

NEW PLANS OF THE EARLY IRON AGE SETTLEMENT OF VROKASTRO

(PLATES 71 AND 72)

WHEN EDITH HALL DOHAN excavated the Late Minoan IIIC—Geometric settlement of Vrokastro in 1910–1912 for The University Museum, she drew what she termed an “amateur plan” of the rooms that were excavated in 1910,¹ on the summit of the limestone spur (Fig. 1; elev. + 313.10 m.). The mountain is located in eastern Crete just south of the main east-west highway which today links the near-by village of Kalo Chorio, west of the site, to the village of Pachyammos, approximately six kilometers farther east. A larger portion of the settlement, between elevations 40 and 65 m. below the summit, was excavated in 1912 but not described in the final publication,² and a plan of this area was never drawn. Included in this paper are new, more accurate plans, a description of both the upper and the lower portions of the excavated settlement, and a map of the area indicating the various routes to the summit.³

The two areas excavated in 1910 and 1912 include a substantial portion of the settlement but by no means all of it, as Hall pointed out. Several structures, including tombs, were located on the hills (Karakovilia, Mazichortia, and Amighthali; see Fig. 1) southwest of

¹ E. H. Hall, “Excavations in Eastern Crete, Vrokastro,” *University of Pennsylvania, The University Museum, Anthropological Publications* III, iii, Philadelphia 1914 (= Hall), pp. 80, 86–88, pl. XVIII.

Additional references frequently cited are abbreviated as follows:

- AC = J. D. S. Pendlebury, *The Archaeology of Crete*, London 1939
 DAG = A. M. Snodgrass, *The Dark Age of Greece*, Edinburgh 1971
 Drerup, = H. Drerup, *Griechische Baukunst in geometrischen Zeit*, *Archaeologica Homerica* O, Göttingen 1969
 Baukunst
 Hayden = B. J. Hayden, *The Development of Cretan Architecture from the LM IIIA through Geometric Periods*, diss. University of Pennsylvania 1981
 LMTS = V. R. d'A. Desborough, *The Last Mycenaean and their Successors*, Oxford 1964

There are no new definitive dates for initial or terminal occupation on the summit. The widest range of dates for the lifetime of the settlement extends from the 12th or 11th century to the Late Geometric period. For Vrokastro dating see *LMTS*, p. 185: LM IIIC sherds; J. N. Coldstream, *Greek Geometric Pottery*, London 1968, pp. 235, 417: Protogeometric B—Late Geometric; M. R. Popham, “Some Late Minoan III Pottery from Crete,” *BSA* 60, 1965, pp. 318, note 15, 334–335: early LM IIIC; *DAG*, p. 371: 11th century; V. R. d'A. Desborough, *The Greek Dark Ages*, New York 1972, p. 375: 12th century; A. Kanta, *SIMA*, 58, *The Late Minoan III Period in Crete, A Survey of Sites, Pottery and their Distribution*, Lund 1980, p. 133, note 1: LM IIIC, earlier than IIIC from Kastri (Palaikastro) or Dreros.

² Hall, pp. 80, 83, 86.

³ Funding for the project was provided by the Archaeological Institute of America (Olivia James Traveling Fellowship, 1981/82). I would like to thank the Greek Archaeological Service and Professor C. Davaras for granting permission to undertake work on a new plan and on pottery at the site, Professor and Mrs. J. W. Myers for providing aerial photographs for study, and Professors G. Gesell, S. Immerwahr, P. Betancourt, and S. Iakovidis for helpful advice and support. I would also like to thank the staff of the American School of Classical Studies, in particular Professor H. Immerwahr, for obtaining a permit in my name for work at the site. Margaret Walsh acted as assistant in the summer of 1981.



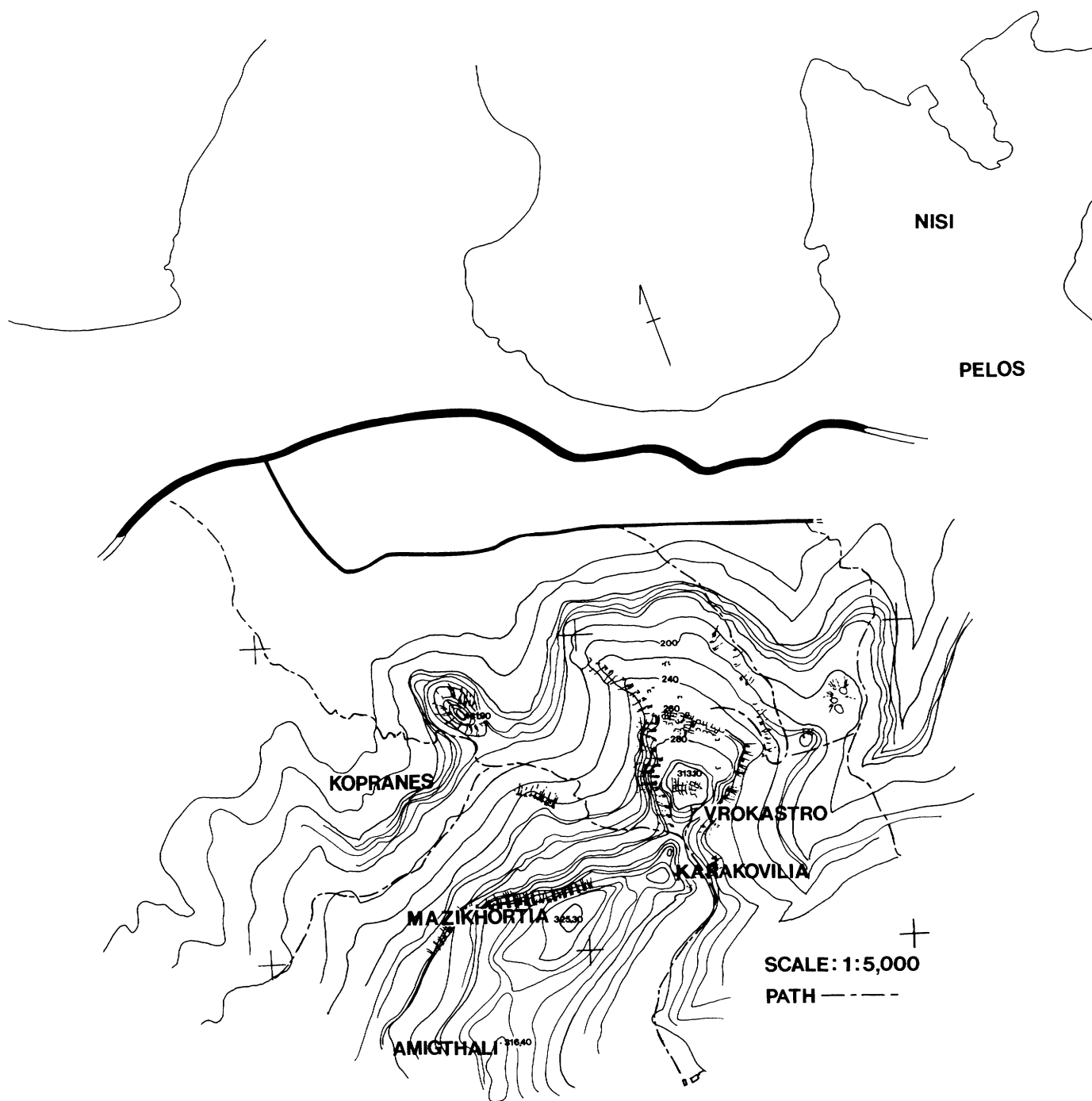


FIG. 1. Area map

the summit.⁴ More rooms were built between the upper and lower excavated portion of the settlement on the north face of the spur, as well as below the Lower Settlement area.⁵ It is also probable that a few farms were located in the fields south of the site.

TOPOGRAPHY

Hall described only one approach to the site, a steep, partially overgrown, goat path on the east side of the spur.⁶ This path begins today at the edge of a dirt road which crosses the northern side of the mountain. It skirts the base of a rising cliff on the eastern side of the spur (Fig. 1). Across a deep ravine that parallels the path on its eastern side there is another, less precipitous route to the fields south of Vrokastro. This path is still used today by the local shepherd. The routes converge on a narrow plateau at the top of the ravine, flanked by rising, terraced slopes to the west which were cultivated in Hall's time. The plateau is north of the bowl-shaped area called Chauga behind the settlement (Pl. 71:a).⁷ From the plateau the lower portion of the settlement can be reached quickly by leaving the path and climbing over the steeply rising terrace walls west of it. The mountain can then be circled to approach the Lower Settlement from the north. Hall may not have been aware of this "short cut", and no one unfamiliar with the mountain could easily locate it. Instead, the longer but more obvious route would be chosen, following the eastern path already described which leads through the Chauga area to the base of a hill south of and below the summit. On the top of this slope there is an approach through the saddle that Hall described behind the mountain (Pl. 71:b).⁸ From the saddle there are two routes to the top. One can be traced along the western cliff edge of the summit (Pl. 71:c) and ends at the western base of Road U2 at the southwest edge of the Upper Settlement (Figs. 2–4). During the lifetime of the settlement this path may have been wide enough for a donkey, although today its base is no longer extant, and portions of it have fallen down the cliff side. The second route from the saddle involves a scramble up the southern face of the mountain and leads to the southern⁹ end of Room U22 (Figs. 2–4). The climb from the sea to the summit requires no more than thirty or forty minutes, especially if the short cut across the eastern terraces to the Lower Settlement is used. Unlike other well-known LM IIIC—Geometric elevated sites (Kavousi, Karphi), which are further removed from the sea, at least part of the economy of the village of Vrokastro may have been based on fishing.¹⁰

⁴ Hall, p. 82.

⁵ *Ibid.*, p. 81. Fragmentary walls of at least five rooms can be seen between the upper and lower excavated portions of the settlement. Below the Lower Settlement area there are several more partially excavated and unexcavated structures. N.B. Because the sequence of numbers is the same for the "areas" in the Upper and Lower Settlements, for clarity these numbers are prefixed in the text by "U" and "L", respectively.

⁶ *Ibid.*, p. 81.

⁷ *Ibid.*, pp. 81, 172–173. Two pithos burials (exact location unknown) were found by Hall's workmen in the Chauga area.

⁸ *Ibid.*, p. 82.

⁹ For the sake of simplifying the description of the Upper Settlement, a reference north is used which is actually northeast.

¹⁰ Several beaches suitable for small fishing boats are located between the peninsulas north of the site (Fig. 1). Vrokastro may fall within the category of Ano/Kato villages as defined by Bintliff, with two separate locations, inland and coastal (or the site may, despite its relative inaccessibility, be located too near the coast to

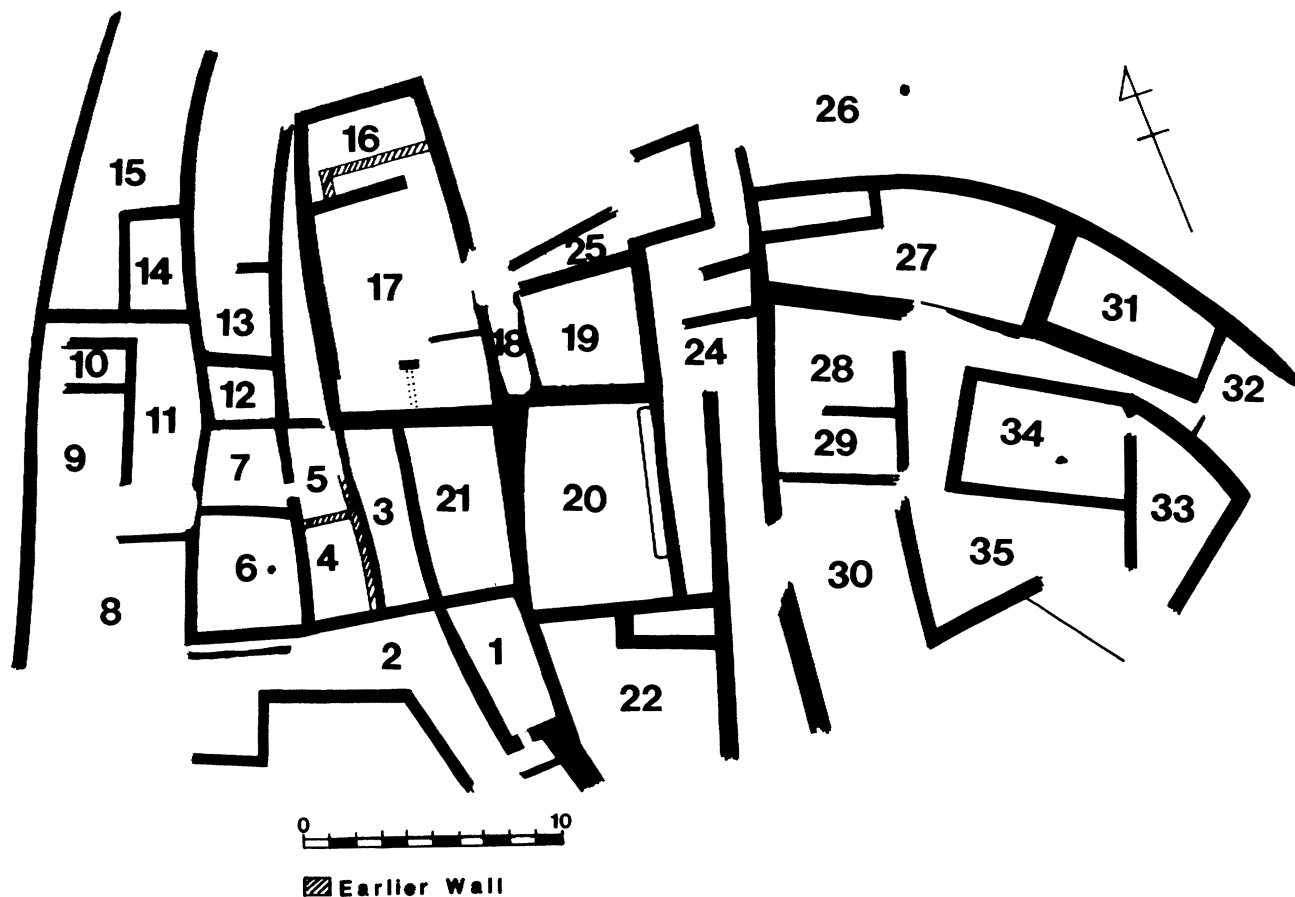


FIG. 2. Hall's plan of Vrokastro, settlement on the summit. Hall, pl. XVIII

The route across the saddle, flanked by a steep drop on its east side and the rocky ridge of Karakovilia on the west, is not visible from the lower eastern path through the Chauga area. The summit provides an excellent vantage point for observing anyone approaching by way of the eastern path or from the fields south of the site (Pl. 71:d). The view is more restricted on the lower, northern side of the mountain, but easy access to this area of the settlement is precluded by cliffs along most of the east and all the west side of the spur. Any stranger would find the approach to the Lower Settlement from the east only by accident,

fit this definition); J. Bintliff, *Natural Environment and Human Settlement in Prehistoric Greece*, BAR Suppl., ser. 28, I, Oxford 1977, p. 114. A coastal settlement in the Vrokastro area of Iron Age date has not been identified, although LM IIIA2–IIIB pottery from tombs was found near the village of Kalo Chorio; Kanta, *op. cit.* (footnote 1 above), p. 140: LM IIIA2 pottery; S. Alexiou, «Χρονικά», *ΚρητΧρον* 17, 1963, p. 405: LM IIIB tomb.

and a rooftop vantage point probably improved visibility for those living in structures below the summit.

There are other routes to the Upper Settlement (Fig. 1), although these involve far longer, steeper climbs. For example, one difficult path on the west side of the summit leads from the dirt road past the lower western hill, Kopranes, to a cleft in the rock ridge separating the Vrokastro summit from Karakovilia (Pl. 71:e). Another goat path north of the ridge of hills to the south (Karakovilia, Mazichortia, Amigthali) links Vrokastro to the village of Kalo Chorio, as does a steep but passable dirt road from Kalo Chorio to a shepherd's house south of the site.

This house is a few minutes' walk from a spring, which must have provided the excellent water source for the village of Vrokastro.¹¹ There can be no doubt that the rolling hills behind the site were cultivated during the lifetime of the settlement, as they are today (crops include cereals, olives, and almonds). The extensive terracing on the northern and eastern sides of Vrokastro in areas where there are no visible house remains may indicate that small portions of the rocky spur were used for cultivation in antiquity as well.

STREETS AND PASSAGES

The upper portion of the site is the best preserved section.¹² Road U2 through the area (Figs. 3 and 4) skirts the southwest section of the Upper Settlement. Rooms U6, U1, and U22 open onto this path which leads to the approach to the settlement along the western cliff edge. The stone-lined drain identified by Hall in the precipitous east-west section of Road U2 south of rooms U4 and U6 is still partially preserved.¹³ Two other routes can be identified. One may have led roughly northward through the center of the settlement (area U24, between Rooms U19–U20 on the west and U27–U29 on the east). The north end of this passage drops down to the relatively level floor of area (or Room) U26, approximately two meters below U24 (Fig. 3; light rubble walls extending westward from Room U27 appear to block only part of the passageway at this point). It is possible that rubble was used to widen the narrow ledges of bedrock between the levels of U24 and U26 to form steps which would have made the descent to U26 less difficult. The short passage U25, defined by a rubble wall on its north side, extends westward from U24 to Room U17. Room U19 probably opened onto U24 through a door in the northern part of the room's east wall; the room is on the same level as the passageway. Room U20, however, just south of Room U19, is approximately one and a half meters below U24. If Room U20 was connected to U24 through a door in its eastern wall, a ladder would be necessary to reach the level of the passageway. (It must be assumed that wooden ladders were used frequently to connect

¹¹ Water flow today would sustain several households and a large animal population. Another spring is located approximately midway between Vrokastro and the village of Kalo Chorio, near the dirt road which leads up from this village to fields south of the summit.

¹² Hall, pp. 86–88; J. D. S. Pendlebury, *The Archaeology of Crete*, London 1939, p. 323; L. Renard, "Notes d'architecture proto-géométrique et géométrique en Crète," *AntCl* 36, 1967, pp. 587–588; Drerup, *Baukunst*, pp. 43–44; *DAG*, p. 371; S. Sinos, *Die vorklassischen Hausformen in der Ägäis*, Mainz 1971, pp. 111–112; J. N. Coldstream, *Geometric Greece*, London 1977, p. 278.

¹³ Hall, p. 87.

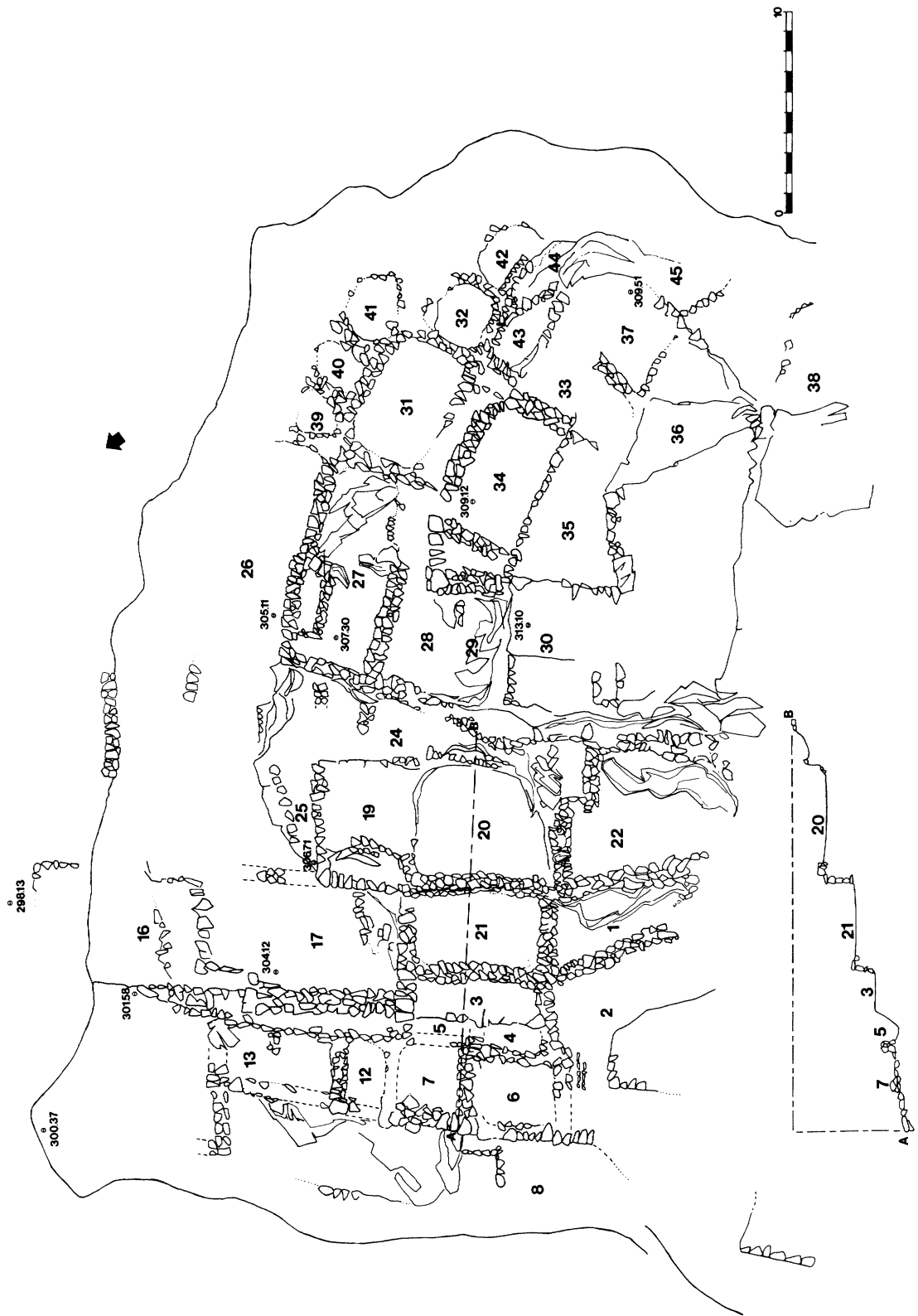


FIG. 3. Upper settlement, actual-state plan with section

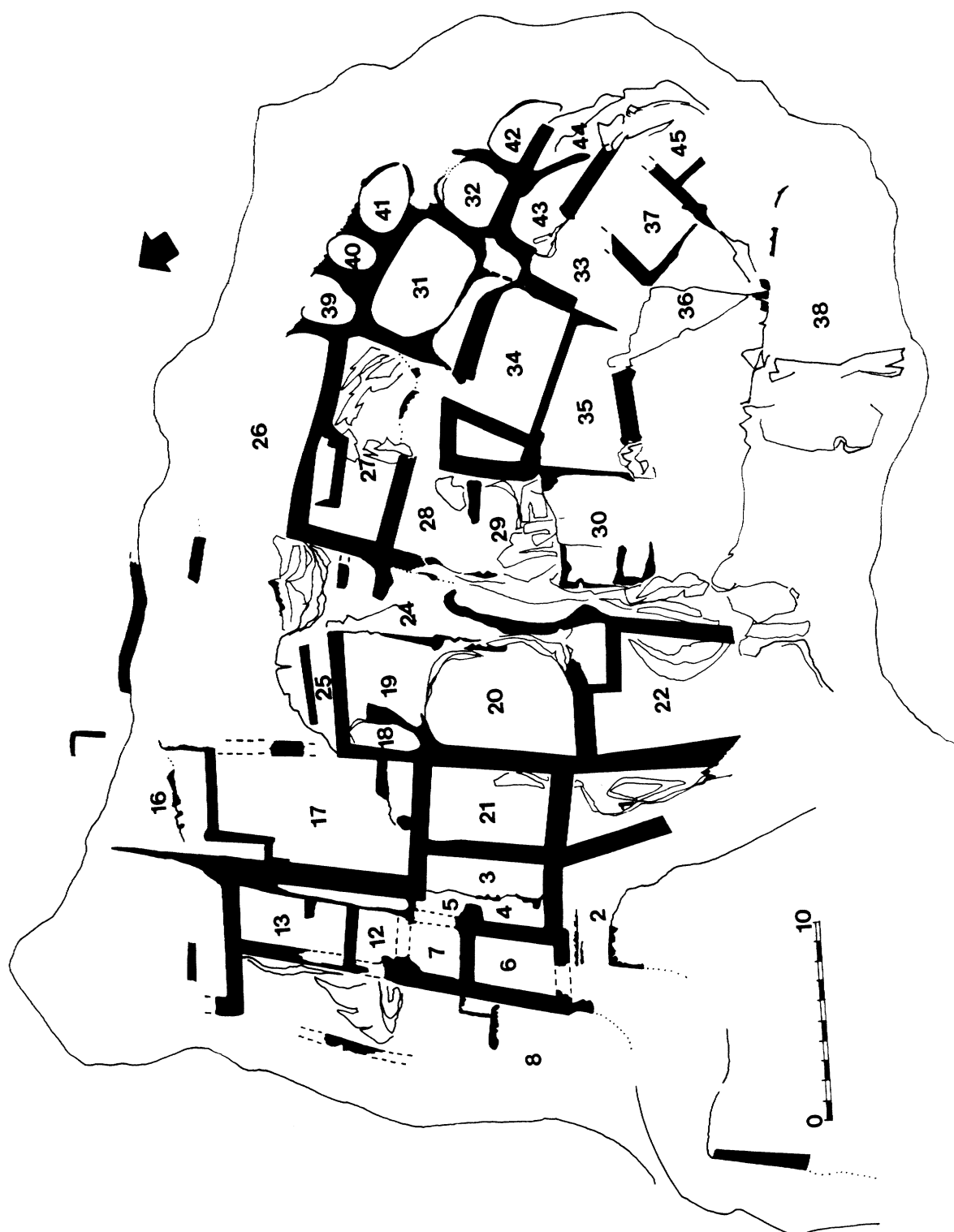


FIG. 4. Upper settlement (walls partly restored)

many of the rooms placed on different levels in both Upper and Lower Settlement, as little trace remained of stone-built staircases at the time of excavation.¹⁴)

In the eastern section of the Upper Settlement (areas U27–U45), another narrow path extends westward from area U43 between Room U34 on its south side and Rooms U31 and U27 on the north. It may end in front of the door in the east wall of Room U28 (Pl. 71:f) or turn south between Rooms U28 and U34 to end in a roughly triangular, probably unroofed area (U35) south of Room U34. Although the angle around the northwest corner of Room U34 appears blocked by a wall extending westward from the north wall of this room, the upright stones forming this small section of wall may have been put in place to break the flow of water from the higher area (U35) behind Room U34 (runoff from this area eventually destroyed the south wall of Room U27). Rooms U34 and U28 are on the same level as the path; all rooms to the north (U27, U31, U32) have floor levels well below it (1.50–2.00 m.) and must have been entered by means of ladders placed against interior southern room walls.

Routes of communication through settlements of this and slightly earlier periods can vary from twisting paths, as at Vrokastro, to paved roads. Streets at Karphi, for example, employed irregularly placed stone slabs for steps and to break the flow of water. The streets opened at intersections into larger, courtlike areas or “squares”. The upper and lower sections of the Geometric town of Phaistos were linked by a broad, cobbled street, and a road of possible Geometric date has been identified at Dreros.¹⁵

BUILDING TECHNIQUES

Building techniques at Vrokastro do not differ greatly from other elevated (or low-lying) sites of early Iron Age Crete.¹⁶ Walls are composed of medium-to-large pieces of rubble, either the local limestone or conglomerate. A few worked rectangular blocks of sandstone (source unknown) can be identified (one lies on the floor of Room U17). Corners were sometimes strengthened with large, upright boulders, and walls were constructed in the usual way, with larger blocks placed along each wall face and smaller stones placed in the core. Small stones were used to fill interstices, and vertical outcrops of bedrock were incorporated into wall construction where possible. The round column bases identified on Hall’s plan are no longer extant (in Rooms U6, U26, U34; Fig. 2). These were roughly worked, as is one column base (no longer *in situ*) lying in Room L52 (Figs. 7 and 8). Although it cannot be detected, clay mortar may have been used to some extent in wall construction; certainly, large amounts of clay and earth were cut out of the hillside to form terraces for room floors. Hall did not report finding traces of mud brick, indicating that

¹⁴ Hall mentions only one staircase: p. 87, pl. XXIII:3. It is in the Lower Settlement, possibly Room L27, although the ledge of rubble lining the south wall of this room today appears to be a bench, not a staircase to the higher level behind, Room L28.

¹⁵ H. W. and J. D. S. Pendlebury and M. D. Money-Coutts, “Excavations in the Plain of Lasithi. III. Karphi: A City of Refuge of the Early Iron Age in Crete,” *BSA* 38, 1937/1938, pp. 64, 66. For a discussion of roads see Renard, *op. cit.* (footnote 12 above), pp. 590–591.

¹⁶ It is difficult to assess whether technical standards were lower at Vrokastro than at Karphi; *DAG*, p. 371. The best built structures with the most regular ground plans at Karphi are placed on more level ground, with less projecting bedrock, than that available at Vrokastro.

room walls were composed entirely of rubble. Flat roofs must have been a necessity in certain areas, such as the eastern side of the Lower Settlement (Pl. 72:e), for communication between rooms on different levels.¹⁷

A large amount of terracing was necessary on the summit and the north face of the mountain (sections, Figs. 3, 7, and 8). Two complementary techniques were used: (1) digging a level space or pocket back into the hillside and enclosing the area on three sides with a rubble wall, and (2) filling in to form level floors behind retaining walls. The rear wall (the scarp remaining after cutting out part of the hillside) was lined with rubble forming a buttress against the slope. The front wall of a room above and directly behind would be placed on top of the rear wall of the lower room (section, Fig. 3). The slope of the eastern side of the Lower Settlement is so precipitous that it may have been possible to exit a room higher up the slope by walking out onto the roof of a room placed directly below it, and some of the lower rooms in this area (L45, L53, L59) may have been entered from above by ladders. In certain cases where there was no upper terrace requiring support, the scarp forming the rear wall was not reinforced by lining it with stone (Fig. 6, Rooms L18 and L19). Filling in the sloping, front portion of the room behind the terrace wall may have been necessary in the small, axial, three-room structure L32–L34 located in the steep, southern area of the Lower Settlement (Figs. 6 and 8). *Kouskoura* (hard-packed, white earth) projecting into room interiors was occasionally cut back (Rooms U21 and U36; Pl. 71:h), although more often bedrock was left projecting through room floors (Room U22). In these cases the floor level may have been raised with an earth fill to make more productive use of interior space.¹⁸

A few extant doors can be identified. In the Upper Settlement: east wall of Room U28; possibly south wall, Room U6; east wall, Room U19; northeast corner, Room U34. In the Lower Settlement, east wall, Room L5; north end, party wall between rooms L8 and L9; west wall, area L27; north wall, Room L36; between Rooms L48 and L52; and possibly in the south walls of rooms L7 and L9. (Rooms U1 and U22 must have opened onto Road U2 through southern doors, although these are no longer extant.¹⁹) Fairly flat pieces of stone with straight edges were used to frame doorways (Pl. 72:f, Rooms L48 and L52), or very

¹⁷ Hall, pp. 86–88, pls. XXII:2, XXIV:2. Dressed stone at Vrokastro is associated with a room (perhaps a shrine) in the bone enclosure area of Karakovilia. Roughly worked rectangular blocks are found in Geometric house construction at Phaistos (room AA); Drerup, *Baukunst*, p. 107. Mud brick is reported in LM IIIC construction on the Kastri Palaikastro, although most buildings from early Iron Age elevated sites are described as stone built, which is at variance with typical Late Bronze Age construction: stone foundations and mud-brick superstructure. Location (i.e. lack of material) may have dictated use of rubble for wall construction. L. H. Sackett, M. R. Popham, and P. M. Warren, "Excavations at Palaikastro, VI," *BSA* 60, 1965, pp. 272–276; Hayden, pp. 139–141.

¹⁸ Red earth (containing LM IIIB sherds?) was reported by Hall as used for fill, although it is no longer visible today; Hall, p. 87; *AC*, p. 306.

¹⁹ The right-angle approach to Room U1, drawn on Hall's plan, Fig. 2, is no longer preserved. This more elaborate entrance would indicate a special function for this small room, in spite of the large amount of projecting bedrock in its interior. In the Lower Settlement, a corridor south of Rooms L7–L8 may lead to doors in the southern walls of these rooms. A slab in the southwest corner of Room L9 indicates a step down from a doorway. Another stone slab is located at the exterior northwest corner of Room L62, suggesting an entrance at this point.

large blocks with one straight edge to enclose entranceways (Pl. 71:f, door in east wall, Room U28). Stone slabs were not usually employed for thresholds; that of the door in the northeast corner of Room U34, for example, is simply a thin portion of the rubble wall, formed of small stones placed on edge. Doors are also indicated by breaks in rubble-wall construction (i.e., between L48 and L52; L35 and L36).

Floors were generally of beaten earth or bedrock, although the presence of bright, multi-colored beach pebbles, especially in the Lower Settlement, indicates these may have been carried to the site to be set in plaster floors.²⁰

THE UPPER SETTLEMENT

The southeastern section of the Upper Settlement is fairly level and required less terracing than the northern or western sides of the summit. Only fragmentary walls remain to attest possible construction in this area (Figs. 3 and 4; Rooms U33, U36–U38, U45). Room U33, however, may not have been a court linked by a door to Room U34 as suggested by Hall's plan (Fig. 2), since the northeastern door from Room U34 appears to open onto the east-west path north of the room.²¹ Five rooms in this area may form three dwellings. Rooms U28–U30, located west of Room U34, may be part of one structure placed on steeply rising ground, with ladders for communication between rooms. The one-room structures U27 and U31 (U27: 5.50 × 11 m.; U31: 5 × 7 m.) are well below the east-west path (U43 and U44) and must also have been approached by ladders: the floor level of Room U27 is approximately two meters above the next terrace, U26. Room U27 has an interior built "closet" in its northwest corner. Small (storage?) rooms U39–U41 (not drawn on Hall's plan, Figure 2) were built against the northeast wall of Room U31 and are on the same level (Figs. 3 and 4). Room U31 is, in essence, a one-room building, despite the presence of these small, auxiliary rooms.²²

Four dwellings (Figs. 3 and 4: Rooms U22, U19–20, U16–17, U3–7 + 21[?]) can be identified in the area west of the north-south corridor U24. Room U22 is a single unit, with a built rectangular "closet" in its northeast corner (preserved length 8 m., width 7.50 m.). No door links Room U22 with Room U20 north of it; if a door had existed, it would still be traceable in the party wall between rooms, because the wall height is preserved to a half meter. Room U20 (8 × 6 m.) may have been entered, as described above, by a ladder from the north-south path through a door in its eastern wall. The entrance would have been located just south of a rubble bench lining the east wall (Pl. 71:g).²³ Room U19 (its floor

²⁰ Flat pieces of plaster from the Lower Settlement, with beach pebbles embedded in their surfaces, indicate paving in some rooms; paving (terrazzo) is also mentioned at Karphi; Pendlebury *et al.*, *op. cit.* (footnote 15 above), p. 67.

²¹ Sinos (*op. cit.* [footnote 12 above], p. 111) suggests 33 is the court attached to Room 34.

²² Small interior rooms occur infrequently in Geometric construction (Kavousi, unpublished house on Vronda, and Praisos, room b). There may be a small room in the southeast corner of Room U17, defined by partially extant, light partition walls (Hall's plan, Fig. 2; Fig. 3); what is probably a small pot stand is located in the southwest corner of Room L6.

²³ Other benches which can be identified at the site line Room U42 and the south wall of Room L27 (Figs. 3 and 7). Interior platforms or benches are a feature of LM IIIC—Geometric construction, although they seldom occur in anterooms or vestibules; Hayden, pp. 140–141. This custom is in contrast to LM I practice in

level is *ca.* 1.50 m. above the floor of U20) may have formed part of one unit with Room U20, with a ladder employed between levels. An enclosed corridor (U18) along the west side of Room U19 possibly connected Room U20 (by a ladder) to the large structure U16–17, via the short east-west passage U25 north of U19. Corridor U25 opened onto Corridor U24 at its eastern end. This approach to the east side of the large room U17 might have led by a ladder through a hatchway to the floor of the room. Another less likely alternative is that Building U16–17 had a second floor which could be entered from a door at the end of Corridor 25 (see Fig. 5). The massive western wall of Room U17 is suggestive of a second floor, but it also served as a terrace against the western drop (Pl. 72:a).

Rooms U16–U17 formed one of the largest structures of the settlement (*ca.* 6.50 × 12 m. = 78 sq.m.; Pl. 72:b). Its northern limit must have been the north wall of Room U16, no longer preserved, which probably served as the anteroom to the main chamber, U17.²⁴ The unit may also have been approached via a terraced path flanking the west wall; it leads north from U5, and parallels the lower western rooms U12 and U18. One more dwelling is located in the southwest area of the settlement. Rooms U3–U7, with perhaps the addition of Room U21 (floor level one meter above Room U3), form a rectangular structure of contiguous rooms, with a possible door to the exterior from Room U6 to Road U2. There are no identifiable internal doorways, although the narrow rooms U4 and U5 may have served as a central passage. Room U1, with a right-angle entrance from Road U2 (drawn by Hall but no longer preserved), does not seem to open onto Room U21 north of it. The floor level in the rooms is roughly the same (as in Rooms U20 and U22), yet there is no trace of a door in the party wall.

Room walls west of U16–17 and unit 3–7 + 21(?) have disappeared down the slope (see Hall's plan, Fig. 2). Rooms U12 and U13 may have been auxiliary rooms serving the large unit U16–17. Little remains of the western, possible shrine area (room 11, Hall's plan, Fig. 2), although a rectangular, stone-built projection (possibly a bench) can be seen built against the western exterior wall of U6 (Fig. 3). Figurines found in the same area as the bench suggest the presence of a bench sanctuary.²⁵

Within the Upper Settlement, still-extant wall foundations indicate at least eight possible dwellings: *one-room*: U22, U27, U31, U34; *two-room*: U19–20, U16–17; *three room*: U28–30; *contiguous*: 3–7 + 21(?). More buildings were probably located in the southeastern area (U36, U37, U45), and a few other rooms were built on ledges on the southeastern and southwestern sides of the summit.²⁶

certain villages, such as Palaikastro, where benches are frequently built in vestibules; J. C. McEnroe, "A Typology of Minoan Neopalatial Houses," *AJA* 86, 1982, p. 14.

²⁴ One wall which can still be seen in Room U16 is the "earlier wall" (Middle Minoan?), extending east-west, indicated on Hall's plan (Fig. 2).

²⁵ For the suggestion that figurines found in this area indicate a cult place, possibly a bench sanctuary, see Hall, pp. 101–102. This type of shrine has a long ancestry on the island and continues to be used in Iron Age Crete. Gesell also suggests a bench sanctuary in the area of room 11; G. Gesell, *The Archaeological Evidence for the Minoan House Cult and its Survival in Iron Age Crete*, diss. University of North Carolina 1972, pp. 181–191, esp. p. 186.

²⁶ Pendlebury (*AC*, p. 306) thought three buildings formed separate dwellings, although he did not identify them by number. Even the single-room units are in many cases large enough internally to have been livable

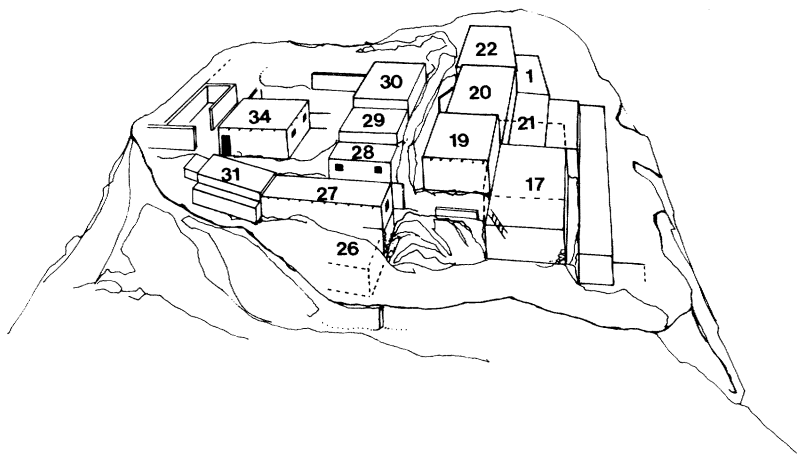


FIG. 5. Vrokastro settlement, summit

LOWER SETTLEMENT

Located approximately 55 m. below the summit is another part of the settlement excavated in 1912 (section, Fig. 7; Pl. 72:c). The west side is the better preserved (Fig. 6). One rectangular dwelling has two or possibly three axial rooms, L3–5 (6×12.50 m. = 78 sq.m.; Figs. 6, 7, and 9). There is a door between Rooms L4 and L5, indicating at least a two-room unit, and Room L3 may have communicated with Room L4, although there is no trace of a threshold in the party wall. The rooms were placed on the same terrace; as a consequence, all three share the same floor level. The rectangular dwelling, the same size as Building U16–17 of the Upper Settlement, was built facing an enclosed court, L6, on its east side.²⁷ A central door in the east wall of the main chamber L5 opens onto this court. Rooms L14 and L15, located in a roughly triangular area south of the courtyard, have floor levels 1.75 m. above it and were approached via a rough, rubble-built staircase at the west end of the northeast wall of these rooms. There is an exit on the south side of area L13, south of House L3–5 (Fig. 6). From this point a room built into the scarp on a higher terrace could be entered (Room L19), or a path (L20) which flanks Rooms L14 and L15 on the south could

spaces, at least for individuals, although we have no indication of function (for example, Room U34 is 18 m. square internally). A few rooms are so full of projecting bedrock that they may have only been used for storage (Upper Settlement: U29; Lower Settlement: L56, L57–59). Hall's photograph, pl. XXIII:1, indicates that floors were built over these projections (the photograph could have been taken within any of the Lower Settlement rooms L57–L59, where bedrock along the south wall forms a high ridge). The floor level within these rooms may have been well below these outcroppings, however, as indicated by the stone-lined pits in the floors of Rooms L57–L59, thresholds (L48 and L52), a possible column base (L45), and floor levels within other rooms immediately behind the encircling wall on the lowest terrace.

²⁷ Open areas or partially to fully enclosed courts, in front of structures or scattered throughout villages, are known in LM IIIC—Geometric construction: *Kavousi*, area in front of building 9–11; *Karphi*, 16, 17, 135; *Phaistos*, area in front of rooms AA, R3, and court G. A few courts can also be identified in LM IIIA–B construction before small, axially built structures: Kephala Chondrou, buildings B (court A); Δ2–E2; N. Platon, «Ἀνασκαφή μινωικῶν συνοικισμῶν εἰς Κεφάλι Χόνδρου», *Πρακτικά*, 1959, p. 135, fig. 147.

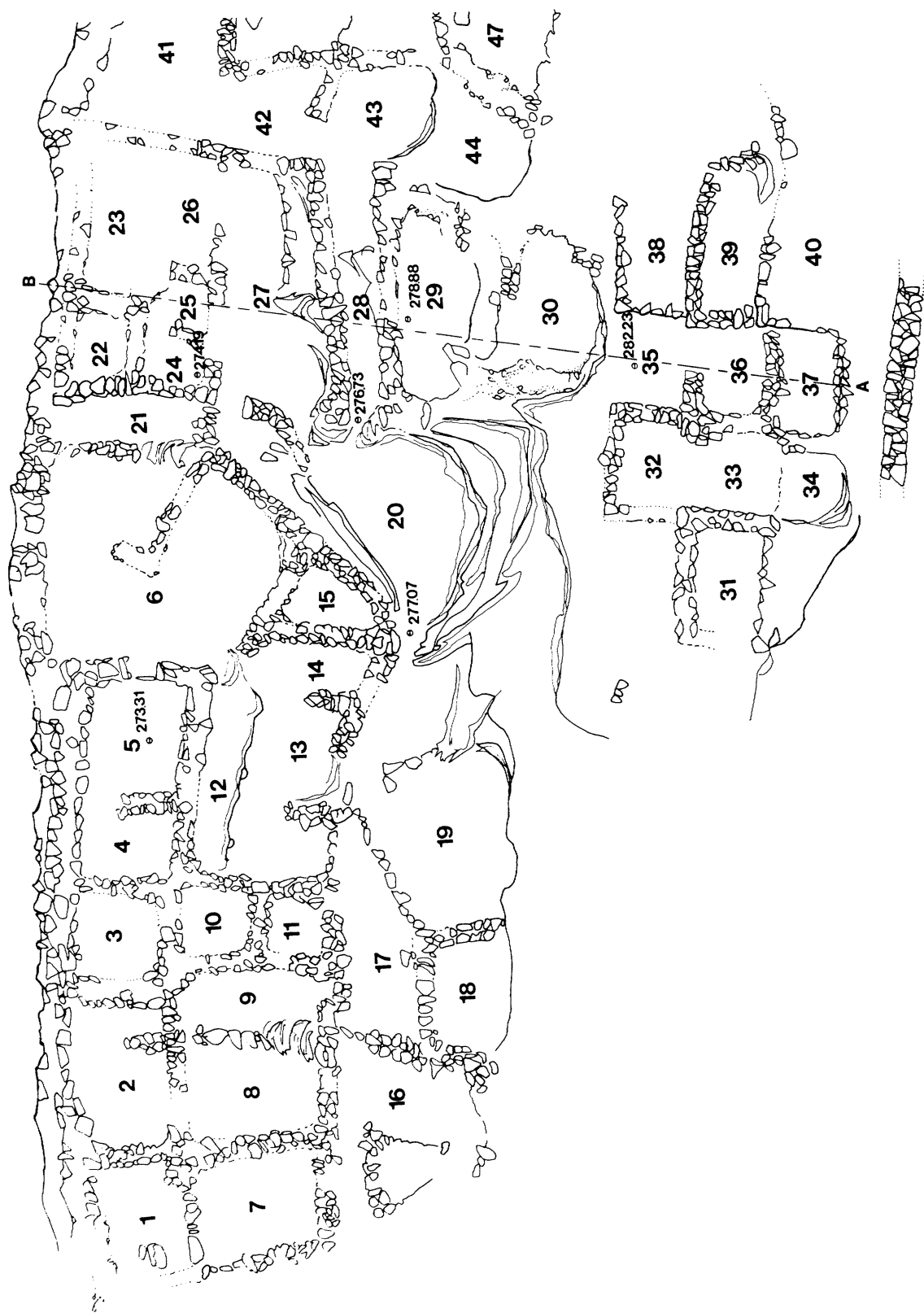


FIG. 6. Lower settlement, west side, actual-state plan

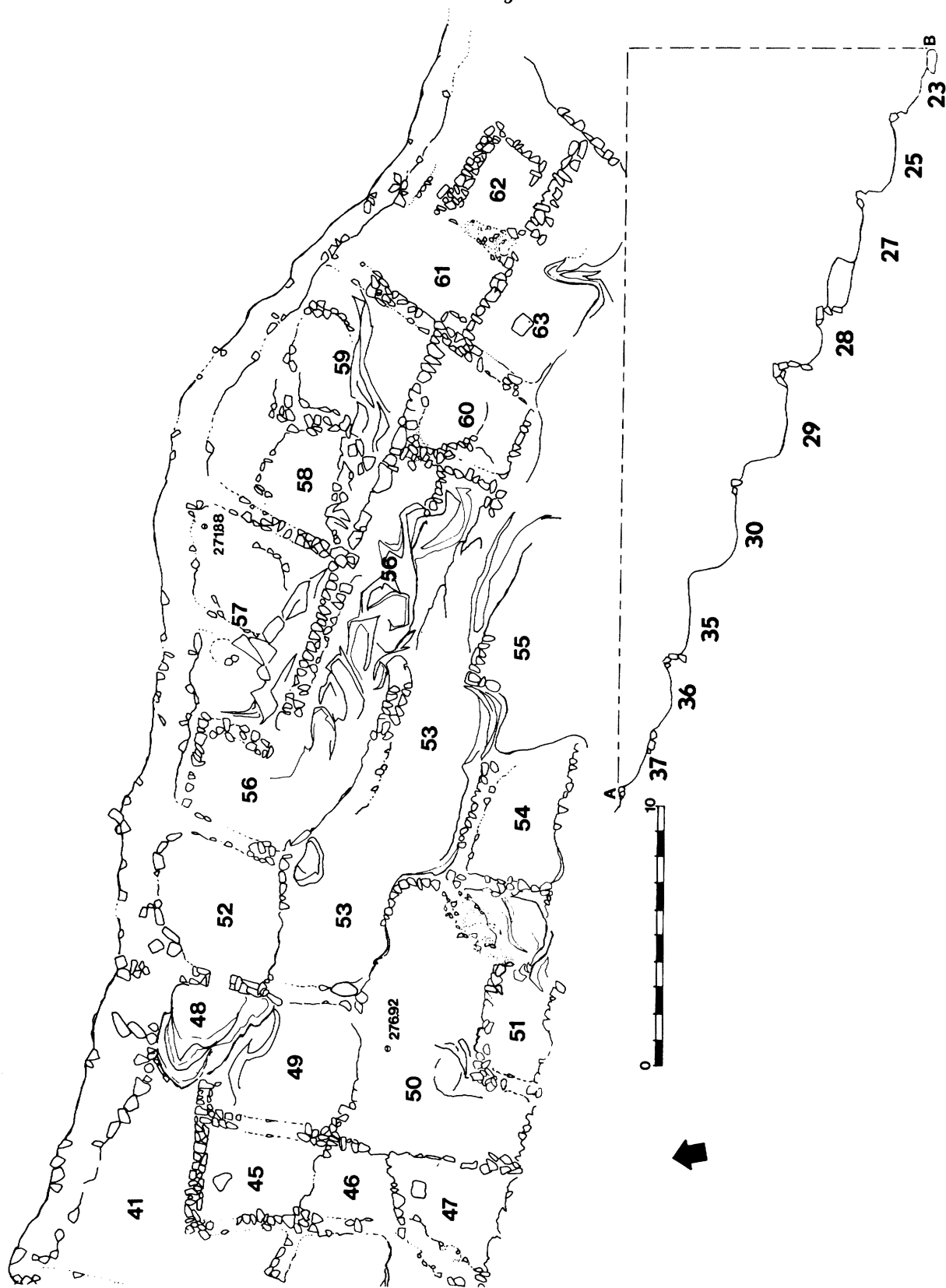


FIG. 7. Lower settlement, east side, actual-state plan with section

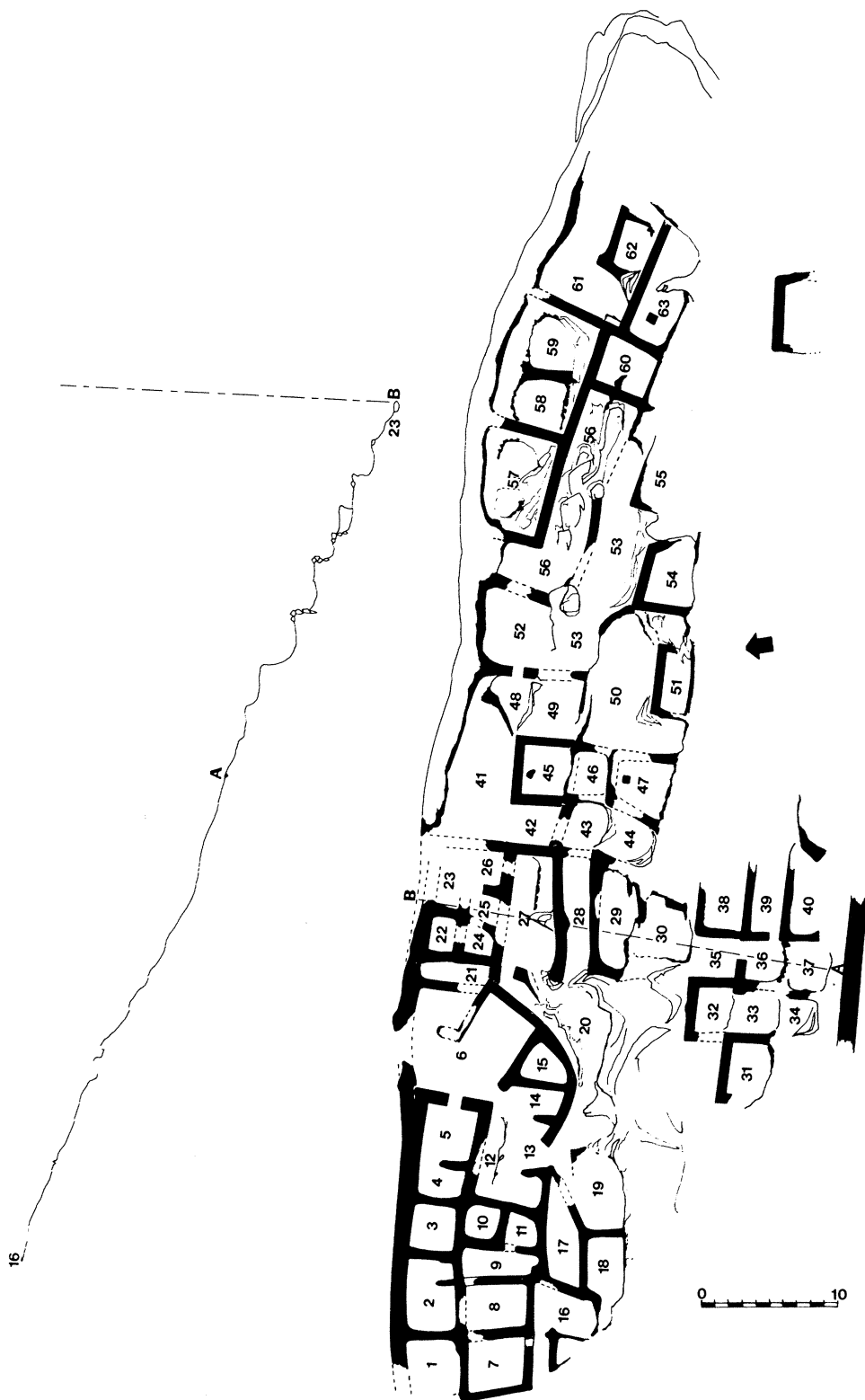


FIG. 8. Excavated portion of the lower settlement (walls partly restored).
Section between room 16, upper settlement, and north terrace wall, lower settlement

be taken to the east (Fig. 7). Farther west there are other rooms, located on three terraces, which may have formed two axial structures, oriented east-west. Since there is over a meter difference between the floor levels of Rooms L1, L2 and L7–9, these two groups of rooms probably formed two separate units. Rooms L7–L9 were possibly entered from a corridor (L16) or room on the south (L17). Room L1 may have been entered from the west.

The path (L20) leads to another rectangular structure (Building L22–26; 6.50×9 m.) divided into five small rooms sharing party walls. Court L6 may have been accessible from the narrow, north-south Corridor L21, located just west of Building L22–26. A passageway appears to have been formed by the southwest exterior corner of L22–26 (Room L24) and a wall in Path L20 which ends in an anta. This passageway appears to link Court L6 on the west to the long, narrow Room L27 (Fig. 6) on the east. The eastern half of Building L22–26 has been destroyed by a goat path, but it is probable that the building was entered from L27. This room contains a bedrock projection which divides it in half; east of this projection a low bench lines the southern wall.

The hill rises sharply south of Room L27 (sections, Figs. 7 and 8). Terraces were cut for Rooms L28–L30 in this area. Communication between levels would only be possible with ladders. Rooms L31–L40 are located even higher up the slope. The small, three-room structure L32–34 may have constituted one unit in this area. A narrow, north-south corridor (L35–36) east of this structure led through a doorway to two or three other rooms (L38–L40). Rooms L38 and L39 have level floors and may have been large enough internally to have served as dwellings (interior floor space 10 sq.m.). Structure L32–33 was built on ground which rises so sharply that it would be difficult to use these rooms for habitation.

Larger rooms are ranged on roughly axial, north-south lines across the precipitous eastern section of the lower settlement (Rooms L42–L62; Fig. 7, Pl. 72:e). Three rooms of one of these units were almost completely dug out of the earth and clay of the hillside (Rooms L42–L44). Large rooms on the lowest level appear to have been built against a massive wall which encircles the settlement on its lower, northern side. This wall is best preserved on the western side of the settlement (Pl. 72:c–d) and ranges from one to one and a half meters in thickness; the eastern portion of this terrace wall must have existed, enclosing the north side of rooms on the lowest terrace (Rooms L41, L52, L56–L59, L61; see Fig. 9 for reconstruction). Only one door can be identified between rooms on this lower terrace (between Rooms L48 and L52; Pl. 72:f). It must be assumed that doors between these rooms were either placed in the fragmentary party walls which extend north to the encircling terrace or that rooms were entered from rooftops. Large, isolated blocks of limestone with flat top surfaces located near the centers of Rooms L45, L47, and L63 may have formed rough bases for wooden columns supporting the roof (Fig. 8).

Rooms L57, L58, and L59 contain stone-lined cavities which may have been used for storage. The area directly behind these rooms (L56), although partially enclosed by walls, was probably not used because of protruding bedrock. The triangular area L41 seems to have functioned as a court in front of the lower rooms L42 and L45 of Structures L42–44 and L45–47. Area L50 was an unroofed portion of the upper terrace in front of Rooms L47, L51, and L54.

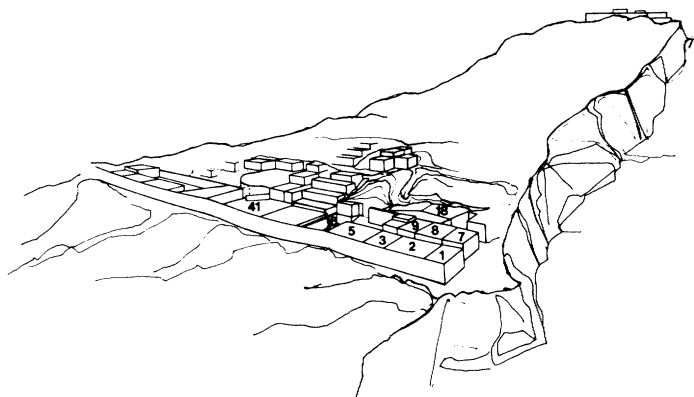


FIG. 9. Vrokastro, lower settlement, with north terrace wall

The partially preserved, northern encircling wall mentioned above (Figs. 6–9; Pl. 72:d), is composed of medium to large, dry-laid rubble blocks. There is also a less substantial terrace wall located high up the slope behind Rooms L32–L34. The lower wall served to retain the rooms on the lowest terrace and also protected the community from winter winds from the sea; it may have functioned as a defense wall as well. Lane L21 between Court L6 and Structure L22–26 may have led down to an opening at least large enough for drainage; stones were placed upright in the path to break the flow of runoff from Corridor L20, higher up the slope.

Little is known at present concerning fortifications of this and the earlier LM IIIA–B periods, although several requiring further investigation have been tentatively identified.²⁸ Fortifications are known on the island in the 3rd and early 2nd millennia, but few if any have been identified as belonging to the LM I period.²⁹ Fortifications reappear in the last third of the Late Bronze Age in Crete and continue in the Geometric and later periods. Most seem to be built in a similar manner: walls are of dry-laid, medium to large pieces of rubble, with smaller stones in the interstices. Not all circuit walls, however, are so simply constructed. A Subminoan–Geometric fortification wall (2.80 m. thick) at Phaistos seems to have had gates, a bastion, and may have been composed at some points of large, almost

²⁸ Cretan fortifications of the Late Bronze—early Iron Age have been tentatively identified at the following locations: *Kastraki*, *Pediada*, LM III (P. Faure, “Nouvelles recherches sur trois sortes de sanctuaires crétois,” *BCH* 91, 1967, p. 144); *Knossos*, South house area, LM III (M. S. F. Hood, “Archaeology in Greece,” *JHS-AR*, 1960–1961, pp. 27, 28, fig. 31); *Kastro Kephala*, LM III (E. Platakis, «Υστερομινωικά–επομινωικά κτίσματα εἰς Καστρορκεφάλαν Ἀλμυροῦ Ἡρακλείου», *ΚρητΧρον* 22, 1970, pp. 511–514; S. Hiller, *Das minoische Kreta nach den Ausgrabungen des letzten Jahrzehnts*, Österreichische Akademie der Wissenschaften P.H. Klasse, Vienna 1977, pp. 182–183; S. Alexiou, «Πόλεις τῆς βορείου παραλίας τῆς Κρήτης», *ΚρητΧρον* 26, 1974, pp. 52–53.; *Kalamauka*, *Siteia*, LM IIIC (P. Faure, “Cavernes et sites aux deux extrémités de la Crète,” *BCH* 86, 1962, p. 39); *Fortetsa*, LM IIIC (S. Hood, “Travels in Crete, 1962,” *BSA* 59, 1964, p. 92); *Gortyn*, Subminoan or later (G. Rizza, V. Santa Maria Scrinari, *Il santuario sull’acropoli di Gortina I*, Rome 1968, pp. 21–22); *Phaistos*, Subminoan–Geometric (D. Levi, “Chronaca d’arte, attività della Scuola Archeologica Italiana di Atene nell’anno 1955,” *BdA* 16, fasc. 4, 1956, pp. 241, 273, note 5); *Anavlochos*, Protogeometric, Geometric (Pendlebury, *AC*, p. 326; P. Demargne, “Recherches sur le site de l’Anavlochos,” *BCH* 55, 1931, pp. 369–373, figs. 4–8); *Dreros*, Geometric? (S. Marinatos, “Le temple géométrique de Dréros,” *BCH* 60, 1936, pp. 217–219).

²⁹ S. Alexiou, «Τείχη καὶ ἀκροπόλεις στὴ μινωικὴ Κρήτη», *Κρητολογία* 8, 1979, pp. 41–56.

rectangular slabs of stone. The LM III fortification wall, 480 m. long, at Kastro Kephala has two bastions and at least two gates.³⁰

There is little evidence for phases of construction at the Lower Settlement, but most of the rooms lying immediately behind the large terrace wall must have been built along with it. Possibly the upper level of rooms (L16–L19, L31–L40, L51, L54) was added at a slightly later date. It is of course possible, although not currently provable, that the entire lower area of the settlement postdates construction on the summit. As for the Upper Settlement, Hall found Middle Minoan pottery which may have belonged to an earlier house or settlement.³¹ The upper course of the west wall of Room L20 has a slightly different alignment than the courses below it, indicating possible rebuilding. Construction probably began on the summit in the most level area, the southeast side, where the least effort would be required in terracing. It is conceivable that most of the western rooms of the summit (U6–U22) were built at one time, with lower terraces providing support for floors and rooms above. This sequence cannot be determined by wall bonding, which is difficult to trace owing to walls which end in bedrock outcroppings, construction on different levels, and poor preservation. It appears that the Vrokastro houses were occupied for the lifetime of the settlement with very little alteration, at least none that can be detected from preserved rubble foundations.³²

TYPOLGY

Building plans found in both the upper and lower portions of the Vrokastro settlement are fairly representative of the range in use throughout the LM IIIC through Geometric periods.³³ The simplest plan consists of one room, usually entered through an off-center door placed in the short wall (U1, U22, U34, U27). Door location is determined by the position of an exterior court or route through the settlement.³⁴ At Karphi, placement of one-room buildings flanking village streets indicates that this plan was the first employed at the site, with larger, more complex structures appearing later, crowded into more exposed areas.³⁵ There is no indication in the village arrangement of Vrokastro, however, that the

³⁰ Platakis and Hiller, *loc. cit.* (footnote 28 above).

³¹ The summit is described as being abandoned after the Middle Minoan occupation: *DAG*, p. 371; *LMTS*, p. 185. There is evidence of LM I occupation in the lower Kopranes area northwest of the summit (Fig. 1): Hall, p. 84. It is likely that occupation, at least in the form of a few farmsteads, continued in the LM I period in fields south of the summit.

³² The period of use may also have been extensive for houses at Phaistos, where building plans were altered only slightly and a long period of occupation is evidenced by changing floor levels and wall repair: Hayden, p. 198, note 96; L. Rochetti, "La ceramica dell' abitato geometrico di Festòs a occidente del palazzo minoico," *ASAtene*, n.s. 35–36, 1974–1975, pp. 173, 197–199, 200, 201, 204, 212, 242, 300. Pottery found in the Phaistos rooms can be dated to the Middle through Late Geometric periods, but some of the pottery recovered in rooms P and Q may be Subminoan or Protogeometric or both: Rochetti, *op. cit.*, p. 300.

³³ Hayden, pp. 130–143.

³⁴ Cretan buildings generally present short sides to courts or roadways, although there are a few doors built in long walls (Karphi, Priest's House and room 146). Even these were located primarily for immediate access to a path or road. There may not be, therefore, a distinct Cretan house type (i.e. "broad house") characterized by door location (Drerup, *Baukunst*, pp. 21–22, 39, 90).

³⁵ Drerup, *Baukunst*, p. 39.

construction of one-room buildings preceded more complex plans. Slight variations in the one-unit plan include internal rooms or "closets" (U22, U27) or the presence of small (storage?) rooms, grouped around the main chamber (Rooms U39–U41 behind Room U31).

Units consisting of two or three rooms are usually built along one axis and represent the second type of plan at Vrokastro and elsewhere in the transitional, early Iron Age period (U16–17, U19–20, U28–30; L32–34; L2–5; L7–9, etc.).³⁶ Room proportion within two- or three-room dwellings varies in LM IIIC—Geometric construction generally and at Vrokastro. Rooms can be of almost equal size within a structure (units L32–34, L42–44). Rooms L3 and 4 may be considered auxiliary or rear rooms located behind the main room of the dwelling, L5. Shallow vestibules or porches can be placed along the short side of the building in front of the main chamber, unless topographical considerations necessitate another arrangement (as at Kavousi, house 5–6). In LM IIIC—Geometric construction, proportions of vestibule to main chamber are usually 1:4 or 1:3. A few small rooms at Vrokastro are placed before main chambers and can thus be considered anterooms or vestibules (U16, U19). They are enclosed, as in the majority of examples from the LM IIIC—Geometric period (columns in porch or vestibule construction are a rare occurrence).³⁷ One possibly contemporary Kavousi building (9–11) corresponds to unit L3–5 at Vrokastro in the elimination of the vestibule and the addition of two rear chambers; the two structures are nearly identical in size: Kavousi, 9–11, 75 sq.m.; Vrokastro, L3–5, 78 sq.m. Both face open area, which is an enclosed court at Vrokastro. Some variation is therefore detectable in the standard two- or three-room axial plan, at least in terms of room proportion (and hence possibly function, as with rear rooms or vestibules). Buildings at Vrokastro may have smaller rear rooms or vestibules flanking the main chamber, or be two- and three-room units composed of rooms of equal size.

There are further elaborations or variants of the basic two- or three-room axial plan. Auxiliary rooms are occasionally found elsewhere aligned beside the main chamber: Karphi, remodeled "Great House", rooms 8–14, and Phaistos, Geometric house AA-Q, with auxiliary rooms FF–HH, west of the main room, AA. Since the main chamber of the Phaistos house has rooms grouped around it on three sides, it may be considered an elaborate development of the axial plan or perhaps a new plan type of the period. At Vrokastro, rooms west of Structure U16–17 may be its auxiliary rooms (U12 and U13), although they could not be entered directly because of the steep slope. The Priest's House at Karphi is another example of modified axial type, with three rear rooms behind the main room and no vestibule before it.³⁸

Contiguous, small rooms appear to form rectangular house plans (U3-7 + 21[?]; L22–26) at Vrokastro and other sites of the Cretan Late Bronze Age and early Iron Age. Earlier

³⁶ Hayden, pp. 132–135.

³⁷ *Karphi*: 135 (Pendlebury *et al.*, *op. cit.* [footnote 15 above], *BSA* 38, 1937/38, p. 71); *Kavousi*: possible wooden column in porch 6 (H. A. Boyd, "Excavations at Kavousi, Crete, in 1900," *AJA*, ser. 1, 5, 1901, p. 138, note 1).

³⁸ *Phaistos*: D. Levi, "Gli scavi a Festòs degli anni 1958–1960," *ASAtene*, n.s. 23–24, 1961–1962, pp. 405–408. For plans of the Geometric structures, see *idem*, *Incunabula Graeca*, LX, *Festòs e la civiltà minoica I***, Rome 1976, pls. AA, B; *Karphi*: Pendlebury *et al.*, *op. cit.* (footnote 15 above), pp. 77–78, 84–85.

structures at Karphi, especially on the east side of the village, can be ascribed to this category (rooms 130–133). No corridors or centrally placed vestibules were located within these structures to facilitate communication between rooms; thus these buildings must be distinguished from even simply planned LM I dwellings.³⁹ Doors in party walls must have been used instead. The one-room unit or axial plan may have been preferred at precipitous sites such as Vrokastro. A much larger area must be cut to make a terrace for a rectangular structure of several rooms placed approximately on the same level, whereas axial rooms can be built on smaller, rising terraces and linked by ladders or rubble staircases. Topographical considerations were of primary importance in determining plan, room arrangement, and location of streets at elevated sites. Street location, in turn, determined where doors were placed and often the general alignment of structures.

A few of the variants related to this simple typology of LM IIIC—Geometric house plans have been mentioned above. Only the standard range of types is seen at Vrokastro: one-room dwellings, two- to three-room axial buildings, and structures composed of contiguous rooms. This range does not reflect all the possibilities, as a large building of unique plan at Praisos illustrates.⁴⁰

The range of simple types can be detected at many other early Iron Age sites in Crete, although two- or three-room axial plans appear in the LM IIIA–B (Postpalatial) periods.⁴¹ These buildings are, on average, smaller than LM IIIC—Geometric two- to three-room structures, and LM IIIC—Geometric plans can be more complex (e.g., the Priest's House or Great House at Karphi, house AA-Q at Phaistos). These differences may not be that significant, and it could be argued that LM IIIC—Geometric one-room or axial buildings are a development of the smaller, simple two- or three-room Postpalatial plans. The origin of these axial LM IIIA–B buildings has not yet been determined. Two choices, perhaps not mutually exclusive, include Mycenaean influence or indigenous development.

Little is known of Cretan architecture for several hundred years after the close of the Minoan Palace period. A transformation of Minoan domestic architecture occurred in the Postpalatial period, as simple, axial building types which were not dependent on palatial room types, arrangement, and architectural techniques became dominant. The Vrokastro building plans are thoroughly representative of the basic forms in use in the Subminoan and Geometric periods and may demonstrate a continuous architectural tradition traceable, perhaps, to the LM IIIA–B periods. These simple structures, however, suitable to construction

³⁹ Hayden, pp. 135–136. These structures containing contiguous rooms are not really comparable (Drerup, *Baukunst*, pp. 94–95) to Minoan house plans of the Neopalatial period which have vestibules or corridors used for internal communication, as in McEnroe's LM I type 3 structure: McEnroe, *op. cit.* (footnote 23 above), pp. 10–13. They may, however, be related to LM IIIA–B buildings of contiguous rooms: Hayden, pp. 112–113.

⁴⁰ R. C. Bosanquet, "Excavations at Praesos I," *BSA* 8, 1901/02, pp. 237–239. The building was constructed in the Geometric or Subminoan period: Drerup, *Baukunst*, pp. 35–36; Renard, *op. cit.* (footnote 12 above), pp. 591–592. The building consists of a large, rectangular area enclosed by a massive wall with two rows of smaller rooms placed on terraces beneath and paralleling the large enclosure; for another discussion see Hayden, pp. 86–88, 138–139, 182.

⁴¹ Hayden, pp. 18–61, 101–110; J. C. McEnroe, *Minoan House and Town Arrangement*, diss. University of Toronto 1979, pp. 159–168.

at the less than hospitable peak of Vrokastro, do little to increase our understanding of the full range of possibilities hinted at by the presence of the much more complex structures of Praisos and Phaistos. More excavation and above all careful recording of building plans of this and the earlier LM IIIA–B periods will be necessary to supplement the typology presented in this paper and to determine the degree of its relationship to Cretan Late Bronze Age domestic architecture.

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a. Chauga area and Vrokastro summit from south



b. Saddle south of Vrokastro summit



c. Path to Vrokastro summit along west cliff



d. Fields south of Vrokastro summit



e. Approach to Vrokastro from northwest. Cleft between Vrokastro peak (left) and Karakovilia ridge (right)



f. Left foreground: south side of door in north end of east wall, Room U28, from west. Right background: Room U34



g. Bench along east wall, Room U20



h. Terraced area U36, southwest side

PLATE 72



a. West wall of Room U17 from east (Room U19)



b. Building U16-17 from north



c. View down slope from Upper to Lower Settlement:
west side of Lower Settlement and north terrace wall



d. North terrace wall (here, north wall of Court L6).
Northeast corner of Room L5 beyond



e. Lower Settlement, east side, Rooms L48-L63



f. Doorway between Rooms L48 and L52