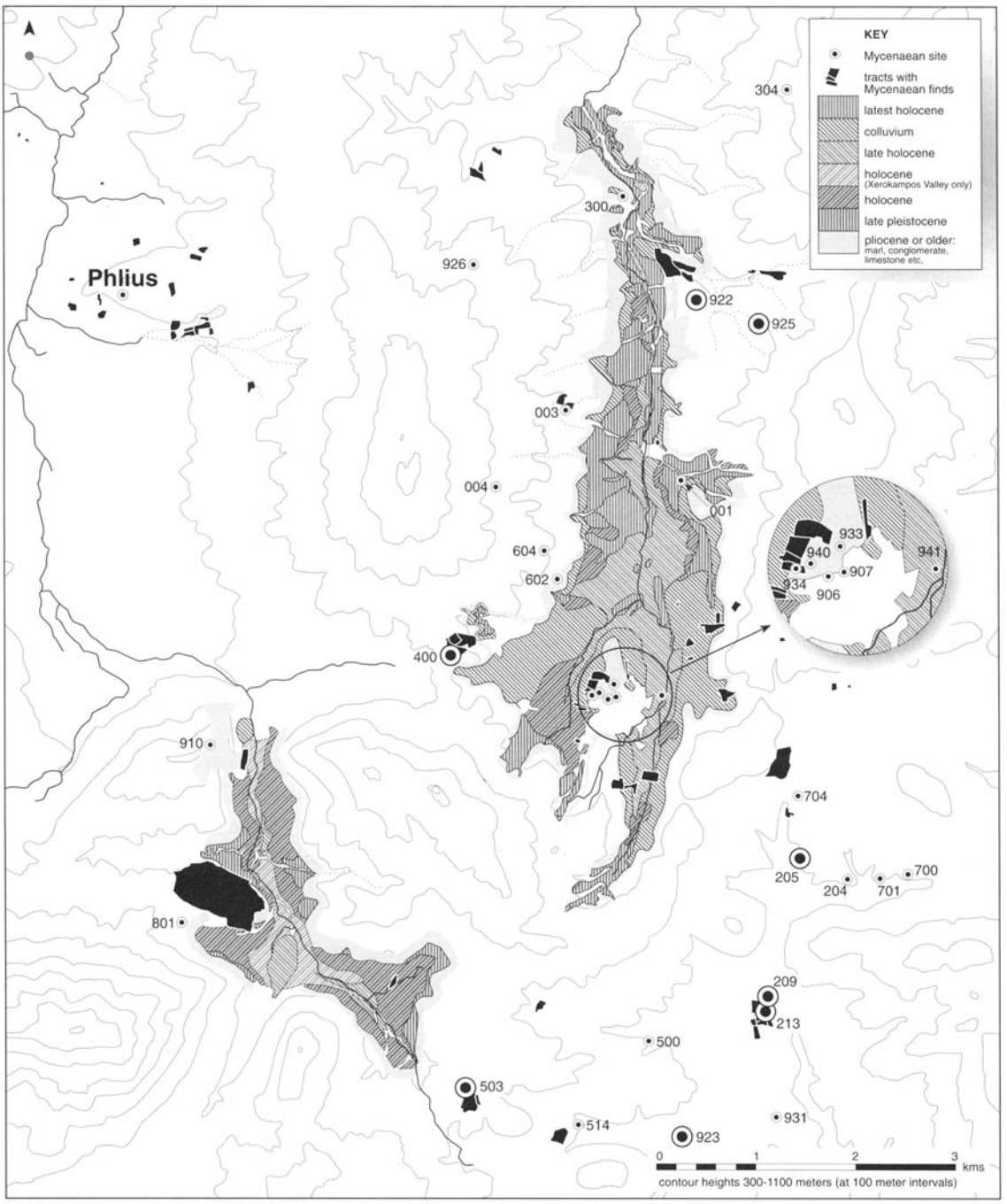

Figure 10.6 Mycenaean finds and soil units in the Nemea Valley region. (Drawing by Rosemary J. Robertson; map of soil units courtesy of A. Demitrack.)

the Shaft Grave period. A similar pattern emerges from the finds at the Sanctuary of Zeus (Klein 1987). The Early Mycenaean period is quite well represented throughout the study region by finds made both on- and off-site (Figure 10.6), but in each type of collection far fewer artefacts can be dated to this period than to LH IIIA2-IIIB. There is a good deal of site continuity as well: six of the seven sites where later MH finds are known continue into the next phase, while LH artefacts have been identified at nearly 20 additional sites. Not surprisingly, much of the survey pottery recognizable as Mycenaean cannot be closely dated, but three things are worth mentioning: first, that every major stage of the Mycenaean period can be recognized among these surface collections; second, that in both tract and site collections, far fewer artefacts can be dated to the late MH, Shaft Grave or Early Mycenaean periods than to developed LH IIIA2-IIIB; and third, that the sites with significant amounts of material were evidently used for long periods of time, and both early and late Mycenaean pottery has been found at most of them (Table 1). In short, the data suggest the development of a long-lasting 4-level site hierarchy, spread widely throughout the study region, beginning in the Shaft Grave era, after several centuries of near-abandonment of the area.

Evaluation and Comparison

Can we regard the picture outlined above as reliable? How does it compare with other nearby regions? And what light might it shed on the sequence and causation of Mycenae's development as the controlling central place for this part of the northeastern Peloponnese?

On the first issue—data reliability—only two points can be mentioned here. One concerns the mapping, by Anne Demitrack, of soil units in the study area, and the evaluation of the extent to which alluvial soils may today be masking prehistoric land surfaces (for a summary, see Demitrack, in Wright *et al.* 1990: 587–91, fig. 3, table 1). Demitrack initially defined and sequenced soil units with reference to soil characteristics, stratigraphy, and artefacts found in exposed sections or collected from sites situated on top of the soil (Figure 10.6). Three Holocene units were identified: H1, the oldest, deposited some time between Early Neolithic and Early Helladic II; H2, being post-classical, and in part post-Roman; and H3, which is quite modern. Subsequent mapping of the distributions of artefacts collected from sites and tracts confirms this picture. In the main valley of the Nemea River, no site where Mycenaean finds were collected lies on the H2 or H3 soil unit; nor is any tract where Mycenaean finds were collected situated in its entirety on the H2 or H3 unit. Excavated portions of Tsoungiza lie on marl and colluvium, whereas the Sanctuary of Zeus is entirely covered by the H2 soil unit. Naturally, this means that there are some parts of the lowermost valley bottom where prehistoric remains could also be buried beneath the H2 or H3 soils, especially at its southern end—but this in fact is precisely the area where we seem to have the best evidence for LBA finds. In other words, while not wishing to sweep a potentially serious issue under the carpet without due consideration, we do not at present regard alluviation to be a significant source of masking and distortion of the overall distributional pattern of Mycenaean finds in the NVAP survey area taken as a whole.

The second point relates to arguments advanced in a number of articles by John Bintliff, and most fully in a recent paper by Bintliff *et al.* (1999). These authors have suggested that even the most systematic and intensive surface surveys in Greece have not proved sufficiently sensitive to detect the sorts

of artefacts that are all that typically remain on the surfaces of extremely small prehistoric sites; they rightly point out that it is often only from the gridded surface collection, on hands and knees, of sites of later (historic) date that traces of prehistoric occupation emerge, and so they conceive of post-prehistoric sites as fortuitous 'windows' onto a largely hidden prehistoric landscape, whose extent and density have thus been greatly underestimated. This charge is, potentially, a very damaging one, but in reality we incline to think it has been presented in a somewhat exaggerated form. Obviously, search intensity does make a difference: NVAP found prehistoric components at nearly 40% of its sites, and maybe some of these would indeed have gone altogether undetected without the minute scrutiny given to these locations. On the other hand, routine tract-walking was quite successful in locating additional prehistoric finds in many other places: Neolithic in 18 tracts, Early Bronze Age in 64, Late Helladic in 72 (of which almost two thirds [63%] were from tracts not later associated with sites). This makes us wonder whether the appropriate metaphor is not so much sites as windows, but rather as blankets that block our view of prehistoric remains by obscuring them with a thick mantle of later material—and were these sites not present, tract-walking would still be reasonably effective in signalling the presence of prehistoric material at these locations.

In any event, some sort of 'archaeological source criticism' (Alcock 1993: 49–53) of raw survey data is needed before we can embark on building meaningful comparisons involving results from a number of different projects, as we suggested earlier is now just beginning to become possible. Yet even comparison at a gross level is instructive. Thus, for example, the Berbati-Limnes survey of the area immediately east of Mycenae, and even closer to it than the Nemea region, likewise finds little sign of MH settlement. In fact, 'not a single sherd of Middle Helladic pottery was identified in the survey, neither in the valley nor in the Limnes area' (Wells 1996: 121), possibly reflecting wholesale depopulation resulting from catastrophic soil erosion at the end of the Early Bronze Age. Recovery seems to have been slow: the Early Mycenaean period is better represented by past excavations (at the Berbati tholos tomb and the potter's workshop on the Mastos, both LH II/IIIA1) than by anything among the new survey finds, which do not indicate intensive occupation until LH IIIA2-IIIB1. Eventually, at the height of the Mycenaean palatial age, settlement expansion onto marginal soils, the labor-intensive construction of roads and (more controversially) terraces, and the lack of elite tombs and structures all plausibly suggest the annexation of Berbati-Limnes by Mycenae as an important strategic and economic asset (Schallin 1996: 170–73).

It will be intriguing to see if surveys now under way in the Phliasian Plain and the eastern Corinthia similarly produce evidence of what Dickinson (1982) some years ago referred to as the 'underdeveloped mainland' in the Middle Bronze Age, and of a late phase of colonisation, coinciding roughly with the Shaft Grave period, and linked with the new political power emanating from Mycenae. Table 10.2 (after Cavanagh 1995: 83, table 2, which is itself based on Rutter 1993: 748, table 1) provides a wider comparative framework, by presenting counts of MH and LH sites known from a number of intensive surveys in southern and central Greece. It reveals obvious regional variability, and no doubt also suffers from some 'noise' arising from the use of different survey methods; but the tripling of site numbers in the LH period is very striking, as is the fact that this increase seems greatest in surveyed regions of the northeastern Peloponnese—Mycenae's ambit. Rutter

Table 10.2 Increases in numbers of sites of the Middle Helladic and Late Helladic periods, based on intensive surveys in southern and central Greece. (After Cavanagh 1995: table 2, with additional data from the Asea Survey courtesy of J. Forsén and B. Forsén.)

Survey (sq km)	MH sites	LH sites	Increase
Laconia (70)	10	9	× 0.9
Boeotia (21)	9	8–17	× 1–2
Oropos (15)	2	3	× 1.5
Pylos (12)	2–4	6	× 1.5–3
Methana (10)	3–4	5–8	× 2
Skourta Plain (32)	3–6	14–18	× 3–4
Nemea (50)	2	8	× 4
S. Argolid (44)	5	27–37	× 5–7
Berbati (25)	0	19	infinite
Asea (33)	1–3	4–5	× 3
Total	**37–44**	**103–129**	**× 2.3–3.5**
UMME	58–107	168–195	× 1.6–3.4

(1993: 781) sees evidence of a broader picture of late MH settlement expansion, and in fact regards the resettlement of the Nemea region as 'but one instance of a far more widespread episode of colonization of the interior. Such resettlement may have occurred not only in other valleys of the northeastern Peloponnese but perhaps also in valley systems as far away as Attica, Phocis and the southeastern Argolid'. While the major expansion of settlement seems to be a function of the mature Mycenaean state in LH II-III, the critical period of change is nonetheless in the early Mycenaean period—a time when, for the first time since the EH period, there is evidence for growth in site numbers, settlement hierarchies, and for social stratification on the mainland, most notably obvious in the form of the Shaft Graves and related developments at Mycenae.

Mycenae and Nemea

The relevance of such developments to the general theme of urbanism in the Aegean Bronze Age is, we hope, self-evident. The processes of political centralization, economic growth, architectural change, fiscal innovation, etc., taking place at the centre (Mycenae) had an impact that, unsurprisingly, is stamped on the history of the development of the region as a whole, and of its subsidiary rural settlements. Seen from the perspective of Nemea, there are few overt signs of the spectacular developments and foreign relations evidenced at Mycenae, just a few kilometers away; even the largest settlement we know of, Tsoungiza, is not so much a major political or economic centre, as a hamlet without centralized organization (Wright 1990). In studying such processes, perhaps we should focus not only on the traditional framework of external contacts between far-flung areas of the Mediterranean and Europe in the Shaft Grave era, but equally on purely local-level relationships.

Why Mycenae would have an interest in seeing the Nemea region resettled is not too difficult to imagine. Recent discussions of Mycenaean state-formation (e.g. Halstead 1995; Bennet and Galaty 1997: 84–87) have emphasized the role that manipulation of surpluses is likely to have played for the early Mycenaean elite, in consolidating their authority by establishing control over access to exotic goods, in establishing reciprocal relations with peers, and in ensuring the loyalty of supporters. Increased agricultural production may have been fundamental to ambitious local leaders at Mycenae seeking to dominate their competitors. By harnessing labour, by bringing additional land under production in marginally occupied areas of its hinterland, by settling and controlling the Nemea Valley and perhaps other similarly vacant areas, Mycenae could have precipitated a quantum leap in the productive capabilities of the polity as a whole. Those in power would have profited greatly by exacting a surplus agricultural product from farmers of the area. These,

incidentally, are precisely the sorts of argument that have been deployed to account for parallel and contemporary developments in the Berbati-Limnes area to the east of Mycenae (Wells *et al.* 1993: 58; Schallin 1996: 170–73).

One piece of evidence may offer a little circumstantial support to this line of reasoning. We have prepared maps, based on aerial photographs, to show the extent of cultivation in the Nemea area at various points over the past half century (1948, 1970, 1980; these maps can be viewed at the website: Cherry *et al.* n.d.). Mycenaean artefacts have been found in virtually every part of the Nemea region that was then in cultivation—indeed, that was *ever* in cultivation in the latter half of the 20th century. Perhaps, then, the scale of land use here during the Mycenaean period (more than 50 sq km) was not dissimilar to that in the 20th century, when the area was farmed by a population of around 700–800, and on much the same types of land, more suitable for olive and vine cultivation than for grain (S.B. Sutton, in Wright *et al.* 1990: 594–603, table 3). This would be wholly in keeping, of course, with what we know of the developed Mycenaean agricultural system in other regions, such as Pylos, where the direct textual evidence is better.

But if early Mycenaean resettlement in the Nemea Valley took place in a landscape essentially vacant for the previous half millennium, what accounts for the hiatus in occupation? Geoarchaeological data raise one intriguing possibility. A series of five auger cores drilled across the valley revealed evidence of several prolonged periods of flooding of the valley floor during the early and middle Holocene (A. Demitrack, in Wright *et al.* 1990: 591, fig. 3; cf. Atherden *et al.* 1993). These events cannot yet be dated at all precisely, but sluggish drainage, stream flooding, and likely year-round swampy conditions would probably have made agriculture in the valley bottom problematic, and settlement in the area correspondingly less attractive. It is certainly possible that one of these early episodes of flooding correlates with the occupational hiatus in the MH period. There exists plenty of ethnohistorical evidence attesting to flooding and depopulation of the area in more recent, Ottoman times. Re-establishing agriculture in the valley after such a period of abandonment was no mean task: it required the assistance of French engineers and the use of industrial equipment to drain its floor of stagnant and malarial waters in the 1880s (Miller 1990: 12, 14, 96). Excavations in 1997–98 within the Sanctuary of Zeus have produced important new data on the history and course of the Nemea River, including its channel during the later Mycenaean period and clear evidence of an artificially cut riverbed, more than 50 feet in width, of Early Christian date (S.G. Miller, in Blackman 1999: 24–26, fig. 29). As Miller comments, 'we can now say that the Nemea Valley is a bowl that does not want to drain naturally, and that a river has existed only at those times when man has cut one. Indeed, the name Nemea derives from the Greek verb *nemein* (to graze) that may refer to an area that was too swampy for cultivation and suitable only for grazing'.

Like the well-known case of the Copaic Basin in Boeotia, therefore, the valley does not drain well and can easily become clogged, resulting in flooding, and in need of human intervention. But intervention by whom, in the mid-second millennium BC? Was Mycenae, the closest power-centre, capable of organizing such an engineering program so early in its history? The answer is at present purely speculative, but in light of recent discoveries we should not underestimate the extent to which Greeks of the Bronze Age were able to shape their environment.

Drainage of the Copaic basin was not the only Mycenaean engineering marvel: we can now add the construction of the Tiryns dam and canal (Zangger 1994: 204–211, figs. 9–13), evidence for hydraulic works in the Pheneios basin of Arcadia (Salowey 1994) and elsewhere (Knauss 1991), or the discovery of partly artificial ports at the Palace of Nestor (Zangger *et al.* 1997: 613–23; E. Zangger, in Davis 1998: 69–74) and possibly in other places besides (Zangger *et al.* 1999). If Nemea were to be added to this list, it would only reinforce our sense of how closely the development of the region was bound up with that of the centre at Mycenae.

Finally, we suggest that the distribution of monumental burials also may offer insights on social and political organisation (Mee and Cavanagh 1984), and, in this region specifically, could be read as suggesting that Mycenae already dominated Nemean lands before its sovereignty over the Argive Plain itself was firmly established. Before the 14th century BC, tholos tombs in the northeastern Peloponnese were built at a variety of Argive locations (some quite distant from Mycenae), but later their spatial distribution contracts markedly, with only those in the immediate environs of Mycenae remaining in use. But, as we remarked earlier, tholoi are conspicuously absent, not merely in the Nemea area, but in the entire Corinthia: indeed, after a century of concerted exploration, not a single such tomb of any date has been found (Cavanagh and Mee 1998: figs. 5.2, 6.2; see also Figure 10.2). This, admittedly, is negative evidence; but it might imply that Mycenae's power extended over most of the Corinthia by the 15th century, when this form of burial first achieves prominence elsewhere in the northeast Peloponnese, and that already in early Mycenaean times there were no rival elites able to challenge Mycenae. As Dickinson argued some years ago (1977: 108, 110), 'in the north-east Peloponnese Mycenae seems to have quickly overcome all possible rivals [and] was the earliest established centre of real power on the mainland'. In short, the shadow of Agamemnon's sceptre, as it were, seems to have fallen across these lands rather early.[1]

Notes

1. Catherine Morgan's excellent discussion (Morgan 1999: 347–65) of relationships between the Corinthia and Mycenae appeared in print too late for us to take it into account.

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11

Exploring the Patterns of Power in the Bronze Age Settlements of Northern Greece

Stelios Andreou

During the period that the politico-economic relations usually identified with southern Aegean 'urbanism' emerged, long stretches of northern Aegean lands, were occupied by societies which appear to have 'resisted' the adoption of analogous organizational forms (Andreou, Fotiadis and Kotsakis 1996). Stratified social structures, exploitative elites, fast demographic growth, nucleated centers and bureaucratic controls of economic transactions were salient features of the 'urban' centers. Instead, the contemporary 'small scale societies' look as if they underscored social structures of equality, emphasized residence in small village sites or hamlets and lacked any specialized political mechanism and institutions. A common feature of Aegean 'urban' formations was their brief life and their low ability to survive. It is worth pointing out the almost total lack of continuity they display in terms of organizational structures with developments in the same areas during the early centuries of the 1st millennium BC. On the other hand, contemporary 'small scale societies' exhibit remarkable stability and endurance for long periods of time without however being monolithic and static. In view of the brief and discontinuous presence of the Aegean 'urban' formations and their limited geographical distribution, one might think that they might not have been an altogether expected consequence of regional developmental trajectories. Stressing the periods when complex forms of social organization such as urbanism or states were attained has the danger of raising these forms to the level of historical necessities. At the same time, however, social processes, which may aim at avoiding or upturning the development of such forms among small-scale communities, are underplayed (Bender 1990).

I shall examine some aspects of community life in one area of the northern Aegean, where small-scale societies had an enduring presence. The aim is to elucidate some of the characteristic structures of social life in the north, which made unwelcome the adoption of urban life there, during the period of Mycenaean 'urbanism' in the south. I shall focus my discussion on the cultural, social and political parameters of human settlement in central Macedonia during the Late Bronze Age and more specifically, during the period from ca 1400 to ca 1100 BC Figure 11.1.

My discussion concentrates on the lowland part of the area, a landscape of coastal plains, river valleys, inland basins and hills. The archaeological record comprises information from intensive survey, extensive reconnaissance, small soundings and extensive excavations in three settlements. It is by far richer than that of any other area or period of Macedonian prehistory and implies some significant changes regarding human relations inside and between communities. (Andreou, Kotsakis and Fotiadis 1996;

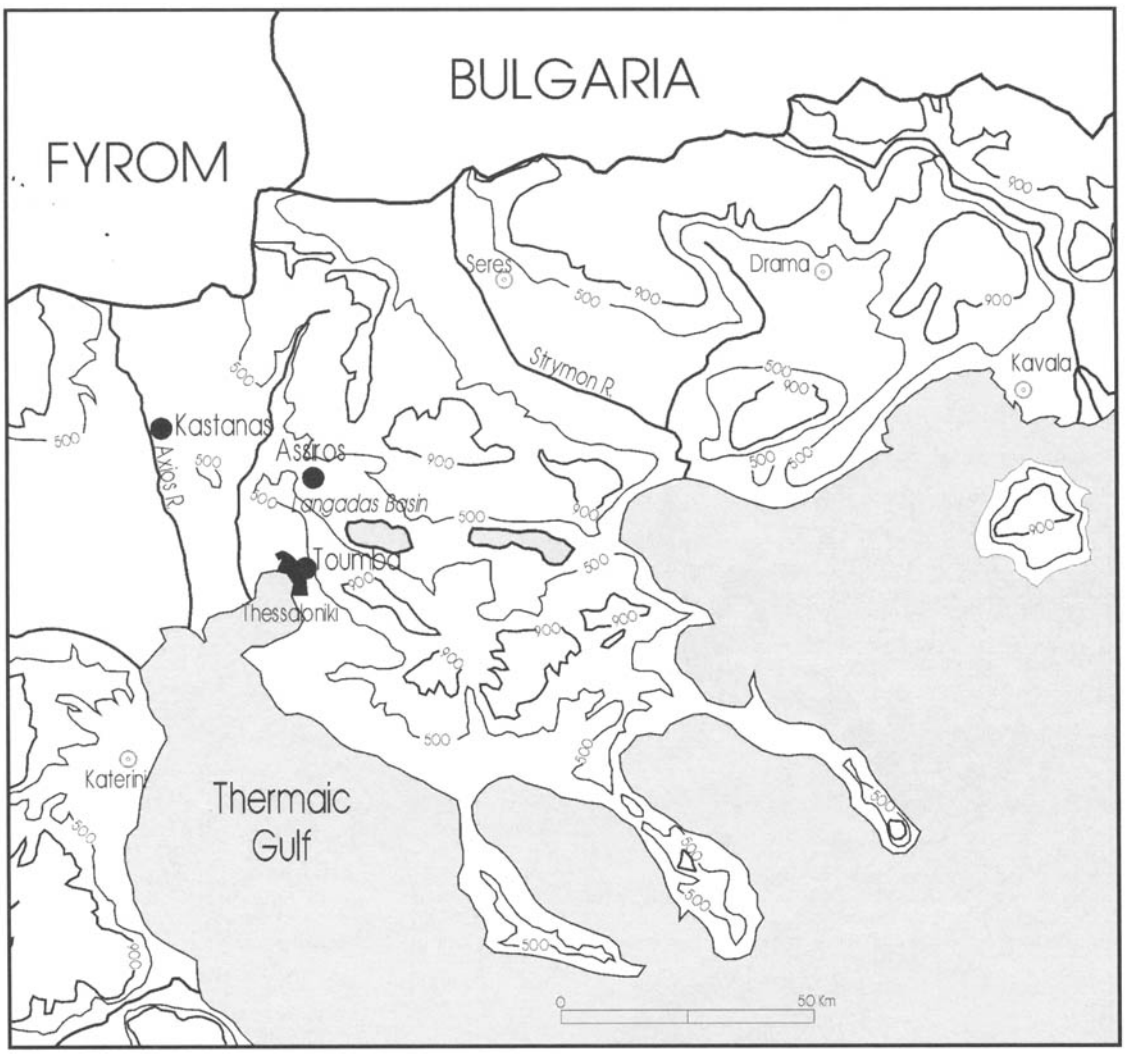

Figure 11.1 Central Macedonia with sites discussed in the text.

Wardle 1997). Considerable gaps however, still exist, primarily in terms of detailed sequences and 'on site' data, which delimit the ability to test propositions concerning socio-political and economic processes and the interpretation of cultural attitudes.

The Settlement in the Landscape

Research has shown that the number of settlements in the area increased slowly and more or less steadily from the 3rd millennium onwards until the EIA. During the same period settlement sizes remained small, rarely exceeding 1 ha. and only in the latter phase few larger population aggregations may have started forming. The western Langadas basin displays a more detailed picture, allowing some insight into the process of settlement expansion during the LBA. Figure 11.2. (Andreou and Kotsakis 1994: 21; Grammenos,

Besios and Kotsos 1997: 13–51; 87–88.) Excavation and survey suggest that human occupation in the area, at the beginning of the LBA was sparse. It was limited to no more than four mounds, standing around eight to five kilometers apart. They were ancient settlements with longer or shorter life spans going back to previous eras and continuing to the next. All, except one, were situated on relatively flat ground on the lower terrace

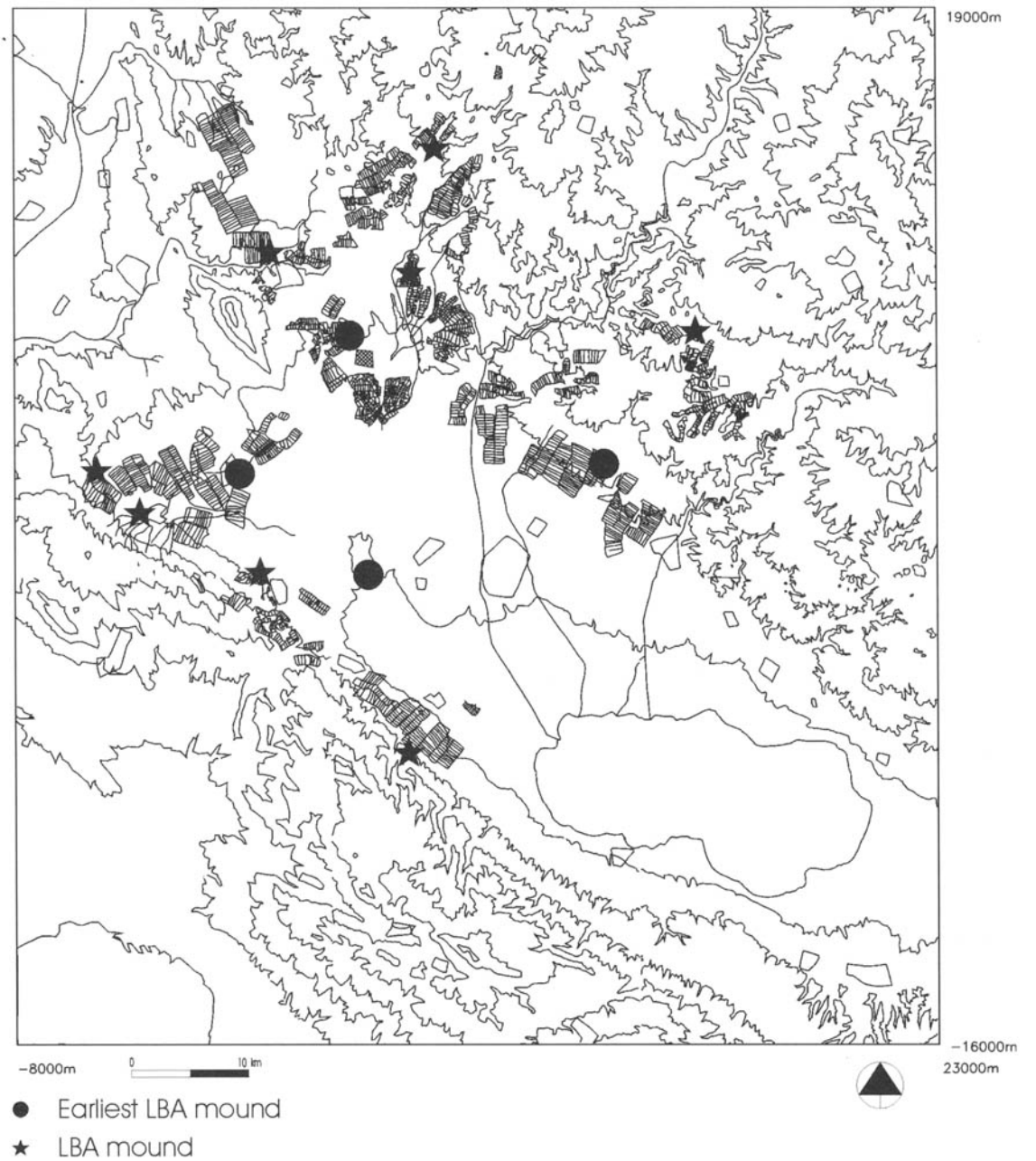

Figure 11.2 Late Bronze Age sites in the western Langadas basin.

system that surrounds the lower plain. They had immediate access to major alluvial fans, very good for cultivation, given the appropriate amount of rain, but also access to water retentive soils more suitable in times of aridity. Their location offered security in terms of subsistence, providing good prospects for the intensification of production through the increase of labor and encouraging at the same time the diversification of cultivation (Andreou and Kotsakis 1994: 20–21; Morrison 1993: 275). In fact, archaeobotanical evidence from Assiros Toumba, one of the sites of this early group, indicates a regime of diversified farming, which was based both on the intensive use of gardens as well as the more extensive use of fields (Jones 1992). The efficiency of the practices used is convincingly demonstrated by the agricultural wealth of the Late Bronze Age storerooms of the site (Jones, Wardle, Halstead and Wardle 1996; Wardle 1987: 326–29; Wardle 1988: 460–62; Halstead 1994: 202, 206).

During the course of the period the number of settlements doubled, and possibly tripled at the very end, reaching a level of density unprecedented in previous phases, but still lower than that seen in contemporary situations further south (Grammenos, Besios and Kotsos 1997: 13–51; Andreou, Fotiadis and Kotsakis 1996: 578; Andreou and Kotsakis 1999b: 40–41). The new sites form a fairly distinct group. They are very small mounds, located often on top of precipitous hills and usually at a distance of five to three kilometers from the already established settlements. They seem however, to occupy a zone strictly outside the limits of the area used by the previous group of sites, on the intersection of the upper terrace system and the surrounding hills. The area provides again opportunities for diversification, particularly through the proximity of mountain and forest, allowing for hunting, fruit collection and herding. Nevertheless, the more limited alluvial fans and the process of continuous erosion make the area less advantageous for cultivation compared to the region directly accessible to the old established settlements a few kilometers away (Morrison 1992: 258). On the other hand, new habitation sites could have taken advantage of the often rugged terrain for protection and defence if the need arose. Possibly, this process of settlement expansion and the filling up of the landscape resulted from continuous splitting of established communities when the community reached a threshold after which further growth was unwelcome. Alternatively, it could occur when participation in the old community was considered disadvantageous for economic or ideological reasons by some of its members. In fact, during the same period a gradual restriction of the occupied area has been observed in individual settlements (Andreou and Kotsakis: 1987: 80–81).

Before we turn to the examination of the on-site evidence for habitation during the Late Bronze Age, some discussion is necessary of some general features of the settlements during this period. As opposed to earlier and later periods, intensive survey has confirmed the view that habitation during the LBA in central Macedonia was restricted in well-bounded, steep sided and highly visible mounds (tell, toumba) with base diameters rarely exceeding the 100 m. Figure 11.3. (Andreou and Kotsakis 1999a: 40–41; Wardle 1997: 96). It is well known that settlement mounds are a regular feature of many areas of SE Europe and the Near East since the beginning of the Neolithic and their formal characteristics, formation processes, ecological and symbolic aspects have been repeatedly discussed in recent years (Sherratt 1983; Halstead 1984; Andreou and Kotsakis 1987; Miller-Rosen 1986; Chapman 1990; Chapman 1994; Kotsakis 1999; Halstead 1999).

Figure 11.3 The toumba of Saratse-Perivolaki.

Of all the regions of Macedonia, mounds continue during the late Bronze Age primarily in its central part and only a few examples are known from areas immediately to the east and west (Wardle 1997: 96). Despite the fact that researchers have pointed out differences in form between the Neolithic and the Bronze Age mounds of the area, the later are often considered as a uniform phenomenon. The uniformity nevertheless, implied by the small fluctuations in size and the present form of the Bronze Age mounds is disrupted when one looks at the on-site evidence obtained through excavation or careful inspection. This evidence suggests a variety of formation processes at work and it has been suggested that these processes are connected to an array of conscious activities related to the use and the structuring of settlement and regional space during the LBA (Andreou and Kotsakis 1987: 63–64). Form and height are certainly a function of length of occupation with repeated rebuilding of individual houses in a confined area, reuse of earlier walls and the employment of mud – primarily mud bricks in LBA Macedonian mounds – as the essential building material. Furthermore, collectively built walls of diverse construction and sizes regularly mark the contour lines of the tell. These walls may retain and divide habitation at different levels of the mound or may serve other functions such as defence and display; moreover, they highlight the limits of occupation creating a clear boundary between the inside and the outside. It has been pointed out that difference in materials, construction method and size of these walls possibly indicate the emergence of loose site hierarchies during this period (Wardle 1980, 261; Kotsakis and Andreou 1989; Andreou and Kotsakis 1999b). There is some evidence that prominence was particularly sought after by LBA communities. More often site heights fluctuate between 5 and 10m, but the deposits of some Late Bronze Age mounds may rise occasionally over 15 m. above the surrounding ground. This was only partly the result of long-term use. It was also attained through vertical rebuilding with a minimum amount of toppling of previous walls and through the erection of massive earthworks on the edge (Andreou and Kotsakis 1987: 75–77). On the other hand, situating mounds on natural knolls and hilltops

secured a physically bounded setting. At the same time it was a means that rapidly enhanced the visibility of the settlement, particularly in a period of progressive deforestation (Bottema 1982). It appears consequently, that during the Late Bronze Age, more than in any previous period, spatial circumscription and prominence were vital issues for communities. They were objectives that were attained through individual house rebuilding and collective architectural activities, through the employment of technology or the exploitation of topography.

It has been repeatedly remarked in the context of discussions related to the earlier Southeast European mounds, that these types of settlement apart from being the places of habitation of the living, were simultaneously the material expression of continuity between the living and their ancestors. Genealogical continuity was established through the persistent architectural and domestic activity on the specific location of the material remains of the previous occupation (Chapman 1991: 155; Kotsakis 1999: 68). Thus, the in situ rebuilding of houses, so well attested in the LBA Macedonian mounds was the symbolic means for the expression of the social identity of their households. (cf. Kotsakis 1999; Halstead 1999). On the other hand, the circumscription in space and the prominence of the LBA tells, emphasized by the collective rebuilding of perimeter walls was a strong reference to a common past, particularly important for the reproduction of the community in the regional level during a period of settlement expansion. Communities were probably stating claims to parts of the space necessary for their continued existence. The nearly neat spatial division between the old settlements of the plain and new mounds on the surrounding hills in the Western Langadas basin may in fact imply the existence of a regional genealogy, which could not be transgressed easily. On the other hand, natural hills and knolls could sustain claims of permanence and social continuity, despite the lack of physical continuity (cf. Chapman 1990). The expansion of settlement to the marginal ecological zones during this period was perhaps not unrelated to the additional advantage these zones presented for the fulfillment of the ideological requirements of habitation, despite possible undesirable effects on continued existence. Whatever the reasons, this move to marginal zones was far from smooth for the newly founded settlements and created, as we shall see below, disparities between old and newly founded settlements on the regional level.

The communities

The excavated mound of Kastanas was one of the newly occupied sites early in the LBA (Hänsel 1989). It was located on a small island not far from the coast of a lagoon, which in the Bronze Age extended into the present lower part of the Axios river (Schultz 1989). The LBA foundation took advantage of an Early Bronze Age mound that had been deserted for over two centuries. Despite the limited area exposed, the detailed reports provide interesting information about the frequent shifts in the configuration of habitation and the development of the social and economic strategies of the new community in the unstable setting near the mouth of the river. The small, randomly placed, mud brick buildings of the earlier LBA phases (17–16) could not have housed groups larger than nuclear families, which were occasionally sharing yards and some external facilities. Indeed, the evidence indicates a low level of self-sufficiency and basic domestic activities taking place inside and out of the houses. It is significant that in the following phases

(15–14), fewer and more spacious establishments were successively taking over the space of the earlier houses. The large 'megaron' of phase 14b particularly, which occupied the greater part of the excavated area, exhibited a significant capacity for storage, a diversified supply of provisions and a far greater than before, scale and frequency of food preparation and consumption. In addition, compared to earlier phases, the deposits display a considerably more elaborate material culture and a greater variety of activities. The excavators suggest that the big house of phase 14b actually provided for a larger crowd than earlier houses (Becker 1995). Even larger and more efficient groups following a more diversified farming regime (Kroll 1984) are suggested by the establishment of more tightly arranged, large and stable complexes near the end of the 11th century BC (Hänsel 1989).

The sequence of the Late Bronze Age levels of Kastanas reveals some important aspects of LBA expanding habitation The original community comprised small, spatially distinct, but marginally self-sufficient groups with very low ability for production of surpluses and very sensitive to any fluctuations in the labor force or the resources. Several strategies were used by prehistoric communities to counteract this fairly widespread problem (Halstead 1989: 68–80). The dominant social strategy however, in the community of Kastanas – as in the other tell communities of LBA central Macedonia – was to intensify production through the increase of the labour force of the household. This could be accomplished either through the temporary or permanent control of post-marital mobility of the junior members of the family or through the incorporation of weaker households by more successful ones (Netting 1990, 39–40; Blanton 1994: 5–6). In the context of the mound settlement, where the establishment of residential continuity with the ancestors through rebuilding was the crucial factor for the social identity of the household, new larger houses appropriated the space of the old in a situation of continuous competition and exercise of social power. Judging from the increased amounts of decorated drinking vessels in the houses of phases 14b and 12 occasional episodes of collective consumption of food and alcoholic drinking were used to strengthen the cohesion of these larger groups. During these occasions Mycenaean wheel-made pottery, imported and locally produced, started to be displayed, implying the ability of local household or descent group heads to participate in regional networks of exchange. (Jung in press). Despite the growth of labour and the intensification of production, the stability of the community of Kastanas was disrupted seriously several times during its lifetime. The important disadvantages related to the marginal setting of the new LBA communities may not be totally irrelevant to these events. It should be added that despite the more compact plan of the later phase, spatial organization never reached the complexity displayed by the two other contemporary sites that are examined below.

The mounds of Assiros and Thessaloniki (Wardle 1988; Andreou and Kotsakis 1996) belong to the group of the old settlements. They were located in zones with rich resources, amenable to diversification and intensification, if adequate labor power were available. These communities were very different from the contemporary Kastanas in terms of complexity in the use of settlement space.

Both were surrounded during successive phases of the Late Bronze Age by systems of perimeter walls with large dimensions, which imply leadership, and the investment of considerable collective labor. Inside these perimeter walls the settlements display large, roughly rectangular complexes with over a dozen separate spaces each, amounting to

c. 200 m² of floor area. The buildings were tightly packed on the highest terraces of the sites. The narrow lanes between the complexes were the only free spaces in the settlements. Assiros particularly, during phases 9–6 exhibits a formalized plan with buildings arranged in a strict order in parallel rows. Furthermore, spaces inside the buildings seem to repeat an architectural module of 2×4m or 4×4m (Wardle 1996). It should be pointed out that the same settlement plan was being rebuilt during four successive building phases for over two centuries (Wardle 1996). The buildings of Assiros were thus turned into genuine 'ancestral homes'. The seven partly excavated complexes of the Thessaloniki Toumba, display a less regular plan, but indicate a similar persistence in space for a period of c. 150 years Figure 11.4.

The function of these large complexes in Assiros and Thessaloniki and the character of the residential groups that occupied them are issues that certainly cannot be resolved with satisfaction at this stage. In terms of internal arrangement, 28% of the c. 200 m² area of building A in Thessaloniki during phase four (c. 1200 BC), was used for large scale storage, as the ca 15 pithoi found in adjacent spaces show (Figure 11.5). (Andreou and Kotsakis 1996: 374). In addition however, clay vats and a pithos or two were dispersed in most of the remaining rooms of the complex, along with a variety of other domestic activities concerning food preparation and cooking, eating, drinking and domestic industries (Karadimou 1998). It is not possible to know if this pattern was repeated in all the buildings of the settlement. At the moment, there are indications that two more complexes owned facilities of large-scale storage. I would like to argue that the large complexes of Toumba were probably housing large descent groups or complex households. The produce of their combined labour was stored in the storage

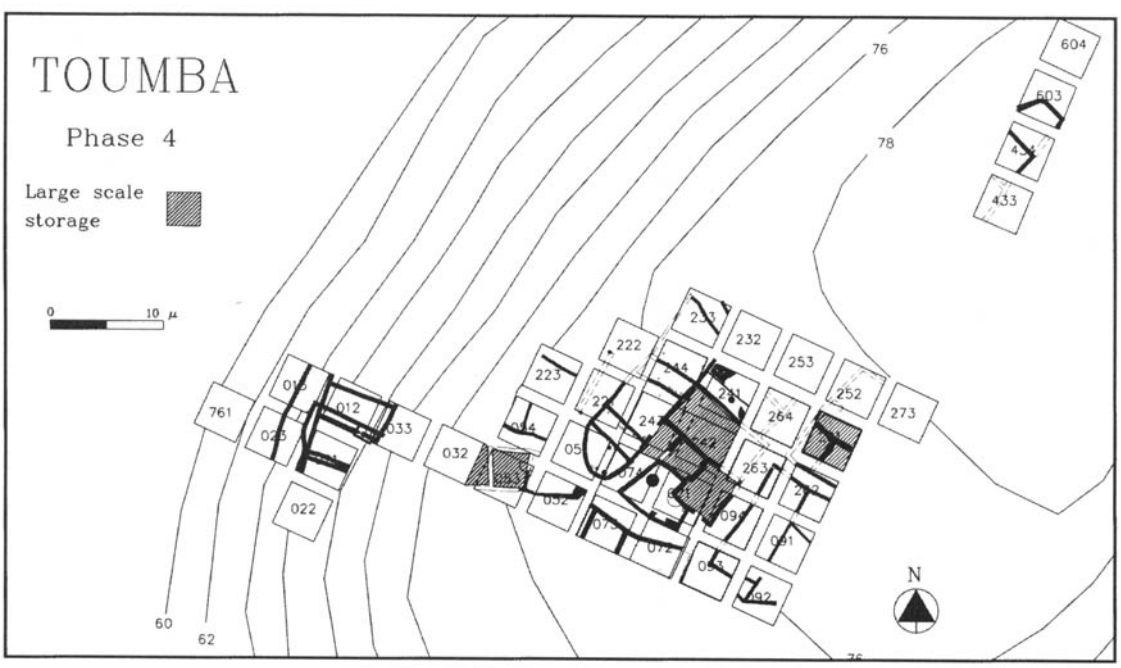

Figure 11.4 Settlement plan of the toumba of Thessaloniki. Phase 4 (12 century BC.)

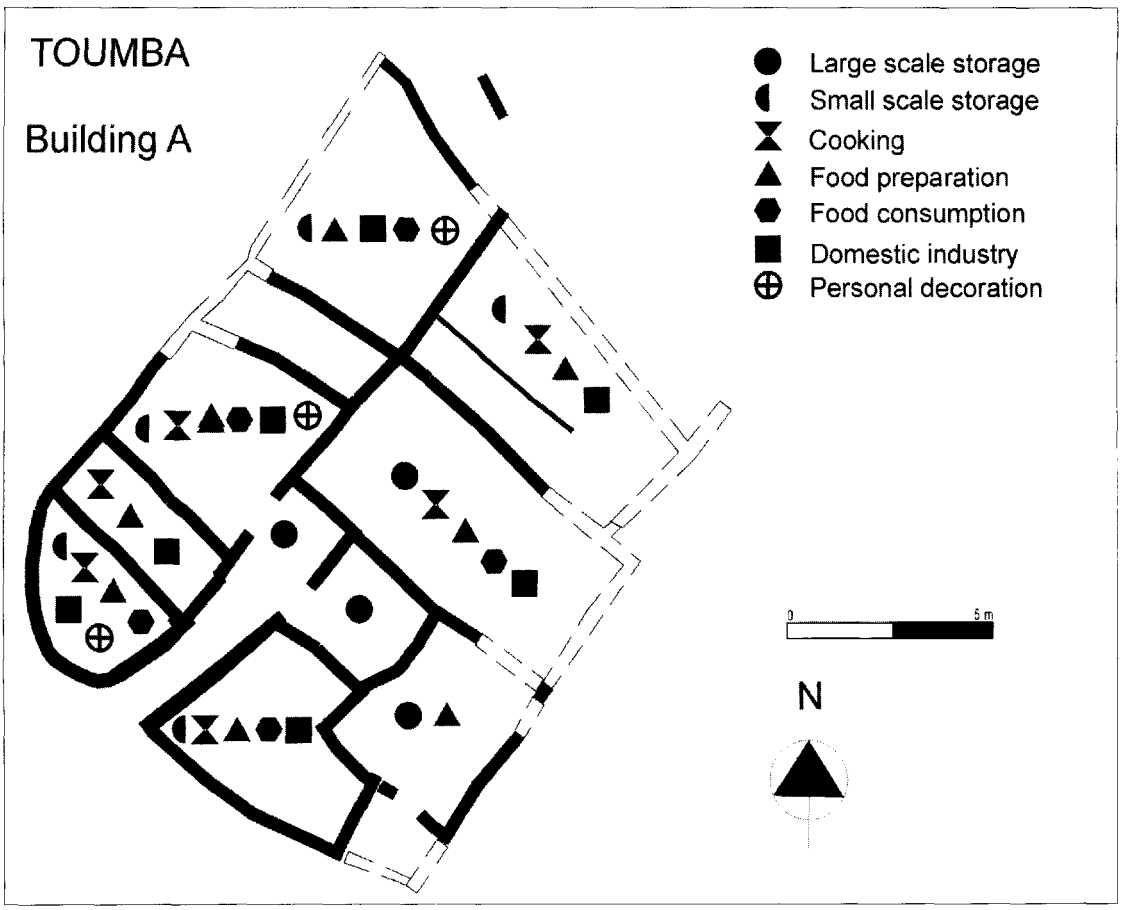

Figure 11.5 The distribution of activities in building A of the toumba of Thessaloniki in phase 4 (based on Karadimou 1998).

rooms probably under the control of the group leader. In view of the evidence from Thessaloniki, it is conceivable that the rich storerooms found at different parts of the site of Assiros during phase nine and possibly eight, may represent a comparable community organization.

Inside these establishments pottery and other implements displayed types which followed the local traditions. Few items only refer to the imitation of practices of foreign elites, to the south or to the north and indicate the ability of household heads to invest part of the stored surplus into long distance exchange networks for the acquisition of valuables (Wardle in press.; Andreou and Kotsakis 1996). But overall, the lack of prestige objects in settlements is more impressive than their presence. One could argue for their deposition in tombs, but the latter are even more conspicuous for their absence, and this may not be a matter of accident. Finally, the stability and coherence of the large descent groups and the conformity of their members to the social rules that were presumably set by the group's leading personalities, were probably secured through collective events during which wine was possibly consumed and Mycenaean drinking vessels were displayed (Andreou forthcoming).

Thessaloniki and Assiros are examples of two old communities, which developed successful social and economic strategies, based on the local values and taking advantage of the favorable local resources and eventually reached a level of considerable stability and complexity. The collectively built walls, among other practical functions, emphasized the success of the community and its long-term history in the area. It is not easy to define at the moment the details of the power structures that were involved in their erection. They demarcated the community towards the outside, but to some extent they confined it to the inside signifying the safe limits for the expansion of its power. The settlement areas in the meantime became the loci of antagonism between resident groups. The extremely crowded pattern on the top of the mounds indicates the force exercised by corporate groups competing for the control of the precious ancestral space (cf. Chapman 1990). There are no clear manifestations of ritual acts performed at any site, but on the other hand, the formalized plan of the settlement of Assiros and the strict regulation of space perhaps point to the ritual power of community heads to restrain excessive ambitions. At Thessaloniki, there are indications for the existence of size differences between buildings. Some indications also exist that groups were differentiated according to the level on which houses were located (Andreou and Kotsakis 1996. Kotsakis and Andreou 1993). It is difficult however, to find evidence at the moment, in either site, pointing to the material manifestation of a chief or a group of chiefs, of local or regional range.

Conclusions

Increasing information points to the fact that the Late Bronze Age in central Macedonia was a period of intensive social and cultural activity on the regional, the community and the household level. This activity was related to the rearrangement of human relations inside communities and to the restructuring of human presence in the landscape. The settlement mound was one of the central factors that defined the configuration of human relations during the period. Another one was the social strategy of LBA households to increase in size, in order to combat risks to self-sufficiency and survival from the disruptive effects of the fluctuations in labour power common among farming communities. With the intensification of labour, production could be increased and satisfactory surpluses could be produced, given the variety, the quality, and the quantity of the resources in close proximity to the Macedonian settlements. It is possible that this new regime required also a readjustment of the traditional small-scale intensive system of farming and the evidence for a faster rate of deforestation in Central, compared to Eastern and Western, Macedonia may be an indication of a more extensive system of cultivation (cf. Halstead 1994: 200–202; Bottema 1882).

Mounds rose in the area during the Late Neolithic as an ideological mechanism to emphasise the importance of the independent household, which was developing at the time in competition to other households. This was a new form of social relations arising in opposition to the relations of reciprocal communality that characterized the flat extended Neolithic sites present in the area. The new form of social relations was connected to a reorganization of production towards a more efficient and versatile system, amenable to intensification through a new emphasis on the diversification of farming (Kotsakis 1999: 72–74). The scarcity of information about the details of habitation during the intervening period between the Late Neolithic and the beginning of the Late

Bronze Age does not permit a detailed understanding of the circumstances under which central Macedonian households started implementing the social strategies that facilitated their growth in size and labour power. It should be pointed out that the new strategies were embedded in the traditional values and the cultural practices related to the ideology and symbolism of the tell and the emphasis to the ties with the ancestors. A new symbolic emphasis however, was directed to the community which, as a group, by seniority and perhaps other forms of power, could claim particular resources from other communities. The size and diversification of these resources were crucial for the successful investment of the growing labour power of the households. Thus, the erection of walls around the settlement was not intended simply as a means of demarcating the community; it was now turned also into a field of expression for antagonism and the display of power. Impressive works like the ones excavated in Thessaloniki and Assiros were the result of this process.

In the course of the Late Bronze Age, relationships inside and between communities were readjusted. Several situations of inequality between members became more pronounced than before, but many remained unresolved, hidden behind traditional values and attitudes, creating several sources of tension.

Inequalities were expressed in a more visible form on the regional level than inside communities, where the ritual expression of the bonds with the ancestors restrained their articulation. Competition for good land was probably an important source of tension between communities. The comparison between Kastanas and the other two sites and the frequency of disrupting events in the former, probably demonstrate the advantages in terms of stability and variety in the resource base of the old sites and also the ability of their household heads to mobilize enough labour. Presumably, there were many occasions for the development of regional alliances which would bind strong with weaker sites; marital exchanges were necessary and probably frequent events, moving people and labour up and foodstuffs down and also entailing long-term ties, hospitality and mutual dependence. Regular participation of needy regional neighbours in feasts taking place in the old sites, where some of the surplus was being redistributed could have been a regular practice, which strengthened bonds, created dependencies and secured services. It is conceivable, although hard to support archaeologically, that loose regional hierarchical networks could have developed on this basis, particularly among neighbouring communities (Wardle 1988: 462; Andreou and Kotsakis in press; Andreou, Fotiadis and Kotsakis 1996: 585).

Inside communities there would have been many sources of tension among more and less successful groups. Competition for ancestral space, which was crucial for the social reproduction and the further growth of groups, was strong as the crowded tops of Assiros and the Toumba of Thessaloniki show. There is some evidence that prestige goods circulating in inter-regional exchange networks were being employed by some household or descent group heads in the intracommunal antagonisms and it is plausible, that something similar was happening with Mycenaean type pottery, although there is no clear supporting evidence yet. Finally, it is possible that during this antagonistic process some weaker and spatially marginal descent groups would decide to fission and move to the surrounding hills. The gradual shrinkage of mound tops (Wardle 1980: 231) in the course of the LBA, may in fact indicate a slight decrease of population.

Tensions would emerge also inside the households or descent groups. The switch

from multi-room buildings with common storerooms in phases nine and eight to dispersed storage in phases seven and six at Assiros, without any other major changes in the plan of the buildings, could be a sign of direct challenge to the power of the descent group heads (Wardle 1989: 462).

None of these tensions, antagonisms and inequalities, however, was resolved during the Late Bronze Age, in a way that would allow one group of the community to gain excessive power over the rest. Instead, it appears that efforts were taken, in some cases through the formalization of settlement and individual building plans, to stress the values which were related to the independence of individual households.

From the Late Neolithic until the end of the Bronze Age the mounds remained the primary, and in the Late Bronze Age the only, foci of social activity in the central Macedonian landscape. They were the places where identities were created, relationships were negotiated and various forms of power were employed. During the Neolithic, the tells were the symbolic manifestations of the independent and competing households and they remained as such through the Late Bronze Age despite important changes in the relationships between household members and between households. In the meantime, a more elaborate way of life had developed. Important changes in the symbolic content of mounds and a rearrangement of the organizational principles of mound habitation became possible during the Early Iron Age when cemeteries emerged as the loci where new social identities could be created, and human relations renegotiated.

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Appendix 1

The Floor Area of 207 Minoan Houses (in m^2)

Todd Whitelaw

Neopalatial house sizes

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Amnisos	Villa of the Lilies			380
Amnisos	House H	72		
Ayia Triadha	Casa delle Sfere Fittili	103		
Ayia Triadha	Casa dei Fichi	86		
Ayia Triadha	Casa del Lebete			127
Ayia Triadha	Casa a Nord della Casa Est	99		
Ayia Triadha	Casa a Ouest del Bastione B			52
Ayia Triadha	Casa a Ouest del Bastione C		71	
Ayia Triadha	Villa A		1254	
Ayia Triadha	Villa B		493	
Gournia	Hill House		245	
Gournia	House Ab	149		
Gournia	House Ac	88		
Gournia	House Ad	111		
Gournia	House Ae	91		
Gournia	House Af		113	
Gournia	House Ag		153	
Gournia	House Ah	127		
Gournia	House Ba	68		
Gournia	House Bb	53		
Gournia	House Bc	59		
Gournia	House Ca	72		
Gournia	House Cb	94		
Gournia	House Cc	67		
Gournia	House Cd	95		
Gournia	House Ce	80		
Gournia	House Cf	105		
Gournia	House Cg	86		
Gournia	House Ch	105		
Gournia	House Ci	73		

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Gournia	House Cj	118		
Gournia	House Ck	94		
Gournia	House Cl	104		
Gournia	House Cm	83		
Gournia	House Cn	74		
Gournia	House Co	154		
Gournia	House Cp	87		
Gournia	House Cq		93	
Gournia	House Cr		77	
Gournia	House Cs		151	
Gournia	House Ct	131		
Gournia	House Da	166		
Gournia	House Db	61		
Gournia	House Dc	54		
Gournia	House Dd	76		
Gournia	House De	189		
Gournia	House Df		88	
Gournia	House Dg	70		
Gournia	House Dh		64	
Gournia	House Ea	139		
Gournia	House Eb	110		
Gournia	House Ec	97		
Gournia	House Ed	84		
Gournia	House Ee	80		
Gournia	House Ef	104		
Gournia	House Eg		52	
Gournia	House Ej		123	
Gournia	House El	103		
Gournia	House Fa	98		
Gournia	House Fb		89	
Gournia	House Fc		94	
Gournia	House Fd	140		
Gournia	House Fe	96		
Gournia	House Ff	132		
Gournia	House Fg		93	
Gournia	House Fh		118	
Gournia	House Fi	67		
Gournia	House Fj		154	
Gournia	House Fk		107	
Gournia	House Fl		107	
Gournia	House Ha	98		
Gournia	House Hb North		104	
Gournia	House Hb South		82	

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Gournia	House Hc		63	
Gournia	House Hd		72	
Khania	House 1	201		
Knossos	Acropolis House		44	
Knossos	Hogarth's House A	218		
Knossos	House of the Chancel Screen		230	
Knossos	House of the Frescoes	140		
Knossos	Royal Villa		247	
Knossos	SEX: North House			98
Knossos	SEX: South House	48		
Knossos	South House		220	
Knossos	Southeast House		217	
Knossos	Southwest House	260		
Knossos	Little Palace	1395		
Kommos	House with the Press	96		
Kommos	House with the Snake Tube	109		
Kommos	House X			233
Kommos	North House		134	
Mallia	Ayia Varvara	132		
Mallia	Batiment Intermediaire	236		
Mallia	Maison Delta A	164		
Mallia	Maison Delta Be		198	
Mallia	Maison Delta Bw	186		
Mallia	Maison Delta G		204	
Mallia	Maison de la Cave au Pilier	121		
Mallia	Maison de la Facade a Redans	129		
Mallia	Maison des Vases a Etrier	97		
Mallia	Maison Zeta A		421	
Mallia	Maison Zeta B		307	
Mallia	Masion Zeta G			147
Mallia	Maison E	1370		
Mallia	Maison Epsilon A	180		
Mochlos	Coast A	103		
Mochlos	Coast B	274		
Mochlos	House B1 East		186	
Mochlos	House B1 West		178	
Mochlos	House B2		570	
Mochlos	House C2		151	
Mochlos	House C3		131	
Palaikastro	House 1	218		
Palaikastro	House 3	149		
Palaikastro	House 4	225		
Palaikastro	House 5	239		

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Palaikastro	House 6	463		
Palaikastro	House 7	160		
Palaikastro	House B1–22	525		
Palaikastro	House B26–39	184		
Palaikastro	House B29–31	62		
Palaikastro	House B40–47		198	
Palaikastro	House D1–17, 28	235		
Palaikastro	House D12–16	119		
Palaikastro	House D18–65		1258	
Palaikastro	House D33–48		105	
Palaikastro	House E1–17	390		
Palaikastro	House E18–20	51		
Palaikastro	House E21–28	80		
Palaikastro	House E29–35	107		
Palaikastro	House E36		181	
Palaikastro	House G1–12, 20	352		
Palaikastro	House G13–21		216	
Palaikastro	House G23–32, 46		192	
Palaikastro	House G33–45		117	
Palaikastro	House K		97	
Palaikastro	House Ksi1–6	105		
Palaikastro	House Ksi20–25	143		
Palaikastro	House Ksi26–33		101	
Palaikastro	House Ksi35–43	149		
Palaikastro	House Ksi8–18	164		
Palaikastro	House L		150	
Palaikastro	House N	155		
Palaikastro	House P17–22	75		
Palaikastro	House P29–41		170	
Palaikastro	House P7–16	137		
Palaikastro	House S		75	
Palaikastro	House X1–17	357		
Palaikastro	House X51–66, 65	238		
Palaikastro	House Y		112	
Palaikastro	Kouremenos A	77		
Palaikastro	Kouremenos B	61		
Palaikastro	Kouremenos C	186		
Palaikastro	Kouremenos E	92		
Palaikastro	Kouremenos FG	170		
Prasa	House A		343	
Prasa	House B	66		
Pseira	House AA	76		
Pseira	House AB		209	

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Pseira	House AD Centre	82		
Pseira	House AD North	127		
Pseira	House AE	43		
Pseira	House AF North		49	
Pseira	House AM	70		
Pseira	House AN	64		
Pseira	House AP	67		
Pseira	House AR		78	
Pseira	House AU		90	
Pseira	House BC	71		
Pseira	House BE	155		
Pseira	House BI	65		
Pseira	House BK	35		
Pseira	House BN East	35		
Pseira	House BO		88	
Pseira	House BP	88		
Pseira	House BS/BV	162		
Pseira	House BT	113		
Pseira	House BW	76		
Pseira	House BZ	72		
Pseira	House CA	73		
Vasiliki	House M	146		
Zakros	Ayios Antonios House A	198		
Zakros	Ayios Antonios House B	326		
Zakros	Ayios Antonios House Da	164		
Zakros	Ayios Antonios House G	171		
Zakros	Building of the Double Doors	175		
Zakros	Building of the Pot Deposit	126		
Zakros	Building of the Shrine Deposit	161		
Zakros	East House	155		
Zakros	Hogarth's House A	105		
Zakros	Hogarth's House D		134	
Zakros	Hogarth's House F	128		
Zakros	Hogarth's House G	211		
Zakros	Hogarth's House H	305		
Zakros	Hogarth's House J	311		
Zakros	House N	183		
Zakros	House North of the Harbour Road	109		
Zakros	House of the Niches	266		
Zakros	House North of the Palace	163		
Zakros	NW House			125
Zakros	Oblique Building NE	98		
Zakros	Oblique Building NW	119		

Site	*Structure*	*Complete*	*Estimate*	*Minimum*
Zakros	Oblique Building SE	73		
Zakros	Strong Building NE	63		
Zakros	Strong Building	225		
Zakros	Tower Building	86		
Zakros	Seager's House A	149		
Zakros	Seager's House B	167		
Zakros	Seager's House C	140		
Isolated structures:				
Chalinomouri	Farmhouse	198		
Cheiromandres	Farmhouse	143		
Chondros	Rousses		91	
Chondros	Tourkissa		149	
Karoumes 1	Farmhouse	135		
Karoumes 2	Farmhouse	85		
Kato Mesara	Farmhouse	129		
Kokkino Froudi	Farmhouse	108		
Koumoi	Farmhouse	331		
Stous Skarveli	Farmhouse			260
Villas:				
Achladia	Villa	289		
Ano Zakro	Villa		322	
Kannia	Villa	424		
Klimataria	Villa		486	
Makryialos	Villa	590		
Nirou Chani	Villa	542		
Plakes	Villa	258		
Pyrgos	Villa		251	
Sklavokambos	Villa		396	
Tourtouli	Villa			527
Tylissos	Villa A	575		
Tylissos	Villa B	365		
Tylissos	Villa C	451		
Vathypetro	Villa		872	
Zominthos	Villa			1115
Zou	Villa		351	
Small Palaces:				
Gournia	Palace	1514		
Petras	Palace		1064	
Zakros	Palace	2825		

Appendix 2

Recent References to Bronze Age Roads in the Aegean (Note: not all claims are accepted by all archaeologists)

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