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## Gournia: a case study of population mobility in the Bronze Age town and the Mirabello region

### ABSTRACT

In his recent review of the literature, Michael E. Smith concludes that in pre-industrial states, even within a single generation, population mobility at the local and regional levels was more extensive and more varied than archaeologists have traditionally recognized. In other words, population mobility was a common, continual process as opposed to an epochal event (Osborne 1991; Cameron 2013; Smith 2014).

In this paper we examine population mobility in relation to the Minoan settlement of Gournia, its surrounding landscape, and the broader Mirabello region. As part of the Gournia Excavation Project under the direction of L. Vance Watrous, we have been conducting an intensive investigation of Gournia's architecture over the course of the last seven years. We have produced a new plan of the site and have begun to meticulously unravel the complex diachronic development of the settlement from its foundation in the Early Bronze Age through to its abandonment at the end of the Neopalatial period. We have identified several key developments, including the introduction of the earliest forms of monumental architecture, the construction of earlier and later palaces, two chronologically distinct street systems, changes in mortuary practices, and various phases of expansion and contraction in the residential zones within the settlement. We suggest that these multifaceted intra-site changes are best understood in relation to contemporary population movements in the surrounding landscape and in the broader Mirabello region. These changes did not occur in isolation: they were part of larger processes of local and regional population mobility.

KEYWORDS: Crete, Minoan archaeology, population mobility, architecture, regional studies

### INTRODUCTION

In his recent review of the literature, Michael E. Smith (2014) concludes that in pre-modern states, population mobility at the local and regional levels was more extensive and more varied than archaeologists have traditionally recognized. Patterns of population movements include regional village nucleation, rural-village migration, and intra-site mobility that were spurred by a variety of factors, such as defense, shifting political structures, competition for natural resources, and economies of scale. In this paper we examine patterns of local and regional population mobility in and around the Minoan settlement of Gournia in the Mirabello region of eastern Crete from the time of its foundation in the Early Bronze Age through to its abandonment at the end of the Neopalatial period.

Over the course of three seasons of fieldwork (1901, 1903 and 1904), Harriet Boyd Hawes revealed a “palace” surmounting the settlement’s “acropolis”, two cemeteries (Sphoungaras and the North Cemetery), more than 60 houses arranged in discrete blocks, and a street network that tied the town together (Fig. 1 and 2).

Subsequent work at the site included supplementary excavations in the Sphoungaras cemetery (Hall 1912), the excavations of additional tombs in the North Cemetery (Soles 1979, 1992), a reinvestigation of the palace (Soles 1991), an intensive survey of the Gournia region (Watrous *et al.* 2012), and an investigation of the harbor area (Watrous 2012). The information generated from these studies indicated that the history of Gournia was much deeper and more complex than previously believed. In light of this tantalizing information, Watrous initiated a five year excavation project (2010-2014) at Gournia that included a complete reexamination of the site’s architecture (Buell and McEnroe forthcoming).

This recent work at Gournia has provided an entirely new picture of this well-known Minoan settlement. Rather than a Bronze Age Pompeii frozen in time (Schiffer 1985), the town and the surrounding region were like organic entities, undergoing continual change, reflecting underlying changes in intra-site and regional demography (Osborne 1991; Cameron 2013; Smith 2014). These changes are observable at several scales, from that of the individual house, the neighborhood, the town, and its immediate periphery, through to the broader Mirabello region (cf. Knappett 2009; Buell and McEnroe 2017).

### INTRA-SITE MOBILITY

#### THE INDIVIDUAL HOUSE

The earliest evidence for domestic architecture at Gournia dates to the Protopalatial period. Hawes excavated the remains of a few buildings of this period, including six rooms in Building Aa, and a few walls belonging to House Ek (Hawes 1908, 22; Soles 1979, 152-155). The recent excavations have identified additional Protopalatial remains in Buildings En, Eo, and Ep. Unfortunately, the remains of these buildings are limited, and to understand the dynamic histories of individual houses at Gournia, we need to turn to the more extensive remains of the Neopalatial period. Each Neopalatial house had a unique history, experiencing decay and repair, expansion and contraction. These buildings changed continually and their final form was only fixed at the moment of abandonment

Building Ac at Gournia provides a good example of the kinds of dynamic changes we see at work at the level of the individual house. When we view the house today as it has been illustrated in its final, Late Minoan IB form, it is spatially fixed to the east of the East Ridge Road and to the south of the narrow alleyway that separates it from house Ab (Fig. 1). Study of the architectural phasing, including examination of masonry fabrics and butted and bonded joints, however, indicates that the building’s history was surprisingly complex (Fig. 3). Originally Buildings Ab and Ac were parts of a single, much larger structure. Today, only the east wall of that building’s first phase survives (Phase 1). Exterior walls were constructed from a monumental form of masonry, incorporating large (>70 cm in any one direction), gray Tripolitza limestone and conglomerate

# Gournia



Fig. 1. The settlement of Gournia (plan by authors)

boulders that were hammer-dressed (Phase 2). The large size of this building and its monumental façades advertised the owner's wealth and social position.

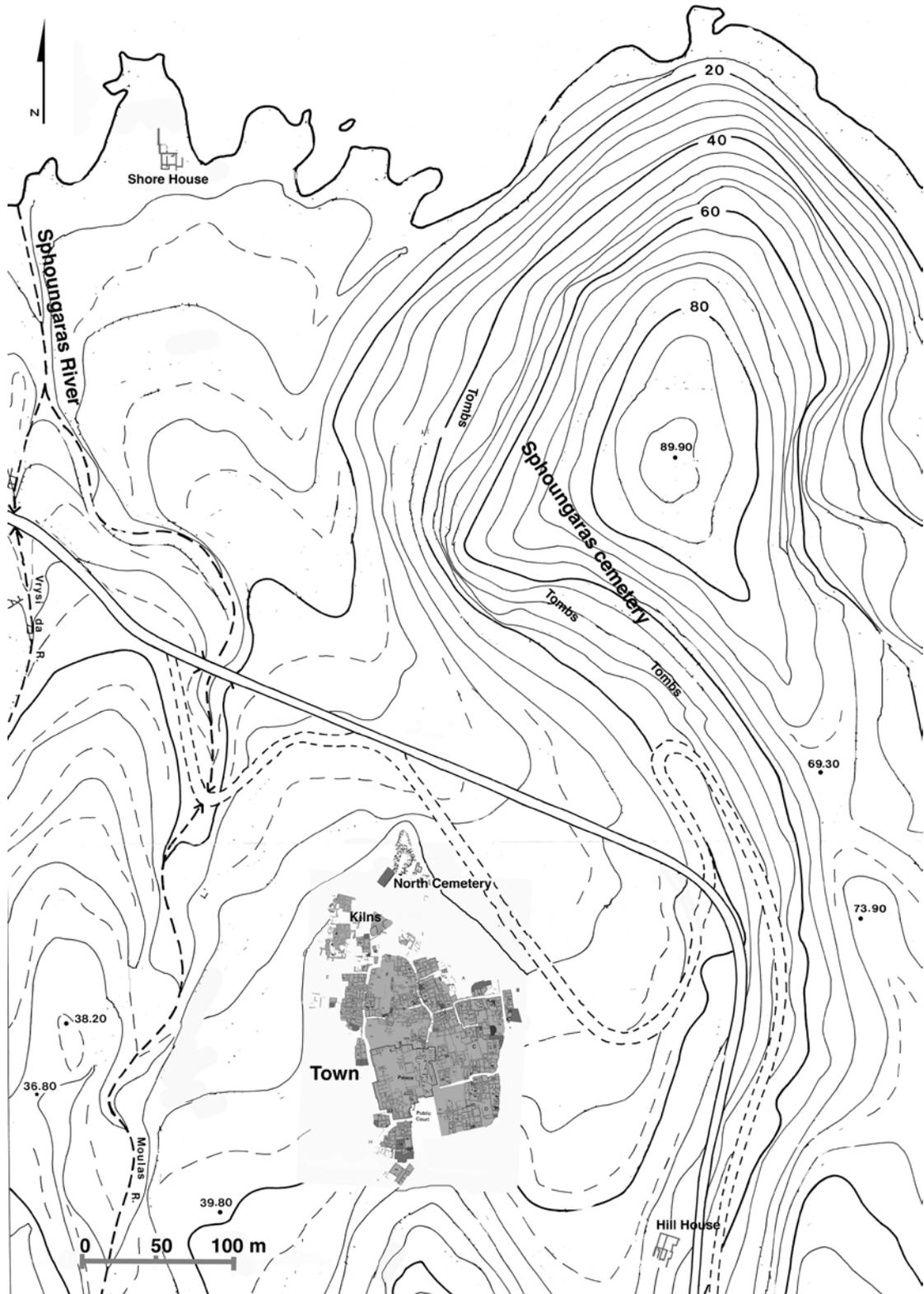


Fig. 2. Gournia and its immediate periphery (adapted by authors from Watrous 2012, fig. 1).

At some point in the Neopalatial period, the building was split into two separate buildings, Houses Ab and Ac, separated by a narrow, makeshift alley (Phase 3). House Ac became the

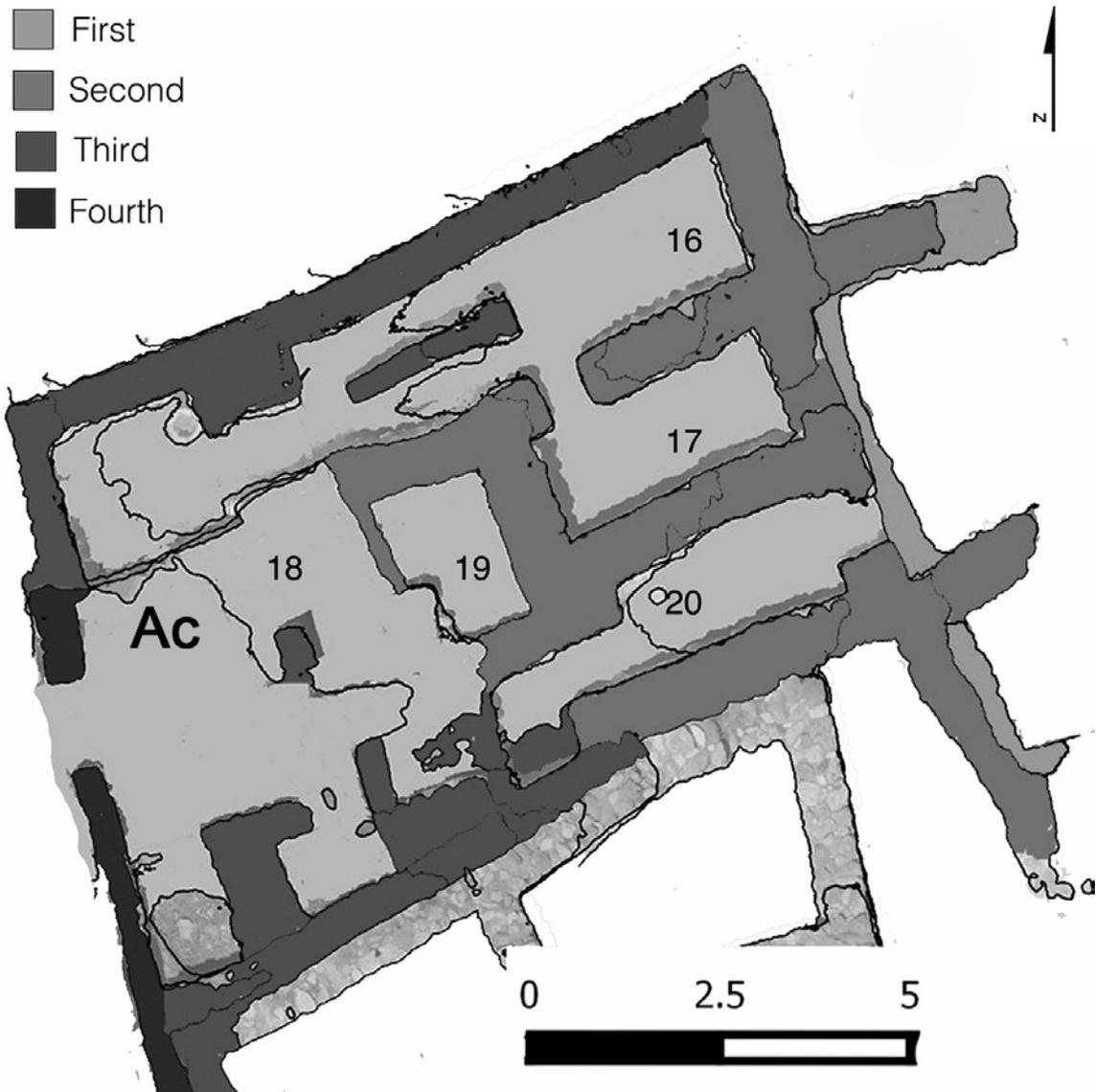


Fig. 3. Phase plan of Building Ac (plan by authors).

smaller of the two and House Ab became the largest building in the block. Later, a thin coursed rubble wall was added as a repair to the west façade of House Ac before its final destruction by fire at the end of the Late Minoan IB period (Phase 4). These changes, occurring over the course of more than eight generations, were tied to natural changes in household composition, and broader social and economic factors. They reflect population mobility at an intimate scale. Most of Gournia's houses have similarly complex stories to tell.

#### THE NEIGHBORHOOD

The individual houses at Gournia were organized into residential blocks and neighborhoods (Fig. 1). The blocks were the result of the town's roughly gridded street system that, over time, became infilled with houses. Because they were contiguous within each block, the houses were structurally interdependent. Neighborhoods, on the other hand, were small areas that provided

face-to-face interaction among residents (Suttles 1972, 55-56; Smith 2010). The residents of each neighborhood may have shared social attributes (e.g., ethnicity, class, religion, occupation, political affiliation) that distinguished them from people in other neighborhoods (Glass 1948, 18). The internal character of each neighborhood changed over time, reflecting shifts in general neighborhood composition, changing identities, affiliations, and occupations.

The northwestern section of Block C, comprised of houses Cd, Ce, Ch, Ci, Cj, and Cm provides a good example of a neighborhood that is characterized by a distinctive architectural style. In their final form these houses were different from most of the other buildings at the site. The walls of their exterior traces were reused from preexisting houses. Builders cut away masses of bedrock to form flat terraces within these outer walls. Thin mudbrick walls were then constructed on a narrow rubble socle (30-35 cm), creating interior partitions (Fig. 4). The narrow width of these internal walls suggests that, unlike many of the houses in the town, these houses had only one storey. Near the center of each house, a roughly square paved room may have been unroofed, providing light and access to the rest of the rooms within the building. The homogeneity of this small group of houses is underscored by the fact that this part of Block C, as a whole, reiterates the layout of the individual buildings: a series of rectilinear units arranged around a large, central open space. This is a good example of the process of “scaling up”, since each of the houses is a smaller version of the block, and even the town, as a whole (Knappett 2009).

Houses Cd, Ce, Ch, Ci, Cj, and Cm seem to have been reconstructed when others in the block were abandoned, as Hawes notes (Hawes *et al.* 1908, 24). When charting intra-site mobility, we should not consider only the major construction phases, the establishment or renovation of new buildings and urban amenities, but also more local instances of destruction, abandonment, and simple neglect (Papadopoulos 2013; Knappett 2015). These decisions are also reflections of demographic mobility.

## THE TOWN

At Gournia, the overall town also changed over time. As in the individual houses and neighborhoods, the vast majority of the ongoing changes were the result of relatively minor bottom-up decisions required to address a myriad of immediate issues and needs: repairing a roof, adding a room, patching a street, etc. On a few occasions, however, more coordinated, sweeping projects dramatically transformed the entire town.

The earliest indication of this sort of widespread change in the town is the massive, but enigmatic pottery dump that Hall excavated in 1904 in the North Trench (Hall 1905). The tons of Early Minoan III pottery recovered from this trench indicate that the settlement at Gournia had expanded considerably at this key moment when, as we shall see, the overall number of settlements in the Mirabello region was declining. This was a time when regional resources came to be concentrated at Gournia. Unfortunately, the Early Minoan III dump itself was deposited as part of a later Middle Minoan IB clearing project, and we know almost nothing about the original layout of the Late Prepalatial town (Watrous *et al.* 2015, 416-420).

That Middle Minoan IB clearing project was part of a major reorganization of the town in the Protopalatial period, which also included massive terracing projects that transformed the



Fig. 4. Rubble socle walls in Block C (plan by authors).

topography of the ridge. As we have previously reported, the first palace, the first system of paved streets, and the first monumental houses were all constructed at this time (Buell and McEnroe 2017). Indeed, it was during this time that the town took on much of the form that we see today, with a central civic-ceremonial area formed by the palace and the public court ringed by a residential zone. A narrow “no-man’s land”, largely taken up by the North Trench pottery

dump, separated the residential zone from the North Cemetery. As we shall see below, this makeover of the town was associated with corresponding changes in the surrounding landscape. It was also connected with widespread changes that swept much of the island and the eastern Mediterranean in the 19th and 18th centuries BCE.

A second wave of building took place throughout the settlement in the Middle Minoan IIIA-III B period. At this time, the palace was rebuilt and extended to the south (Watrous *et al.* 2015, 429-439). The Public Court was paved for the first time and a new street system was laid out. A new series of monumental houses (e.g., Houses Ab, Ad, Ba, Cc, Da, De, Ec, and Fd) went up across much of the site. By the Late Minoan IA period, the settlement expanded considerably, taking on its canonical form. The northern part of the site became an industrial district with a metal foundry and series of ceramic kilns. By the end of this period, in the Late Minoan IB period, impressive ashlar masonry was added to the west and south facades of the palace. The industrial area on the settlement's northwestern side was abandoned, and the area came to be used once again as a dumping ground, continuing the long-established pattern of waves of construction, decay, and removal of debris.

Gournia was mostly abandoned following the destruction at the end of the Late Minoan IB period. A limited number of settlers returned in the succeeding Late Minoan IIIA-III B period, occupying three houses in Block E (Eh, Ei, and Ej) and constructing the monumental corridor House He at the southern end of the site. The settlement came to be used also for a few larnax burials and the Neopalatial street system, no longer needed, went out of use. Near the top of the hill, a small shrine was built over the path of one of the Neopalatial streets, perhaps in commemoration of earlier days. In Late Minoan III B this new settlement was, in turn, abandoned and, until relatively much later, the continual changes stopped.

#### IMMEDIATE ENVIRONS

In many ways, the surrounding landscape was an extension of the town into space and time. The initial Protopalatial construction of the monumental Shore Building and its monumental addition in Middle Minoan III-Late Minoan I precisely parallel the major building phases within the town. This building provided access to coastal shipping routes and to local fishing. Paths led to terraces and fields, a street connected the harbor installations to the settlement, and a larger road near the course of the modern highway went along the coast, providing quick access to the key land route across the Isthmus of Hierapetra (Watrous 2012).

Two cemeteries united the townspeople across generations and confirmed hereditary rights to the land (Vavouranakis 2006, Murphy 2011, Legarra Hererro 2016). The earliest evidence from the cemeteries at Sphoungaras and on the North Spur of the acropolis predates architectural remains in the town. In the early Prepalatial period, the cemetery at Sphoungaras included rock shelter burials, direct inhumations, larnax burials, and perhaps even some Cycladic-style cist burials like those at Zakros and nearby Pseira (Fig. 5) (Hall 1912). The earliest pithos burials began to appear in the Late Prepalatial period (Early Minoan III) (Fig. 6). While the North Cemetery also included several rock shelter burials, this was primarily a cemetery of ostentatious house tombs belonging to at least six of the most prominent families of the town. The earliest of these (Tomb

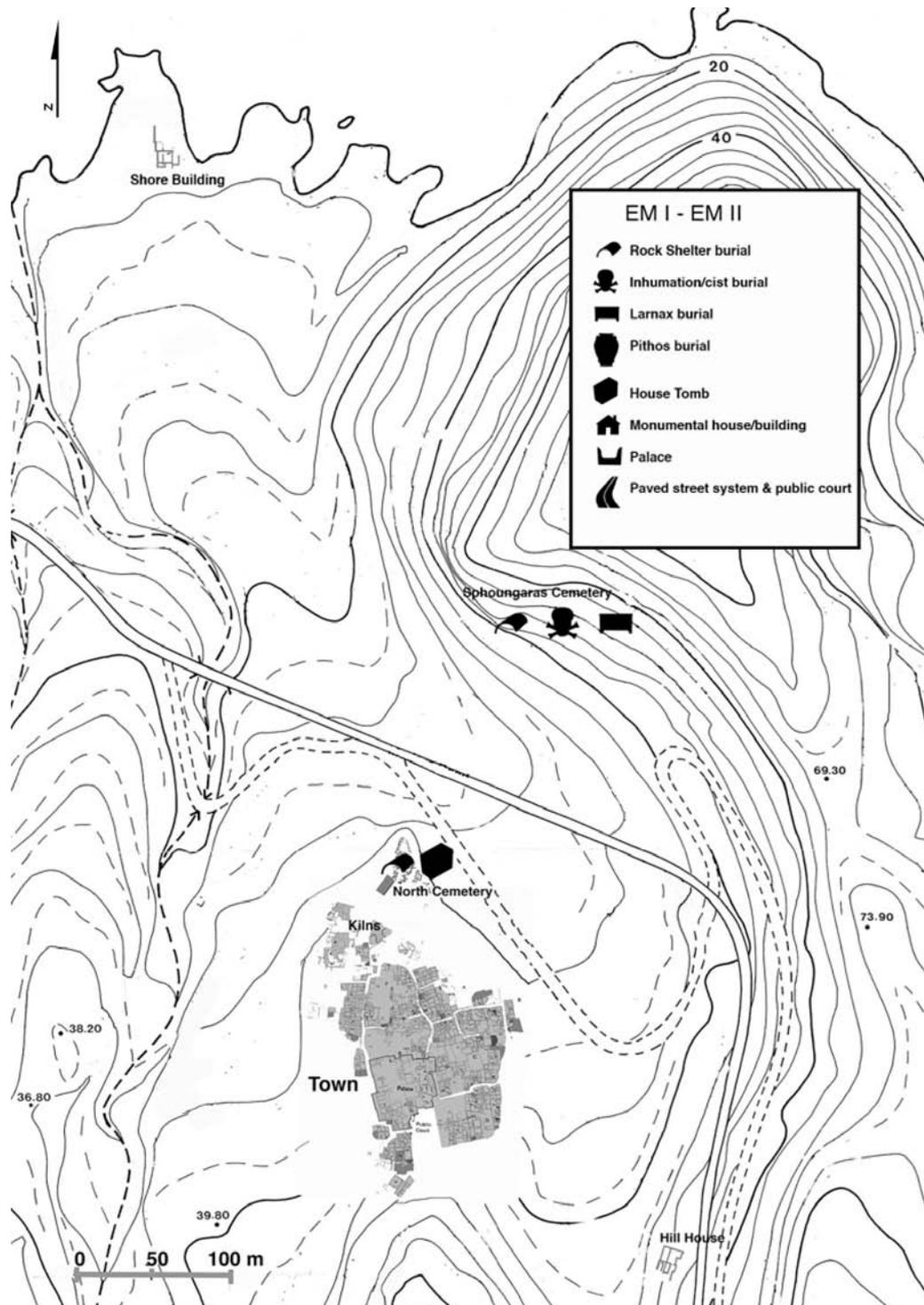


Fig. 5. Gournia and its immediate periphery: Early Prepalatial Period (adapted by authors from Watrous 2012, fig. 1).

III) dates to the Early Prepalatial period (Soles 1992). Four additional house tombs (I, II, IV, VII, and VIII) were built in the Late Prepalatial period (Early Minoan III-Middle Minoan IA). The great range of mortuary customs suggests that in the Prepalatial period the population of Gournia was already ethnically, socially and economically diverse.

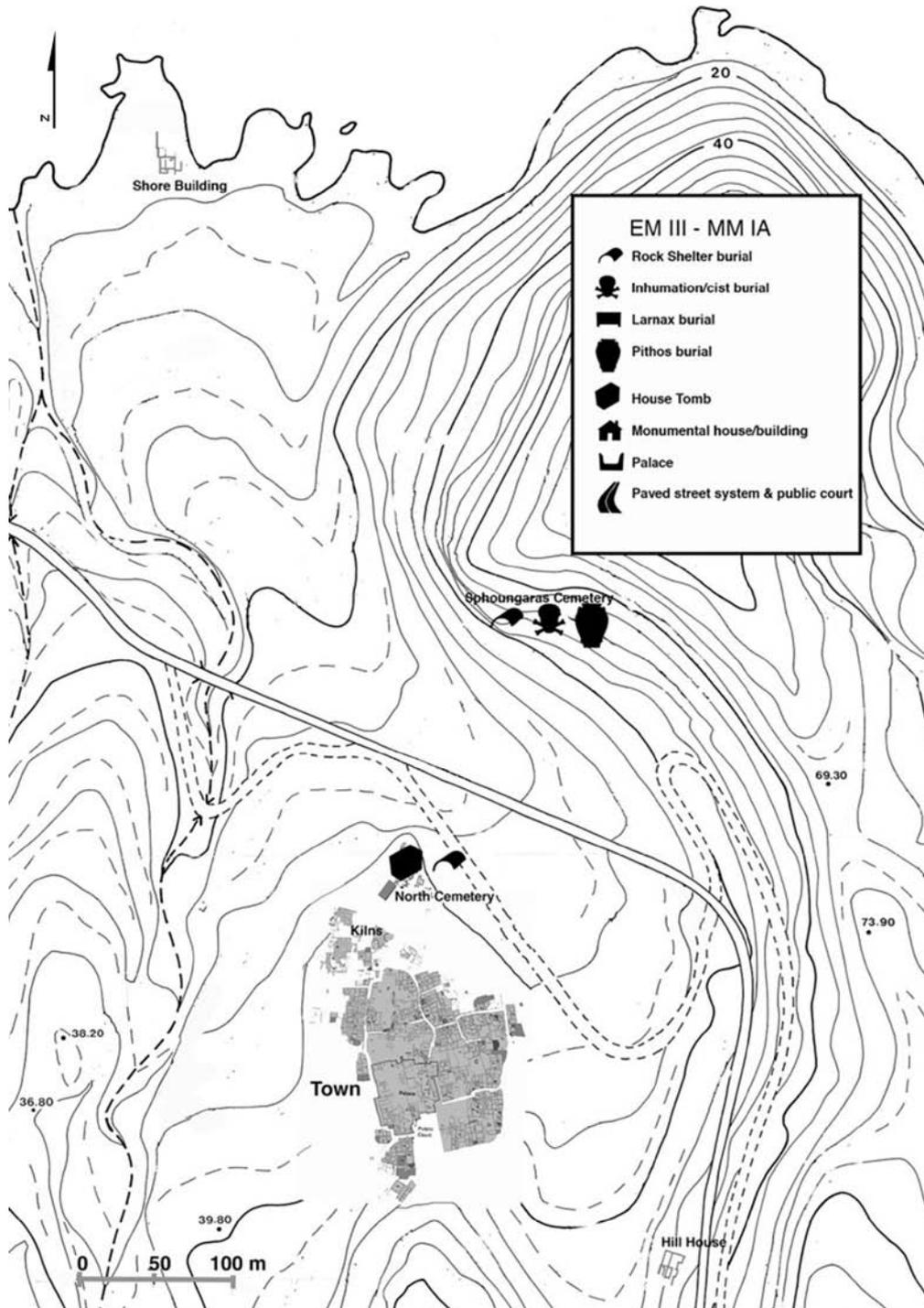


Fig. 6. Gournia and its immediate periphery: Late Prepalatial Period (plan by authors).

There was a dramatic change in mortuary activity at the height of the Protopalatial period in Middle Minoan II, when the town was being transformed through the construction of the first palace, the first monumental houses, and the first system of paved streets (Fig. 7). At this precise moment, the Sphoungaras Cemetery, with its broad range of tomb types, ceased to be used (Hall 1912). Wealthy burials, however, continued in the house tombs in the North Spur

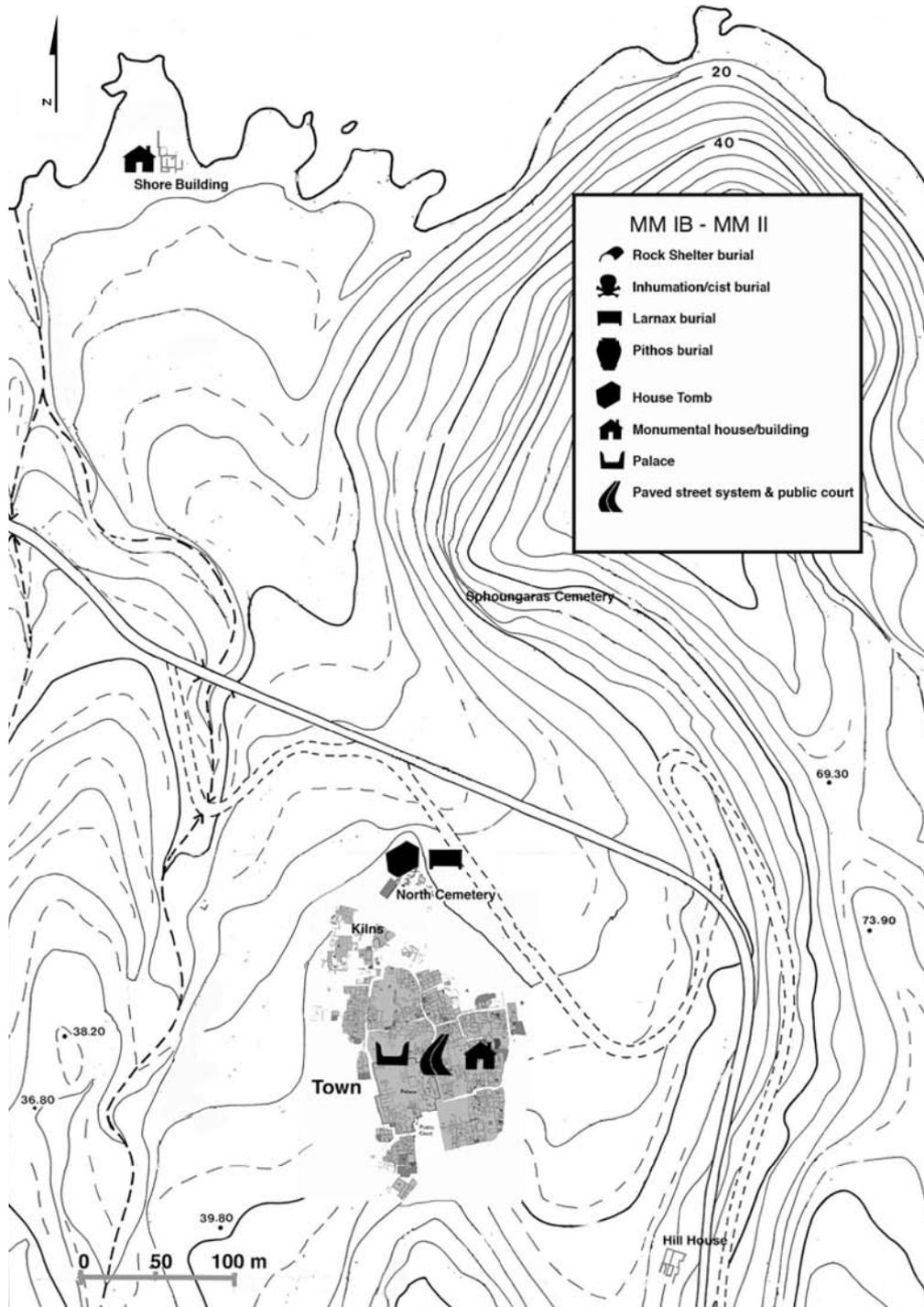


Fig. 7. Gournia and its immediate periphery: Protopalatial Period (plan by authors).

Cemetery. These elite burials are probably to be associated with the people who had been involved in the reorganization of the town.

A second dramatic change in mortuary customs coincided with the second Middle Minoan III – Late Minoan I transformation of the town with its new palace, newly paved Public Court, new series of monumental houses, and new street system. Suddenly the house tombs of the

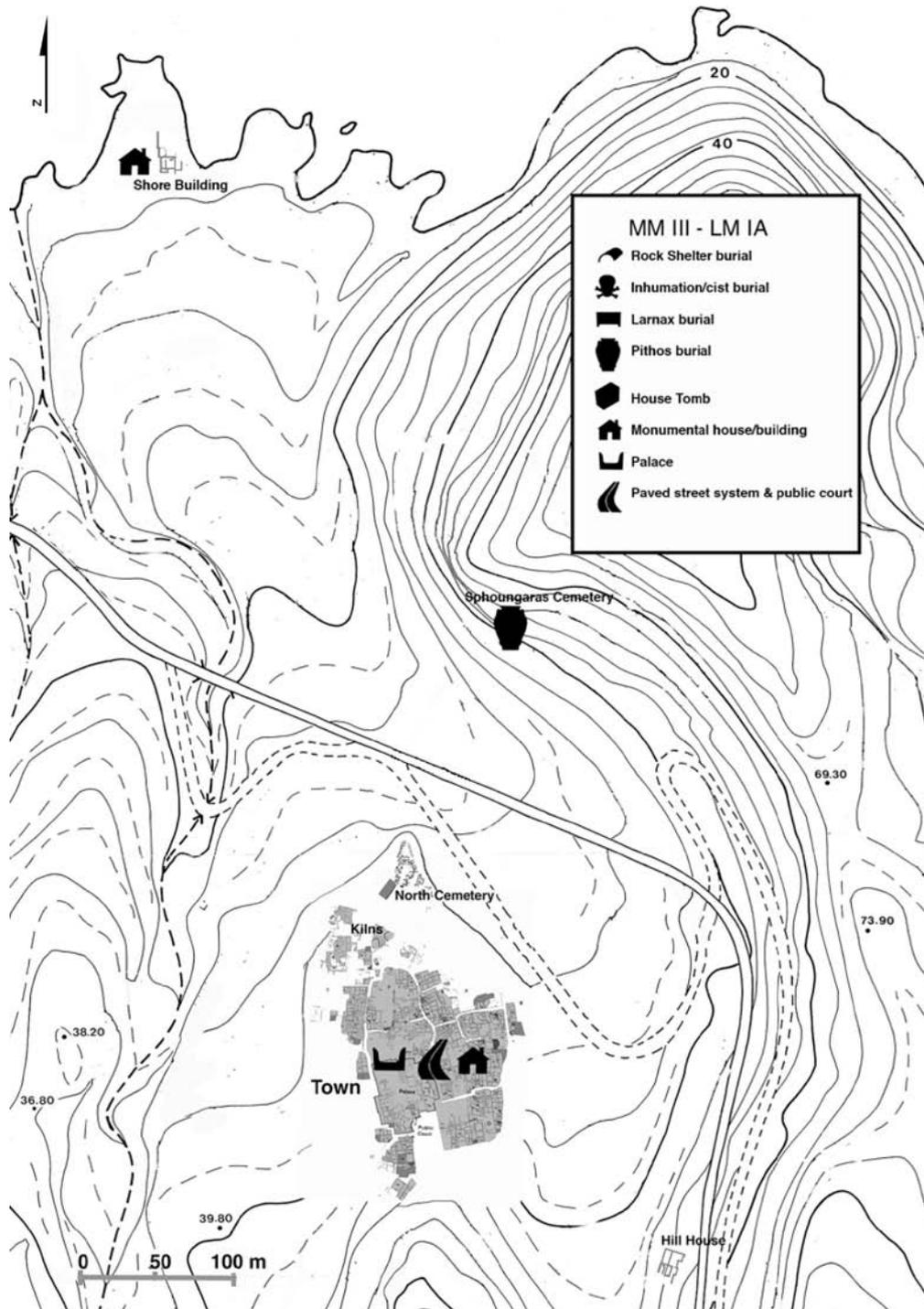


Fig. 8. Gournia and its immediate periphery: Neopalatial Period (plan by authors).

North Spur Cemetery went out of use. Pithos burials, originally introduced in the Middle Minoan IA period, became the predominant form of burial in the Sphoungaras cemetery (Hall 1912) (Fig. 8). Thus, social display in the North Cemetery ceased was replaced by the construction of lavish edifices within the settlement, while, at the same time, Sphoungaras became the settlement's primary cemetery. This would not last, however, since no funerary remains from the Late Minoan IA through IB periods have been recovered at Sphoungaras.



Fig. 9. Surveys in the Mirabello Bay area (adapted by authors from Hayden 2003, 2004; Haggis 2005; Watrous *et al.* 2012; Map data: Google Earth, TerraMetrics).

## REGIONAL MOBILITY

The Mirabello region has been the focus of three archaeological surveys, the Vrokastro survey (Hayden 2003, 2004, 2005), the Gournia survey (Watrous *et al.* 2012), and the Kavousi survey (Haggis 2005) (Fig. 9). The evidence compiled from these surveys reinforces what we have learned in the Gournia Excavation Project: continual cycles of mobility frequently corresponded with social, economic, and political changes within the broader region.

### THE FINAL NEOLITHIC THROUGH EARLY PREPALATIAL PERIOD

The Mirabello region was first settled in the Final Neolithic period. At this time, settlements were few, small in size, located some distance from one another (ca. > 1km), in defensible positions, and close to water sources (Hayden 2004, 35-48; Haggis 2005, 38, 59-62; Watrous *et al.* 2012, 17-18). The settlement situation changed dramatically in the Early Prepalatial period as the total number of sites grew exponentially (Fig. 10). Early Prepalatial sites were also more diverse than those of the Final Neolithic period, ranging from larger settlements down to smaller ones, perhaps on the order of the single farmstead. Early Prepalatial settlements were more evenly dispersed throughout the landscape, occupying varied topographical positions, including the coastal zone and valley floors, presumably to take advantage of good agricultural land (Watrous *et al.* 2012, 26). Several scholars have explained the increased population and new settlement pattern as the result of immigration from the Cyclades as opposed to strictly local demographic growth (Betancourt 1999; Nowicki 1999; Hayden 2003; Watrous *et al.* 2012, 26).

### THE LATE PREPALATIAL PERIOD

Though the Kavousi area witnessed a slight increase in the number of settlements in the Late Prepalatial period, the Gournia area saw a substantial reduction in settlement numbers (Watrous



Fig. 10. Mirabello region: Early Prepalatial sites (adapted by authors from Hayden 2003, 2004; Haggis 2005; Watrous *et al.* 2012; Map data: Google Earth, TerraMetrics).

*et al.* 2012, Tables 2 and 3) (cf. Fig. 10 and 11). The largest Early Prepalatial settlements in the northern Isthmus, including both Gournia and Vasiliki, grew in size, while many sites within their vicinity were abandoned (Watrous *et al.* 2012, 35). At the same time, there was a movement away from the dispersed settlement pattern of the preceding Early Prepalatial period to spatially separated clusters of interdependent sites, sharing similar topographical situations, water supplies, and arable resources (Haggis 2005, 7-73, fig. 20). Haggis (2013, 60, 69) reasonably

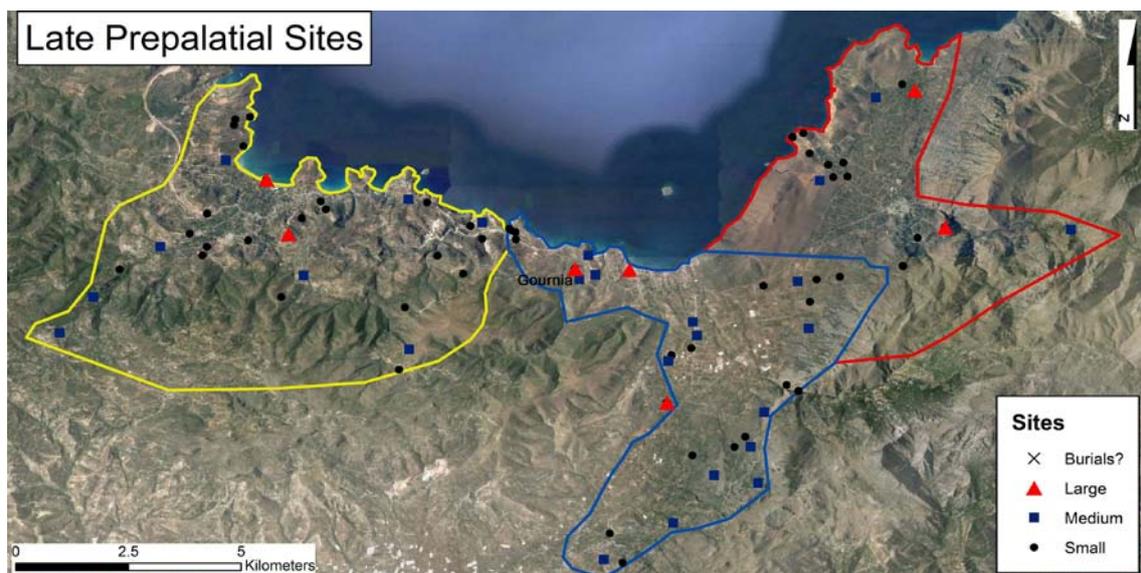


Fig. 11. Mirabello region: Late Prepalatial sites (adapted by authors from Hayden 2003, 2004; Haggis 2005; Watrous *et al.* 2012; Map data: Google Earth, TerraMetrics).

suggests that these settlements were parts of socially and economically related groups. Other settlements were established in defensive locations. All three patterns (aggregation of sites, clustering of sites, and the establishment of sites in easily defended locations) may be adaptive responses to local conflict, presumably over agricultural resources.

#### THE PROTOPALATIAL PERIOD

The number of sites increased across all three survey zones in the Protopalatial period (Hayden 2004, fig. 17; Haggis 2005, fig. 11; Watrous *et al.* 2012, 41, Map 20) (cf. Fig. 11 and 12). Although many of the new sites were small in size, there was an expansion of the historically larger settlements, including Gournia. Both situations imply an increase in population (Hayden 2004 93, 97-98, 115). At a time when other excavated sites in the general region such as Vasiliki, Pseira, and Mochlos (the latter two not included in the survey regions) shrank in size, Gournia expanded. The expansion was accompanied by transformative changes to its built environment, including the construction of the settlement's first palace, several monumental houses, and a street system. The construction of these edifices may signal new power-sharing arrangements, aimed at integrating and ordering society, as well as managing tensions (Kowalewski 2006; Birch 2013, 9).

Protopalatial settlements occurred in all topographic positions and on all soil types throughout the Mirabello region, suggesting more intensified agricultural production (Watrous *et al.* 2012, 46). Intensive farming may have been a response to the continued growth, in terms of both population and complexity, of larger settlements. And lastly, as in the preceding period, some settlements were situated in defensive locations, implying, once again, local strife. Indeed, the reoccupation of the refuge settlement of Katalimata in the Gournia area at the end of the period may point towards a displacement of population due to local conflict (Nowicki 2008). Evidence

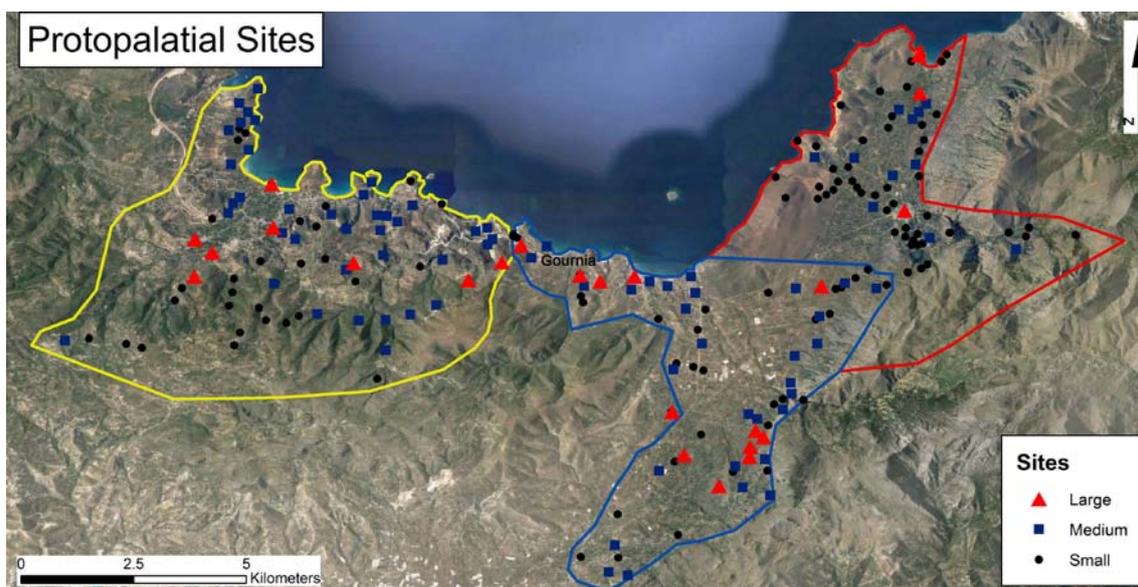


Fig. 12. Mirabello Region: Protopalatial sites (adapted by authors from Hayden 2003, 2004; Haggis 2005; Watrous *et al.* 2012; Map data: Google Earth, TerraMetrics).

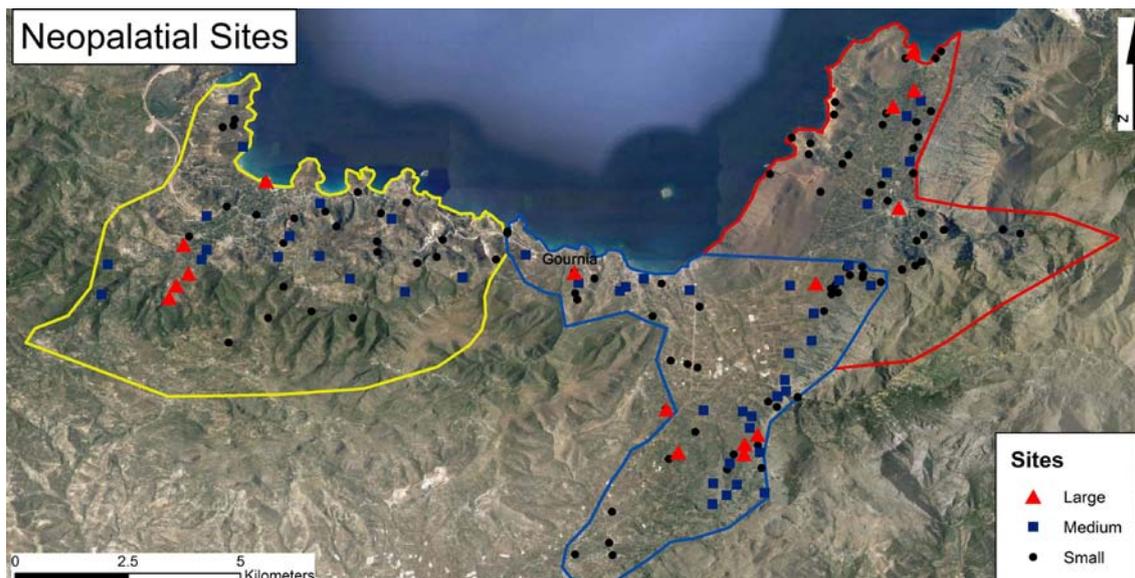


Fig. 13. Mirabello Region: Neopalatial sites (adapted by authors from Hayden 2003, 2004; Haggis 2005; Watrous *et al.* 2012; Map data: Google Earth, TerraMetrics).

for warfare is further confirmed by the fire destructions at a number of settlements throughout the broader Mirabello region, including Pseira, Vasiliki, and, perhaps, Priniatikos Pyrgos. Gournia was not destroyed at this time. Gournia's relative growth, larger agricultural catchment, public monument and amenities, and elite buildings indicates that it had become an urban entity.

#### THE NEOPALATIAL PERIOD

There was a reduction in the number of sites in the Mirabello during the Neopalatial period, especially of larger Protopalatial ones (Hayden 2004, fig. 18; Haggis 2005, 75; Watrous *et al.* 2012, 51) (cf. Fig. 12 and 13). Since the number of settlements around Gournia decreased substantially, we suggest that there was population aggregation at the settlement. The movement of people to Gournia corresponds to its emergence as the regional center, one which now served as the locus for a number of specialized activities and economic opportunities, as evidenced by the continual construction and reconstruction of the city's monumental core and bountiful evidence for industry and trade (Watrous and Heimroth 2011). The movement of local people to Gournia to take advantage of new socio-economic opportunities accords with Tilly's (1978, 54) concept of "career migration".

As Gournia expanded in both size and complexity, it came to possess direct access to three times more arable land than it had previously (Watrous *et al.* 2012, 55). This land could now be farmed in order to support its sizeable population, including palace dependents. Moreover, surpluses would have been used in large-scale feasting events, the evidence for which comes in the form of two substantial feasting deposits from palace room 13/13a, marking major building episodes in the life of the palace. Indeed, such events, which helped to promote group identity and social cohesion, may have further facilitated physical aggregation (Haggis 2012; Birch 2013, 6). Outside of Gournia's immediate vicinity, the long-stable pattern of site clustering largely

ceased (Watrous *et al.* 2012, 52). Gournia's hinterland was now restructured, being largely populated by small sites, to provide for the city itself (cf. Kowalewski 2003).

At the end of the Late Minoan IB period, Gournia and the other large sites in the Mirabello region, including Mochlos and Pseira, were destroyed. More generally, the number of sites throughout the region dropped precipitously and no new settlements were established in the Late Minoan IIIA period (Watrous *et al.* 2012, 66). At this time, the coastal plain was all but abandoned, and so too many of the region's rich agricultural areas (Watrous *et al.* 2012, 66). Preexisting settlements that continued into the Late Minoan IIIA period were much reduced in scale and usually in elevated, defensible locations. In sum, the survey evidence suggests a tremendous loss of population, concern for safety, and reduction in the scale of agricultural enterprise, all of which are paralleled at Gournia itself.

## CONCLUSION

From the Final Neolithic through the Neopalatial period, Gournia and the Mirabello region underwent continual change at every scalar level: the house, the neighborhood, the town, the immediate environs, and the broader Mirabello region. We think these inter-scalar changes were interdependent. As Gournia went from village, to city, to regional center, agricultural productivity intensified, as did manufacturing and trade. To integrate the increasingly complex and diverse community, the emerging collective/corporate leadership was accompanied by new sociopolitical and ritual practices (Kowalewski 2006, 117). The dynamic sense of mobility that the peoples of Gournia and the Mirabello region experienced was not simply a matter of physical movement, but of complex organizational and ideological transformations.

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