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The Functions of Masons' Marks in the Bronze Age Palace at Malia (Crete)

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The function of a large number of distinctive signs, usually called masons' marks, carved on cut-stone blocks found in Minoan or Bronze Age buildings on the island of Crete remains a debated topic. Interpretations have varied from a simple practical use, aiding the builders in positioning the blocks, to a magical or religious function. In view of the constantly expanding corpus, this article considers the use of the marks visible in the walls of the Neopalatial palace at Malia (ca. 1700–1450 B.C.E.). Topics explored include the characteristics of the marks and the blocks on which they are carved, the phases of the construction process during which the carving occurred, the proportion of marked blocks in the building, and the distribution of the marks in relation to the organization of the building project. A case is made for the largely secular function of the marks that reflects different tasks during the construction project. They are most likely identifiers for the masons involved in quarrying the blocks and the builders in charge of the construction and final trimming of some of the best executed walls of the palace.¹

INTRODUCTION

Minoan “masons' marks” is a generic term used to designate a wide range of pictographic signs carved on cut blocks of limestone, gypsum, and sandstone that compose the walls of the palaces and other specimens of elite architecture in Bronze Age Crete during the second millennium B.C.E. These marks consist of linear patterns that can be combined to form ligatures. Although parallels exist with signs of the Cretan Hieroglyphic and linear scripts, no obvious relationship can be established between masons' marks and scripts, and the marks form a separate category within the written record.² They were mainly carved on the walls of the palaces, but they also appear in a series of large houses and, to a lesser extent, in tombs erected in ashlar (online appx., table 1, on AJA Online).

Cut-stone masonry is one of the most elaborate features that characterize the appearance and development of elite or palatial architecture in Minoan

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² Chapouthier 1930, 92–5, fig. 36; Hood 1987, 208; 2002, 100.

Crete.³ The carving of masons' marks on cut blocks occurs from the Middle Minoan (MM) IB to the Late Minoan (LM) IIIA2 (i.e., from ca. 1900 to 1330 B.C.E.), precisely the period during which the island witnessed the development of palaces.⁴ Various interpretations of Minoan masons' marks have been offered. Some stress a religious or magical function related to the function of the rooms the marks adorn or the objects on which they are carved; others support a secular meaning related to, for example, the positioning of the blocks or the identification of teams of stonecutters.⁵ The wide range of interpretation is based on the type of object on which the marks are carved, the context within which the blocks were discovered, and the parallels offered in other societies. With the possible exception of a mark carved on one of the blocks of a dam-bridge at Ras Shamra-Ugarit,⁶ masons' marks are absent from the Bronze Age Levant and Anatolia.⁷ The best parallels are found in ancient Egypt and medieval Europe.⁸

Shaw stressed the difficulty in agreeing on an unequivocal interpretation of Minoan masons' marks,

³McEnroe 1982, 2010; Driessen 1989–1990; Shaw 2015.

⁴Cucuzza 2001.

⁵For a religious or magical function of masons' marks, see Evans 1901, 110–11; Sakellarakis 1967, 285–86; Gesell 1985, 35; Rutkowski 1986, 41–2; Hood 1987, 210; 2002, 102–3. For a secular interpretation of the marks related to groups of workers or guilds of stonemasons, see Burrows 1907, 111–12; Dussaud 1914, 350–51; Chapouthier 1930, 84; Pernier 1935, 413–15; Pendlebury 1939, 119; Nilsson 1950, 247–48; Driessen 1989–1990, 20–1; Begg 2004a, 20; 2004b, 222. Graham (1969, 155) and Shaw (2009, 76–9) consider both functions and stress the multivalence of the signs. For a summary of the discussion on the functions of masons' marks, on which most references quoted here are based, see Begg 2004a, 8–12. For a review of masons' marks in different societies, see Begg 2004a, esp. 2–8; 2004b, esp. 222.

⁶This mark, without a parallel among those known from Minoan buildings in Crete, was found on the face of a block from the central pier of the dam-bridge on the Nahr ed-Delbé, near the south entrance of the city of Ras Shamra-Ugarit on the Syrian coast (Geyer et al. 2013, esp. 30–1, n. 25, fig. 35). The first phase of this structure is possibly dated to the Late Bronze Age, despite technical differences with the contemporary architecture in the city (Bessac 2010). It is worth noting that the mark is affixed on a block that, like the other ones used in the dam-bridge, was not trimmed after it had been extracted from the quarry.

⁷Hood 2002, 100. Masons' marks are known, however, on Levantine Iron Age sites (see Shiloh 1979, 63, fig. 85; Franklin 2001). I thank L. Hitchcock for these references.

⁸James 1990.

whose “broad chronological range and variety may not be compatible with simple, general explanations for them all.”⁹ In fact, the debate regarding the meaning of such marks echoes a broader one, namely the function of the buildings on whose walls they were carved. At the palace of Knossos, the repetition of the double-axe mark on the ashlar walls of the Hall of the Double Axe suggested to Evans a religious purpose, based on the appearance of this symbol on the pillars of sanctuary crypts.¹⁰ His argument regarding the religious vesture of power in Minoan Crete and his vision of the Minoan palace-temple remains predominant in Minoan studies.¹¹

Since the first Minoan masons' marks were identified at Knossos in 1881,¹² the corpus of signs carved on ashlar walls erected during the Bronze Age on the island of Crete has increased considerably. New marks have been discovered, and catalogues and studies of marks in formerly excavated sites or buildings have appeared (fig. 1; see online appx., table 1). Such marks have also been discovered elsewhere in the broader Aegean; with the notable exception of Akrotiri on Thera, they are generally found in lesser proportions outside Crete.¹³

This article explores the function of the masons' marks carved on the sandstone ashlar blocks that compose the walls of the Minoan palace at Malia. A corpus of these marks was published by Olivier in 1980.¹⁴ This catalogue includes a list and detailed description of all the marks accessible in 1979, to which were added marks recorded by the excavators in the 1920s and 1930s that have since disappeared through erosion or the relocation of the blocks. However, no interpretation of the meaning of the marks is proposed by Olivier.¹⁵ This article accordingly offers to investigate their function by focusing not so much on the marks themselves but rather on the blocks on which they were carved.

⁹Shaw 2009, 78.

¹⁰Evans 1901, 110–11.

¹¹Evans 1930, 346. For synthetic studies on the impact of Evans on Minoan civilization, see Schoep 2010, 2018.

¹²Stillman 1881, 49, cited in Begg 2004b, 219.

¹³Outside Crete, masons' marks have been found in Akrotiri (Palyvou 2005, 120–21, 180–81; Notti 2014), Therasia (Sperling 1973, 58, cited in Palyvou 2005, 154 n. 18), Aegina (Niemeyer 1995, 78), Mycenae, Pylos, and Peristeria (Hood 2002, 98), and Cyprus (Hitchcock 2003, 2008, 2012).

¹⁴Olivier 1980, esp. plan 30.

¹⁵Olivier 1980, 176.

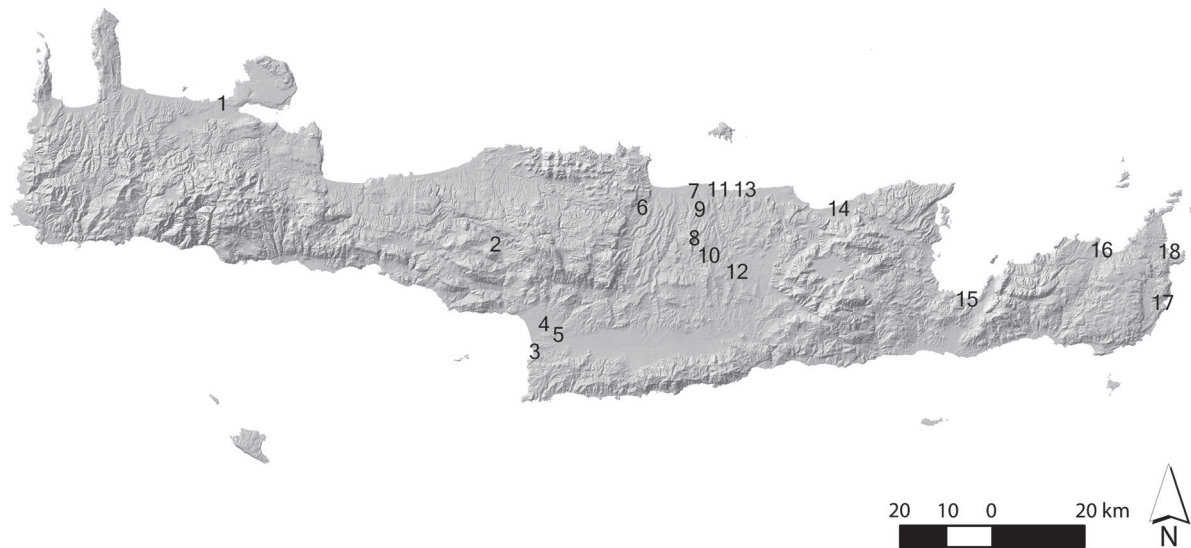


FIG. 1. Map of Crete, showing sites mentioned in the text: 1, Khania; 2, Monastiraki; 3, Kommos; 4, Aghia Triada; 5, Phaistos; 6, Tylissos; 7, Katsamba; 8, Archanes; 9, Knossos; 10, Xeri Kara; 11, Amnissos; 12, Galatas; 13, Nirou Hani; 14, Malia; 15, Gournia; 16, Petras; 17, Zakros; 18, Palaikastro (drawing by S. Déderix, with data provided by the IMS-FORTH).

THE NEOPALATIAL BUILDING PROGRAM OF THE PALACE AT MALIA

The Minoan palace at Malia (fig. 2) as visible today is the result of a large Neopalatial construction program that rebuilt and considerably expanded an earlier Protopalatial (ca. 1900–1700 B.C.E.) edifice. After the destruction of the earlier palace at the end of MM IIB (ca. 1700 B.C.E.), a possible attempt at reconstruction took place in MM III (ca. 1700–1600 B.C.E.), but such a project was either rapidly abandoned or has left few substantial remains.¹⁶ The discovery of a foundation deposit sets the construction of the Neopalatial palace at the transition between MM IIIB and LM IA (ca. 1600 B.C.E.).¹⁷ The Neopalatial building program included the construction of the South Wing; the reconstruction of the West Wing; the erection of a new ashlar sandstone west facade on the West Court; the construction of a Quartier d'apparat, including a

Minoan hall (Room III 7) and a lustral basin (Room III 4); the construction of Areas IV and V and the walls surrounding the North-West Court; the development of the northeastern area of the palace; and the construction and embellishment of the southern and eastern limits of the Central Court (see fig. 2). Such a large-scale project most likely occurred during separate building episodes that extended over several years. However, the structural connections between the walls, the coherent configuration indicating common planning, and, in some cases, the position above Protopalatial remains indicated by the preliminary stratigraphical sequence of the palace, show that these areas belong to a unified Neopalatial building program.¹⁸

A large part of this extensive Neopalatial building program incorporated blocks of sandstone. This material, known locally as *ammoudha*, or *ammoudhopetra* (literally, sand-stone), originated from local quarries situated along the shore to the north of the settlement (fig. 3a, b).¹⁹ The stone was procured by cutting channels

¹⁶ For the MM IIB destruction of the palace, see Pelon 2005, 186–90. Regarding the few remains of a MM III palace, see Pelon 1983a, 701–3; 1984, figs. 1, 12–14; 1986b, 814, fig. 1. Although this MM III palace is sometimes referred to as *chimerical* (Driessen 2010, 563), recent discoveries in Sector Pi in Malia have indicated the presence of substantial deposits dated to MM III. These deposits bridge the gap between the MM IIB destruction and the MM III/LM IA reconstructions at Malia (Alberti et al. 2016).

¹⁷ Pelon 1984, 884; 1986a, 19; Poursat 1988, 75.

¹⁸ The explication of the architectural sequence of the palace at Malia is the focus of an ongoing project. It relies on the work of the first excavators, Pelon, and Devolder (Chapouthier et al. 1962; Pelon 1980, 1982, 1983a, 1993, 2005; Pelon and Hue 1992; Devolder 2016a, 2016b, 2017a).

¹⁹ Guest-Papamanoli 1989; Dimou et al. 2000, 438, 448–49; Müller-Celka et al. 2003; Müller-Celka and Dalongeville 2009; Shaw 2009, 33; Devolder 2013, 18.

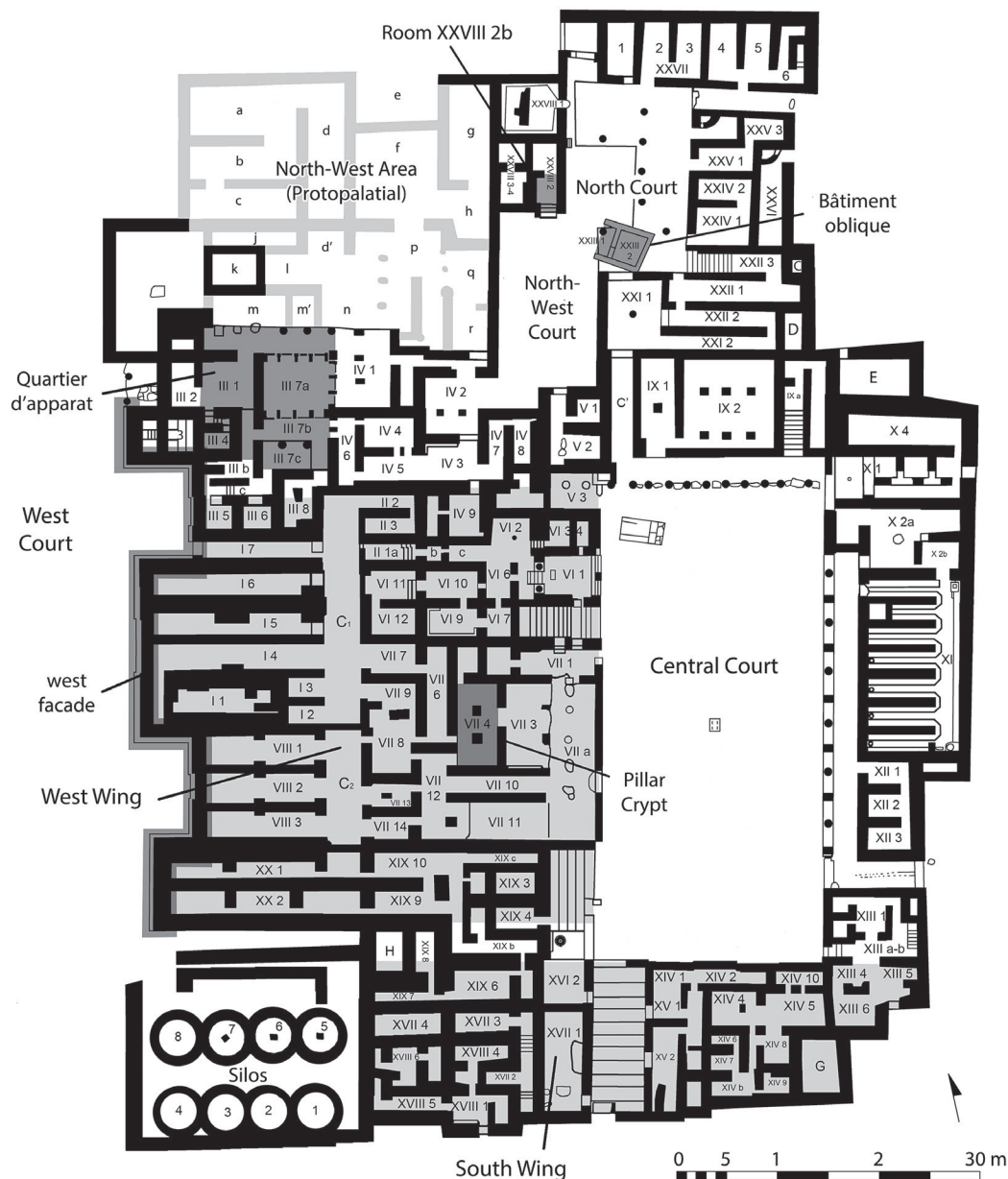


FIG. 2. Schematic plan of the palace at Malia in the Neopalatial period. Roman numerals refer to room clusters ("Areas"). Arabic numbers and occasionally lowercase letters refer to specific rooms within areas. The areas frequently discussed in the text are highlighted in gray (modified from Pelon 1980, plan 28; 2002, pl. 32; courtesy École française d'Athènes).

around the blocks using picks made of copper alloy. Once the block's lateral faces were freed, it was retrieved by splitting off its lower face from the bedrock with a pry-bar, although the use of wooden wedges is not excluded.²⁰ This method allowed for the produc-

tion of pieces of regular shape. Hollowed depressions sometimes visible on the lateral faces of the sandstone blocks in the palace indicate that natural circular holes observable on the surface of the quarry were often used to delimit the block to be extracted (see fig. 3a).²¹

²⁰ Soles 1983, 40; Vandeput 1987–1988, 89–90; Waelkens 1990, 54; Shaw 2009, 28–34.

²¹ Guest-Papamanoli 1989, 115, figs. 3, 4; Shaw 2009, 33–4. The cavities that appear in the quarries can be seen in some of

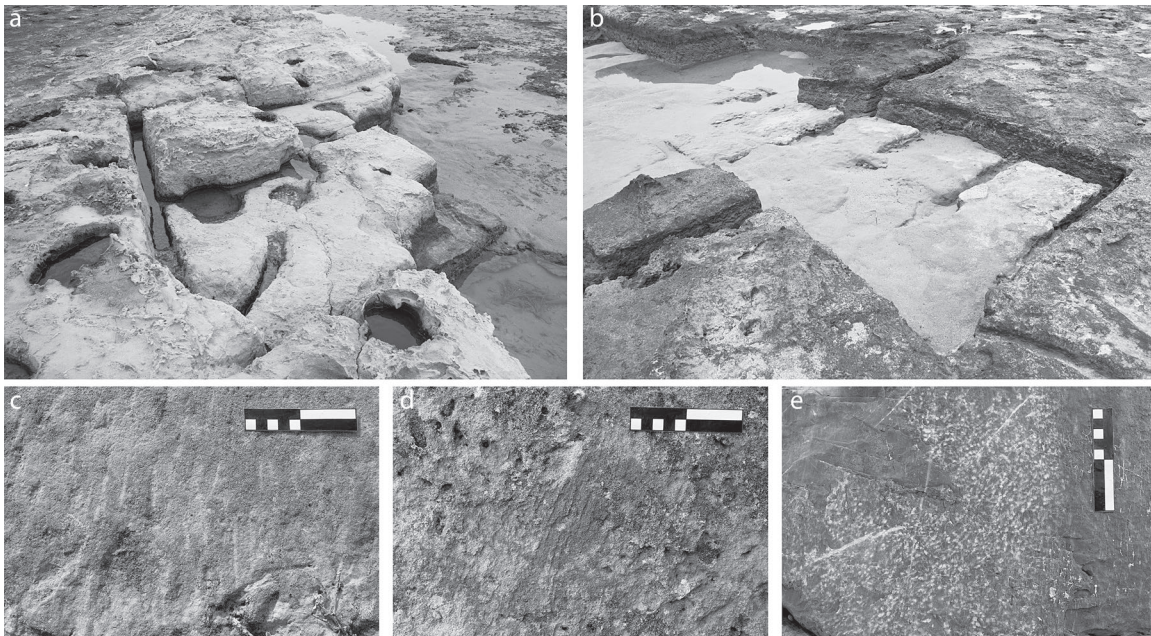


FIG. 3. Quarries on the shore of Malia and blocks in the palace: *a*, view with the natural circular holes that appear on the surface of a sandstone quarry; *b*, view showing regular extraction channels in a sandstone quarry; *c*, detailed view of flat chisel marks on a sandstone block in the north wall of Room IV 2; *d*, detailed view of point marks on sandstone Block 69; *e*, detailed view of lithic tool marks on a limestone block in the northwestern corner of the facade of Area V.

The modest size of the blocks suggests that they were transported by wheeled carts to the construction site,²² where some of them were further processed to be given a specific shape before being incorporated in the walls.²³ Additional trimming of some of the blocks occurred once they were set in position, as suggested by the discovery of sandstone debris in the fills at the feet of some ashlar walls.²⁴ Because of the porous nature of the rock

and the exposure of the ruin to erosion, traces related to working the stones are rare. However, in some instances tool marks suggest that chisels and points were used (see fig. 3c, d),²⁵ and it is also likely that the surface was smoothed with the help of lithic tools. Once the blocks were inserted in the walls and construction was completed, their surfaces were coated with a thin layer of white plaster.²⁶ This coating is clearly visible on excavation photographs of the palace at the beginning of the 20th century, and plaster remains are still apparent today in the joints and on the surfaces of several

the sandstone blocks in the palace. In the south wall of Room I 5, the visible face of a block shows the cone-shaped cavity where the lateral face of the block bisected a natural hole in the quarry surface; the underside of this block would originally have been its upper surface in the quarry.

²² Measurement of 117 sandstone blocks incorporated in the walls of the west wing of the palace at Malia has indicated that most of them (113) weighed between 100 kg and 2 tons, a weight that does not surpass the limits of what could be transported on a wheeled cart pulled by an ox (Devolder 2013, 24–5; 2017b, 68–9).

²³ The manufacture of ashlar blocks may have occurred both in the quarry and on the construction site (Shaw 2009, 66; Devolder 2013, 31–2).

²⁴ Sandstone flakes, and in some instances a layer of sand, were found at the foot of the sandstone facades to the south and southeast of the central court and in Room IX 2 of the palace at

Malia (Pelon 1978a, 1978b, 1990a, 1990b). Similar discoveries were made at Palaikastro, Myrtos-Pyrgos, Petras, Knossos, and Akrotiri (Bosanquet 1901–1902, 308; Cadogan 1975; Popham et al. 1984, 44; Evely 1993, n. 57; Palyvou 2005, 157–58; Shaw 2009, 66). It is worth noting, however, that Bevan and Bloxam (2016, 86) suggest that the blocks were dressed in the quarries.

²⁵ Shaw 2009, 52. For metal tools used in the eastern Mediterranean, see Blackwell 2011.

²⁶ Shaw, who doubts that Minoan ashlar blocks were covered with plaster except for the joints, recognizes the need on the porous sandstone walls of the palace of Malia for a “thin layer of ‘whitewash’” (Shaw 2009, 75–6).

sandstone blocks (online fig. 1).²⁷ It is thus likely that the ashlar walls were once entirely coated with plaster.²⁸

The construction of sandstone walls in the palace at Malia was markedly different from the construction of walls with *sidheropetra* (literally, iron-stone), a very hard bluish-gray limestone that forms the plateau of the Malia plain and that is used in the shape of rubble stones or boulders.²⁹ Limestone rubble and boulders were not quarried but simply collected or pried loose from the bedrock. They were used with minimal or no working and were naturally irregular in shape, although in some cases the natural breakage pattern of the stone produced flat surfaces.³⁰ In several instances, a dense network of percussion marks indicates that the surface of some of the limestone boulders was worked with hard stone tools (see fig. 3e). Limestone and sandstone were thus procured and worked in noticeably different ways, with metal tools used only for working sandstone; it is worth underlining that no bluish-gray limestone boulders bear masons' marks.

Although all the sandstone blocks were extracted and shaped in the same way, it is essential to stress the diversity in the sandstone walls in the palace at Malia, where blocks of various shapes and dimensions were used. They can be categorized as follows (fig. 4):

A: large quadrangular (ca. 1.44 m long x 0.82 m wide x 0.50 m high; see fig. 4a);

B: rectangular (narrower than A, ca. 1.28 m long x 0.53 m wide x 0.48 m high; see fig. 4b);

B*: narrow rectangular (narrower and more standardized in shape than B, used for the plinth of the west facade, ca. 1.39 m long x 0.46 m wide x 0.56 m high; see fig. 4c);

C: trapezoidal/triangular (ca. 1.18 m long x 0.65 m wide x 0.46 m high; see fig. 4c);

D: square in plan and shorter in height than in length and width (used for the pillar blocks only, ca. 0.86 m square x 0.56 m high; see fig. 4d).

In rare instances, and only on blocks found out of position in the palace, thick sandstone slabs bore masons'

marks (Blocks 90, 99–103, 105, and 108; ca. 0.15 m high).

These five main kinds of sandstone blocks were incorporated in four types of ashlar masonry identified in the edifice (fig. 5; online fig. 2). Despite indications that in some rare cases sandstone blocks were reused from an earlier phase of the palace, these four types of masonry were erected during the Neopalatial period.

The first type of ashlar masonry can be defined as rubble-backed ashlar and is best illustrated by the west facade (see figs. 2, 5a). Quadrangular (A) and triangular (C) blocks formed a leveling course on which rectangular (B) or large triangular/trapezoidal (C) blocks were set.³¹ The backing of the upper sandstone courses was made of limestone rubble and boulders. In the sandstone wall that forms the southern limit of Room XX 2 (online fig. 3), the leveling course projected under the upper courses to form a sort of plinth; elsewhere in the west facade, narrow quadrangular (B*) blocks formed a plinth set against the leveling course and were structurally independent from it (see fig. 4c).

The second type of ashlar masonry was made of large quadrangular blocks (A) set in headers and stretchers (see fig 5b; online fig. 2). This masonry was mainly attested in the walls that surround Rooms I 5 and I 6, which were connected structurally to the west facade of the palace.

Sandstone blocks of rectangular (B) or triangular/trapezoidal (C) shape form the third type of ashlar masonry, which can be termed two-faced ashlar masonry (see fig. 5c; online fig. 2). The blocks were set in both faces of the wall, the backing or filling of which was made of limestone rubble or boulders. The outer faces of the wall were generally carefully trimmed, and special care was taken in the bonding and structural positioning of the blocks in the wall. This type of ashlar masonry is best exemplified in the walls of Areas III, IV, and VII.

A fourth, heterogeneous, type of ashlar masonry was made of sandstone blocks of various shapes and dimensions associated with limestone rubble and boulders (see fig. 5d; online fig. 2). It is defined as irregularly coursed ashlar masonry that forms sturdy walls. In Area XX, it formed a stone socle up to 1.40 m high that supported a mixture of clay and rubble.³² A less sturdy

²⁷ See AJA Online for all online-only figures accompanying this article.

²⁸ Chapouthier and Charbonneaux 1928, 27–8, pls. 4, 17; Charbonneaux 1928, 353–54, 357, 362; Pelon 1980, 163, 165, pl. 8.1; Dimou et al. 2000, 442.

²⁹ Boulders are natural uncut stones of large dimensions generally too heavy to be lifted by a single individual. With reference to the palace at Malia, I use the word "boulder" for uncut wall stones more than 0.3 m long.

³⁰ Dimou et al. 2000, 438–39, 448–49.

³¹ By leveling course I mean a course set on the foundations to provide a leveled surface on which the blocks of the elevation are set.

³² Pelon 1980, 159.

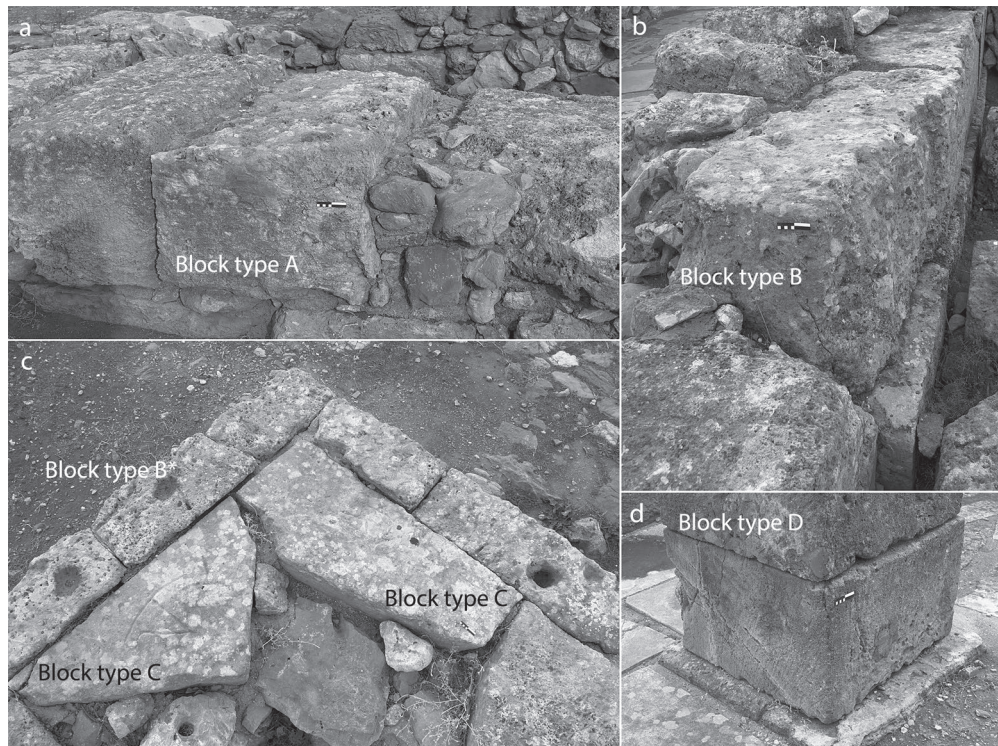


FIG. 4. Five types of blocks used in the different sandstone ashlar masonries of the Neopalatial palace at Malia: *a*, Block type A, north wall of Room I 5, looking north; *b*, Block type B, eastern facade on the North-West Court, looking south; *c*, Block types B* and C, southwest corner of Room III 3, looking southeast; *d*, Block type D, south pillar of Room VII 4, looking southwest.

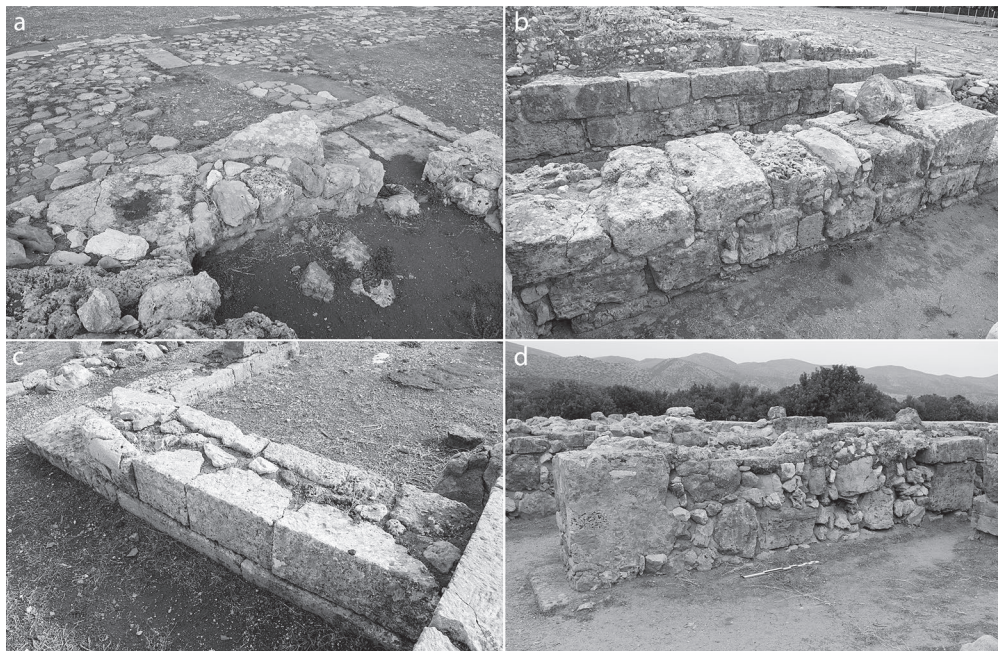


FIG. 5. Four kinds of masonries used in the Neopalatial walls of the palace at Malia: *a*, rubble-backed ashlar masonry, west wall of Room I 6, looking northwest; *b*, headers and stretchers masonry, south walls of Rooms I 5 and I 6, looking southwest; *c*, two-faced ashlar masonry, west wall of Room IV 2, looking northeast; *d*, irregularly coursed ashlar masonry, south wall of Room XIX 10, looking southwest.

but still heterogeneous version of this masonry constitutes the north wall of Rooms IX 1–2 (see online fig. 2).

All the marked sandstone blocks were quarried and shaped as part of the large-scale Neopalatial building program of reconstruction and expansion of the palace (see figs. 2, 6). Indeed, many of the blocks bearing marks were incorporated in the walls of the Neopalatial sandstone west facade on the West Court, where they were used in the leveling course, plinth, and elevation. Soundings by Pelon under Area III—the Quartier d'apparat—demonstrated that the sandstone west facade and the rooms associated with it were erected above the remains of the MM IIB destruction of the palace and on top of an attempt at the reconstruction of the complex during MM III.³³ The west facade was thus constructed later during the Neopalatial period, when it replaced an obsolete Protopalatial facade.³⁴ This Neopalatial sandstone west facade was connected structurally to the sandstone walls in Areas I, III, VIII, and XVII–XX of the West and South Wings of the palace.³⁵ Similarly, the architectural study of the Pillar Crypt (Room VII 4) and adjoining rooms demonstrates that this ensemble was built after the destruction of the Protopalatial building.³⁶ Furthermore, Neopalatial walls in Areas IV–VI of the West Wing were erected on top of Protopalatial remains, and the walls around the North-West Court were built in the Neopalatial period and reused various materials from the Protopalatial palace.³⁷ That is, all the marked sandstone blocks of the West Wing were incorporated in walls that can be allocated to the large-scale Neopalatial building program set at the transition between the MM III and LM IA phases.³⁸ Reuse in this new complex of architectural remains from preceding phases has been demonstrated,³⁹ but as far as the marked sandstone blocks are concerned, all were procured during the Neopalatial period. No masons' marks have been found on stones that have been identified as reused from the Protopalatial structure.

CORPUS OF MASONS' MARKS IN THE NEOPALATIAL PALACE AT MALIA

A total of 135 masons' marks have been identified on the sandstone blocks of the palace at Malia.⁴⁰ This

number is strikingly low, especially when compared with the more than 750 marks in the palace at Knossos and 220 marks in the palace at Phaistos.⁴¹ It cannot be ruled out that marks in the palace at Malia were carved on now hidden or eroded faces of blocks or on blocks looted from the ruin in recent time.⁴² But the same arguments are also valid for the other palaces and so do not explain the lower number of marks at Malia. Instead, it is worth underlining the diversity in the masonry used in the Neopalatial complex at Malia. Compared with the palaces at Knossos and Phaistos, ashlar constitutes only a relatively low proportion of the walls at Malia (see online fig. 2); the rest are reused Protopalatial layered-rubble walls,⁴³ mudbrick walls (some of which are reused from the Proto- and even Prepalatial periods),⁴⁴ walls of limestone boulders and rubble, and walls of large limestone boulders.

The signs carved on the sandstone blocks of the palace at Malia include the star, the double axe, the *bras levés* (upraised arms),⁴⁵ the trident, the branch, the cross, the axle, the snake, and the dumbbell. Some of these were classified by Olivier into a series of subtypes (table 1; see fig. 6).⁴⁶ Nine types of signs are thus represented on the blocks of the palace at Malia, while 25 types have been identified in the palace at Knossos and 15 in the palace at Phaistos.⁴⁷ No type present in the palace at Malia is absent from those at Knossos and Phaistos, and it seems that only the most popular Knossian signs were carved on the blocks at Malia (see online appx., table 1). Since this article explores the functions and meanings of the masons' marks in this building by shedding light on the activities they reflect and the groups or individuals they may represent, the focus is placed not so much on the marks themselves as on the blocks on which they are carved. My purpose is to address the correlation between the carving of the marks and specific tasks within the construction process, the proportion of the blocks being marked, and

the basis of his observations of the ruin in 1979 and information provided by Chapouthier 1930, 76–81.

⁴¹ Hood 1987, 205.

⁴² Pelon 1980, 59.

⁴³ Devolder 2016a.

⁴⁴ Devolder and Lorenzon (forthcoming).

⁴⁵ This sign is sometimes referred to as “the bird” at Knossos (Hood 1987, 211), but most authors, including Anglophones, use the French terminology.

⁴⁶ Olivier 1980, 181.

⁴⁷ Pernier 1935, 407–8, 413; Hood 1987, table 5; 2002, figs. 1–3.

³³ Pelon 1982, 1983a, 2005; Devolder 2017a, fig. 1.

³⁴ Devolder 2017a.

³⁵ Devolder 2016b.

³⁶ Devolder 2016b.

³⁷ Devolder 2017a.

³⁸ This is disputed by Chapouthier 1930, 75–6.

³⁹ Devolder 2016a, 2017a.

⁴⁰ A total of 132 marks were catalogued by Olivier (1980) on

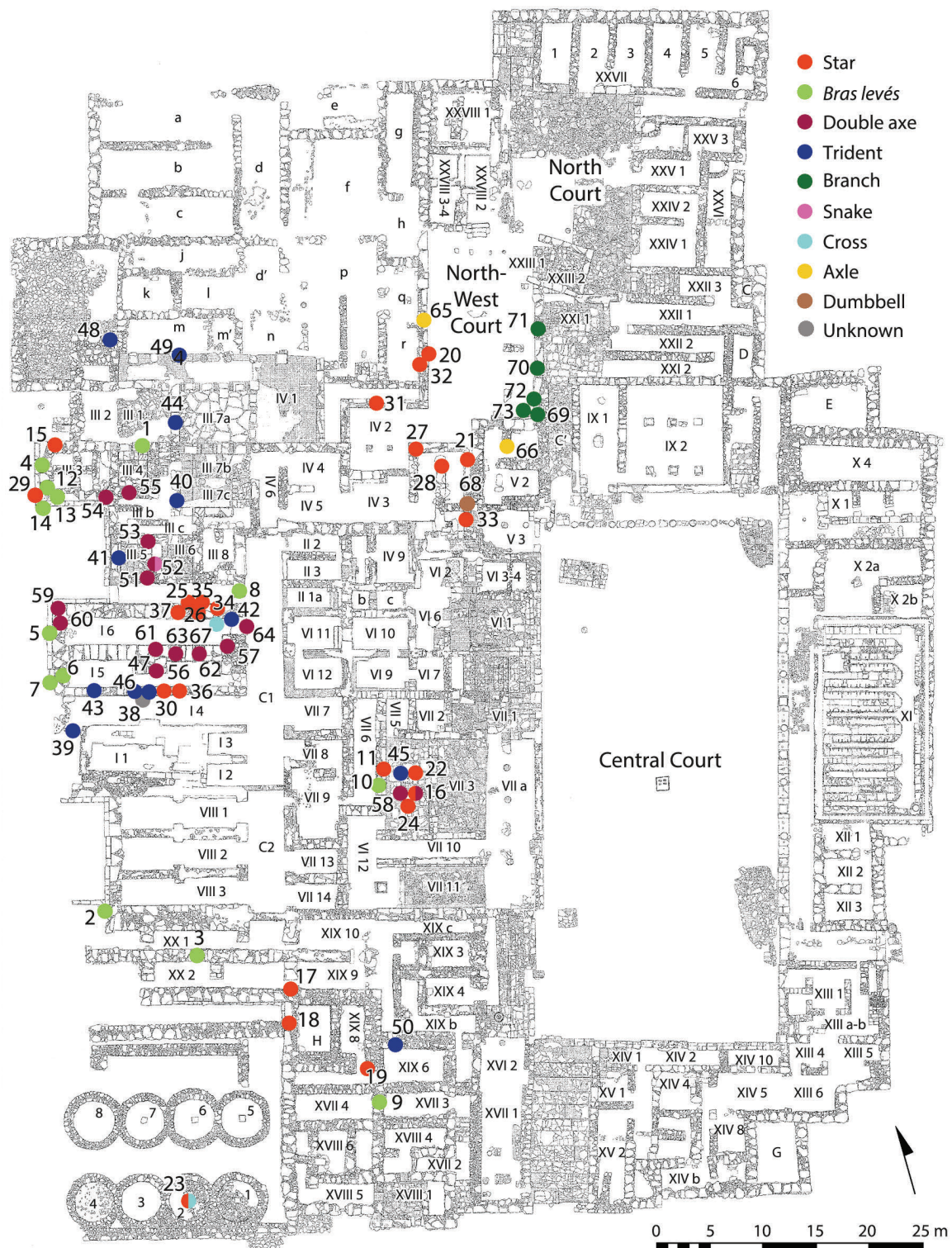


FIG. 6. Plan of the palace at Malia with marked blocks in position in the walls of the Neopalatial building (modified from Pelon 1980, plan 28; courtesy École française d'Athènes). See table 2 in the online appendix for specific information about each numbered block.

TABLE 1. Sign types carved on Neopalatial blocks in their original positions and on Neopalatial blocks reused in later constructions within the palace at Malia.

Sign	No. Marks on Blocks in Position	No. Marks on Reused Blocks	Subtypes ^a
Star	24	4	a b c d
Double axe	15	—	a b c d e
<i>Bras levés</i>	14	—	a b c d
Trident	12	—	a b
Branch	5	8	a b c
Cross	2	—	a b
Axle	2	—	
Snake	1	—	
Dumbbell	1	—	

^a Oliver 1980, 181.

the meaning of the distribution of the signs in relation to the organization of the building project.

Out of a total of 132 marks published by Oliver in 1980,⁴⁸ 122 are still visible today. Three additional marks were identified in 2017, making a total of 125 marks available for study (online appx., table 2). Eighty-nine marks are carved on blocks that are still set in the walls of the building. Of these, 77 are carved on 73 sandstone blocks that are in their initial positions in the Neopalatial walls of the palace, here Blocks 1 to 73 (see fig. 6),⁴⁹ and 36 blocks bearing masons' marks are now stored in the North-West Court of the palace and elsewhere in the building (Blocks 86–121).⁵⁰

Twelve other marks are carved on Blocks 74 to 85 in the walls of Rooms XXIII 1–2 (the *Bâtiment oblique*) and Room XXVIII 2b (see figs. 2, 7; online appx., table 2). The masons' marks in the *Bâtiment oblique*, an LM II structure set diagonally to the main orientation of the palace in the North Court,⁵¹ are often taken as an illustration that the most shallowly carved signs in the palace at Malia are late in date. This interpretation would fit the broad chronological pattern underlined by

Evans and Hood at Knossos. They suggest that earlier marks are generally broader and more deeply engraved than later, shallowly chiseled ones.⁵² However, as has been suggested, the branch and star signs were not carved when the *Bâtiment oblique* was erected in LM II. Rather, this late structure reused marked blocks from



FIG. 7. View of the northeastern area of the palace: *a*, the *Bâtiment oblique*, looking east; *b*, Room XXVIII 2b, looking southwest (the marks are highlighted in white).

⁴⁸ Signs 1–121, 202–212. Signs 201 and 301 are excluded here because one is made on a mudbrick (201, in relief), and the other is a Linear A inscription (301) (Olivier 1980).

⁴⁹ Displacement of some of these blocks during conservation work in the palace cannot be excluded. This may be the case with Blocks 1 and 54, which were perhaps incorporated in the north and south walls of the lustral basin (Room III 4) in modern reconstruction.

⁵⁰ Signs 95–121 (Olivier 1980).

⁵¹ Pelon 1997, esp. 351–55.

⁵² Evans 1906, 166; 1921, 132–35; 1930, 244; Hood 1987, 205; 2002, 101–2; Begg 2004b, 219–20.

the ruined Neopalatial palace.⁵³ The same goes for re-used sandstone blocks bearing masons' marks in Room XXVIII 2b.⁵⁴ The ensemble formed by Rooms XXVIII 1–4 abuts against the walls of the Neopalatial palace, and the sandstone blocks of Room XXVIII 2b belong to walls of a heterogeneous type that, instead of being deeply founded, are set above the LM IB destruction layer of the edifice.⁵⁵ There again, the marked blocks are reused in LM II from the Neopalatial sandstone facades that border the North-West Court.⁵⁶

The Carving of the Marks During the Construction Process

Only a handful of marks are carved on the surface of Minoan quarries, namely at Palaikastro (one), Malia (one), near Kamilari (one), and at Knossos (10).⁵⁷ The mark discovered in one of the sandstone quarries at Malia represents a "V" with two curved lines protruding from one of its extremities, and it is without parallel among those carved on the blocks of the palace or other buildings in the settlement.⁵⁸ Further, it finds no exact correspondence with the signs carved on the blocks used in other Minoan sites. No evidence in any Minoan building suggests that the masons' marks refer to a specific quarry. Since there are several instances in Crete of different marks on the same block, and of the same mark on blocks of different kinds of stones, the use of a mark to identify a quarry can be ruled out.⁵⁹ One cannot exclude that the marks were carved on the surface of the quarry to indicate the location of the blocks to be extracted. However, considering the recurring position of the marks on the faces of the blocks parallel to the stratification of the stone,⁶⁰ it is possible

that the marks were preferentially carved on the top or bottom face of the block after it had left the quarry bench.⁶¹ Several indications suggest that deeply carved marks were related to the activities that occurred in the quarries, while shallowly carved marks fulfilled a different function.

Deeply carved masons' marks in the palace at Malia are best interpreted as signs identifying the individuals or teams who were involved in the extraction process. With the exception of a few notable cases described below, the deeply carved marks do not seem to be related to the working and positioning of the blocks on the construction site. The same sign can be carved on blocks incorporated in foundations, facade walls, or inner partitions, unrelated to their orientation or position within the ashlar masonry (see fig. 6; online appx., table 2). Further, no definite pattern is discernible that would allow specific marks to be associated with specific types of blocks (fig. 8). The same goes for subtypes of marks, which also cannot be associated with types of blocks (see table 1). Unlike other sites, where different kinds of stones bear masons' marks, marked blocks in the palace at Malia are all sandstone. It is the only building material on this site to be quarried according to the grid system previously described instead of being procured in the shape of irregular boulders pry-levied from the bedrock.⁶² This further suggests that marks were deeply carved by teams of workers in the quarry prior to the shaping of the blocks and their incorporation into the walls. This interpretation is supported by the occurrence of the same sign carved on blocks that are only roughly shaped and seem not to have been fashioned after they had been extracted as well as on carefully trimmed blocks. For example, the double axe appears on untrimmed, roughly quadrangular blocks (Blocks 56–57 and 61–64) and on the untrimmed surfaces of blocks with carefully trimmed faces (Blocks 51–55 and 59–60) (fig. 9; see online appx., table 2). This is the case for other marks and for subtypes of marks as well (see table 1), and it is striking that, with the notable exception of three deep marks on the blocks of the Pillar Crypt (Room VII 4; Blocks 16, 45, and 58), no mark is deeply carved on the trimmed face of a block. Overall, most deeply

⁵³ Pelon 1997, 346, figs. 4–8, referring to Platon (1961–1962, 136) and Alexiou (1968, 107–8).

⁵⁴ Pelon 1997, 347, figs. 4, 9–12.

⁵⁵ Chapouthier and Demargne 1942, 18–9, pl. 4; Pelon 1980, 88–90; 1997, 351–55, fig. 15.

⁵⁶ Pelon 1980, 90; 1997, 346.

⁵⁷ Driessen 1984, 149; Hood 2002, 101; Watrous et al. 2004, 291, pl. 10.2; Whitley 2004–2005, 108, fig. 156.

⁵⁸ Whitley 2004–2005, fig. 156.

⁵⁹ Begg (2004b, 221) points at adjacent blocks of limestone and gypsum bearing the same sign in the palace at Knossos; these blocks would not be from the same quarry.

⁶⁰ Out of 125 marks identified on the blocks of the palace at Malia, 59 are located on either the top or the bottom surface of the block as it was oriented in the quarry, and 29 are on a face perpendicular to the bedding plane. In 37 cases, the stratification of the stone could not be determined because of the homogeneous texture of the sandstone.

⁶¹ As already stated by Chapouthier 1930, 88–9.

⁶² Except for sandstone, the stones used in the palace of Malia were levied from the bedrock, sometimes taking advantage of the natural stratification of the stone (Dimou et al. 2000, 438–40).

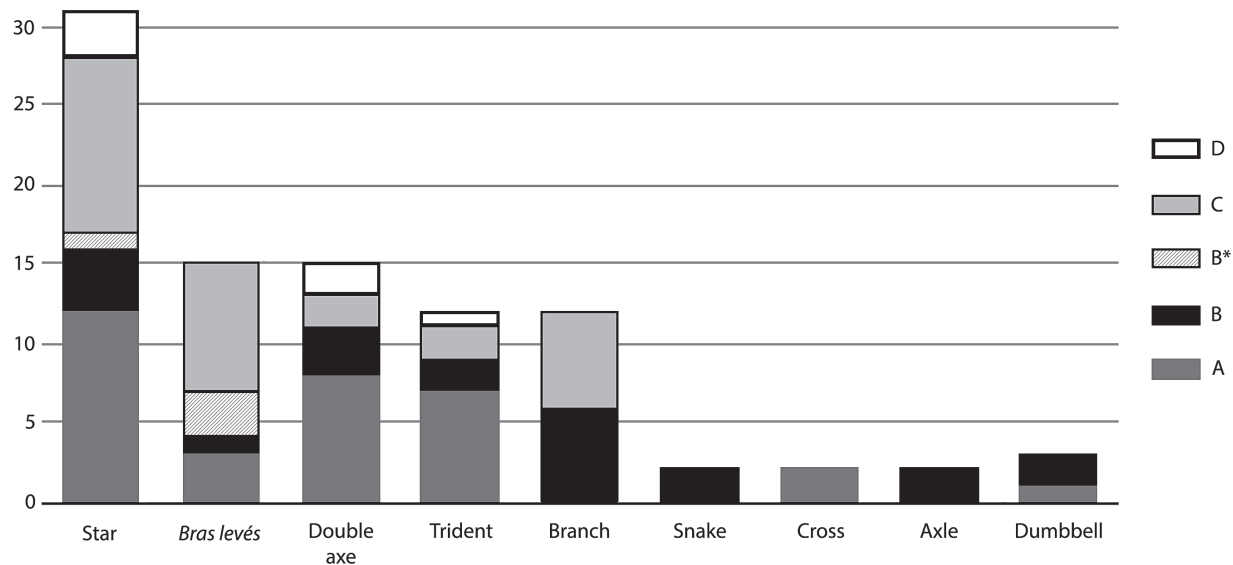


FIG. 8. Distribution chart of signs according to Block types A, B, B*, C, and D.

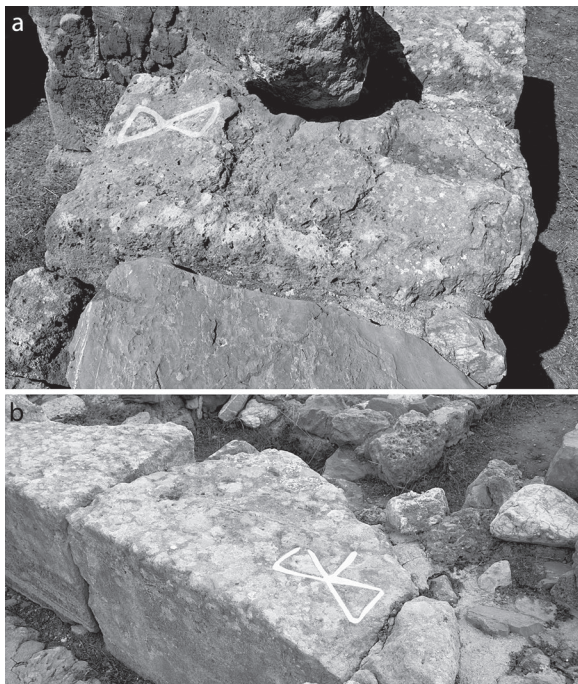


FIG. 9. The double-axe sign (highlighted in white): *a*, on the untrimmed Block 63, looking west; *b*, on the trimmed Block 54, looking northwest.

carved marks seem unrelated to the careful shaping and trimming of the block. Instead, they seem to refer to the procurement of the blocks. For example, several of the marks—all tridents—were apparently partly destroyed while the block was being shaped for its

placement in a wall (Blocks 40, 42, 44, and 50; online fig. 4). On the upper face of Block 46, set in the upper preserved course of the wall that separates Rooms I 4 and I 5, a 0.70 m long channel cuts across the middle prong of the trident (fig. 10). The detailed observation of the block shows that the mark was carved first, and that the channel later partly erased it. The trident mark was carved on the block in the quarry, while the channel corresponds to an abandoned attempt at further fashioning the block at the construction site.

The confluence of data suggests that the deep marks generally were carved on each block after it had been extracted from the bedrock so that it could be claimed by the individual or team responsible for its extraction. The signs may have been deeply engraved in the block so that, even if the block were trimmed or abraded during the transport or construction process, the mark could still be easily spotted. The marks may have been directed at the compensation due to the quarrymen unless a more intangible purpose, such as the commemoration of the particular teams involved, was at stake.⁶³ It is possible that the subtypes of marks identified on the blocks of the palace at Malia referred to different individuals in the same team.

The deep carving of identical signs (Block 2) or different signs (Blocks 23 and 52) on the same block cannot, however, be explained as identification marks

⁶³ Begg 2004a, 20.

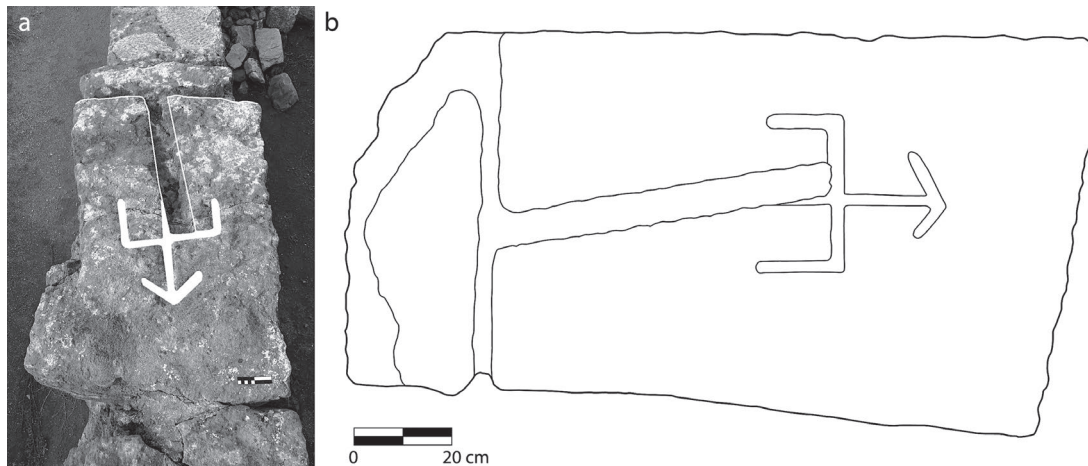


FIG. 10. Block 46 with a masons' mark partly cut by a channel that was probably related to an abandoned attempt to shape the block: *a*, view looking west, with mark and channel highlighted in white; *b*, detail as drawing.

carved by a specific quarrying team. The carving of different marks on the same block may suggest that when shaping the extracted block was necessary it was in some cases performed by a team other than the one who had quarried it, in which case both teams affixed their mark. Block 2 may have two identical marks (*bras levés* of subtype IIa; see online appx., table 2) for the same reason: the two marks could indicate that the same team extracted the block and then shaped it.

The branch sign and some of the star signs are two notable exceptions that do not fit the pattern of marks deeply carved in the quarry (fig. 11; see table 1; online appx., table 2).⁶⁴ Branch signs are shallowly carved on Blocks 69 to 73, which are still preserved in their original position on the western face of the eastern wall of the North-West Court (see figs. 6, 12). Of the eight large ashlar blocks still in position in this facade of well-dressed, isodomic, rubble-backed ashlar masonry, only the five that show the branch sign are not eroded, so it is possible that all the blocks in this facade once bore the same mark. This possibility gains strength when one considers that the blocks whose lateral faces bear the shallowly incised branch sign in the Bâtiment oblique and Room XXVIII 2b (Blocks 78–85) seem to be reused from this eastern facade of the North-West Court, as is suggested by their proximity to it and by the similar traits and dimensions of the blocks (see figs.



FIG. 11. Detailed views of the shallowly carved star and branch signs: *a*, Block 11, west wall of Room VII 4; *b*, Block 85, west wall of Room XXVIII 2.

2, 7, 12; online appx., table 2).⁶⁵ Four star marks are shallowly carved on the lateral faces of blocks still in

⁶⁴ Finely carved star signs are represented by subtypes IIIa and IIIb (Olivier 1980, 181). The same subtypes are also deeply carved on other blocks.

⁶⁵ As already suggested by Pelon 1997, 348. Begg (2004a, 14; 2004b, 219–20) mentions a LM III date, but I prefer to rely here on the LM II date suggested by Pelon.



FIG. 12. Eastern facade of the North-West Court of the palace at Malia, looking southeast. At the foot of the wall, marked blocks of generally unknown provenance are stored.

their original positions in the Pillar Crypt (Room VII 4) (Blocks 11, 16, 22, and 24; see figs. 6, 13). Three others are lightly carved on the lateral faces of blocks in the *Bâtiment oblique* (Blocks 74–76) that appear to be Neopalatial blocks reused in LM II, as noted above (see fig. 7).

Shallowly carved branch and star marks seem to have fulfilled a different purpose from deeply carved marks. Considering their position exclusively on carefully trimmed faces of blocks (see online appx., table 2), I suggest that shallow marks were carved after the block had been given its final shape and trimmed and before it was laid in the wall, in order to single out which face was to be set in the facade. The discovery of sandstone chips in the preparation layer for the floor between the North and North-West Courts tends to suggest that the blocks were trimmed on the building site and that the shallow marks were consequently carved there.⁶⁶ The marks were most likely intentionally shallow to disappear easily under the plaster coating of the wall, but they were perhaps also partly erased by a final polishing of the blocks in position. The concentration of the shallow branch mark on the eastern facade of the North-West Court strongly suggests that one team was responsible for the erection and finishing of this wall.

To summarize, it seems that most masons' marks were deeply carved on the blocks in the quarry to in-

dicate which individual or team was involved in the extraction of each block (Blocks 1–21, 23, 25–68, 77, 86–110, and 118–121), and, in some rare cases, in the shaping of the block as well (Blocks 2, 23, and 52). It is most likely that the mark was preferentially carved on one of the largest surfaces of the block after it was extracted from the quarry bench and before it was brought to the construction site (see below).⁶⁷ It is probable that the blocks were conveyed to the palace in lots of several blocks piled in a wheeled cart. Blocks bearing different marks may have been transported in the same convoy and brought to a common block pool to be used as needed by the builders, which would explain why blocks with the same deeply carved marks are not concentrated in one part of the palace (see fig. 6). After further shaping in some cases, the blocks were inserted in the walls, and the outer face of some of them was carefully trimmed. With the exception of three marks deeply carved on the trimmed faces of Blocks 16, 45, and 58 of the Pillar Crypt, only shallowly carved branches and stars are visible on carefully trimmed faces of ashlar blocks (Blocks 11, 16, 22, 24,

⁶⁶ Pelon 1978b, 76.

⁶⁷ More than 80 percent of the deeply engraved marks were set on the top or bottom surface of the block as it was oriented before extraction (i.e., on a surface parallel to the horizontal stratification of the stone, when it could be identified); the remaining 20 percent were set on a plane perpendicular to it (of 98 deep marks: 59 parallel, 12 perpendicular, 27 undetermined; see online appx., table 2).



FIG. 13. General view (looking southwest) of the Pillar Crypt (Room VII 4) with the blocks bearing masons' marks, the latter being highlighted in white.

69–76, 78–85, and 111–117). It cannot be excluded that more shallow marks have now disappeared because they were erased by the final smoothing of the blocks or because of the weathering processes that followed the ancient destruction and the modern re-discovery of the palace.

The Proportion of Blocks Bearing Marks

As noted, the number of marks now visible is almost certainly not representative of those initially carved on the blocks. To a large extent, this is because only some of the six faces of each block are now available for observation.⁶⁸

Rooms I 5 and I 6 in the West Wing are delimited on their north and south sides by walls erected with large quadrangular sandstone blocks set in headers and stretchers (see figs. 5b, 14; online fig. 2). The west wall of these rooms is the sandstone facade facing the West Court (see fig. 2). Of the 131 blocks that still

compose the walls of these rooms, 24 show masons' marks. Since 20 of them are carved on the upper surface of the blocks, and only four on one of the lateral faces, it is probable that many marks on the upper faces in the lower courses are now hidden (e.g., Blocks 35 and 38; online fig. 5). It seems that deeply carved marks were preferentially set on one of the largest surfaces, top or bottom, as the block was oriented in the quarry (i.e., a face parallel to the horizontal stratification of the stone; see online appx., table 2), and that the block was placed on one of these largest surfaces when it was incorporated in the wall. Therefore, usually the mark would be on either the top or bottom surface of the block in the wall.⁶⁹ Of 50 sandstone blocks whose upper surface is entirely visible in the walls that surround Rooms I 5 and I 6, the upper face of 19 of them, slightly less than half, shows a deep mark. With such a proportion it is logical to consider that most of the remaining 31 are carved on the bottom surface, with a low proportion of the marks set on the lateral faces (e.g., as is the case for Blocks 25, 42, 64, and 67 in the lower courses of the same walls). This is

⁶⁸ It is also the case that some marked blocks were used in the foundations. In 1983, Pelon (1983b) discovered two marked blocks in Room ε revealed under the floor level of the North Portico north of Room III 7a.

⁶⁹ Notti (2014, 103) made a similar observation at Akrotiri.

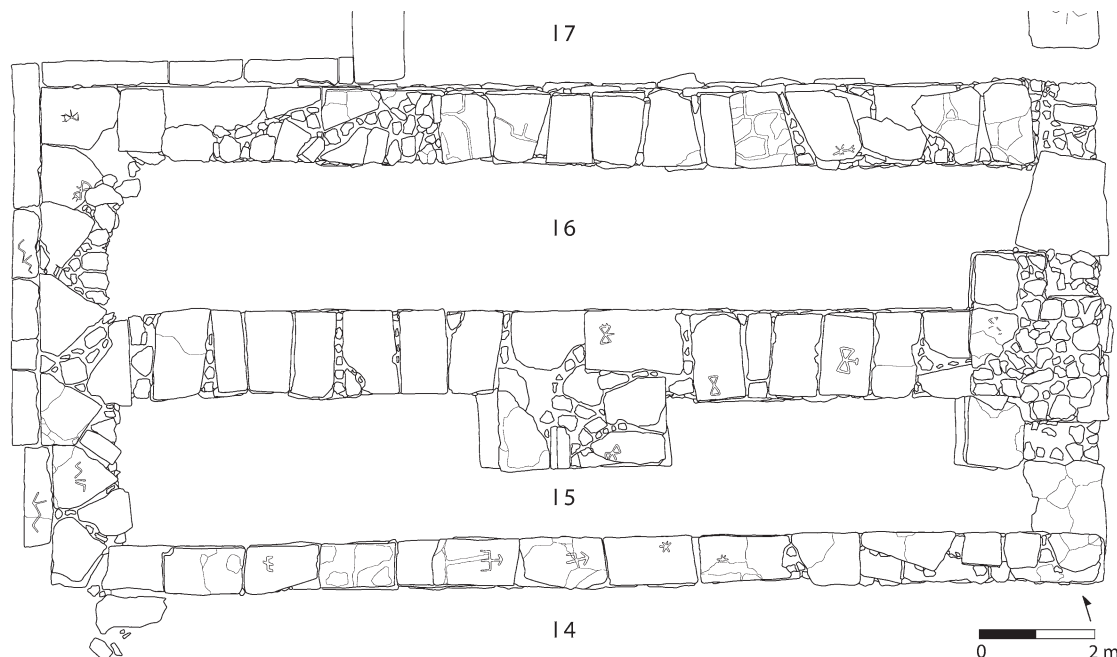


FIG. 14. Plan of the sandstone walls surrounding Rooms I 5 and I 6 in the western magazines of the Neopalatial palace at Malia (modified from Pelon 1980, plan 16; courtesy École française d'Athènes).

easily explained if the mark was carved when the block was lying on the ground offering one of its largest faces to the quarryman. The proportion of marks on sandstone blocks whose upper surface is entirely visible in the walls of Rooms I 5 and I 6 thus suggests two things: first, most and perhaps all sandstone blocks incorporated in the walls delimiting Rooms I 5 and I 6 were marked. And second, the marks were carved after the blocks were extracted.

In other parts of the Neopalatial building, deeply carved marks appear on roughly half of the visible upper surfaces of the blocks, excluding those whose surface has been eroded. This is this case, for example, in the walls of the West Wing, Quartier d'apparat, Areas IV and V, and around the North-West Court, where cut sandstone blocks were possibly all marked (see fig. 6). However, it is not the case for the blocks that compose the inner walls of Areas XVII–XX in the southwestern part of the palace. There the scarcity of the marks is so striking that it is hard to believe that it is due to the vicissitudes of preservation or the access to the carved faces. The ashlar masonry in these rooms is heterogeneous, with cut sandstone blocks—most of which are only roughly regular—mixed with large limestone boulders and rubble (see fig. 5d, 15).

The scarcity of marks in Areas XVII–XX can likely be explained by the reuse of many sandstone blocks from an earlier phase of the palace, a suggestion based on several factors. First, the sandstone blocks in Rooms XX 1 and XX 2 are of a markedly different color than elsewhere in the building (reddish-brown/gray instead of very pale to light yellowish-brown), although this may be the result of heavy destruction by fire in this area.⁷⁰ Second, the walls here include some reused sandstone slabs coated with plaster that are identical to those discovered in the Protopalatial Dessenne Building and Quartier Mu,⁷¹ although it cannot be totally excluded that restorers used at least some Protopalatial slabs during modern conservation works. Third, several blocks of gray-black crystalline and gray sandy limestone from the leveling course of the Protopalatial facade on the West Court are incorporated in the

⁷⁰ Hazzidakis 1915, 116. Sandstone blocks in Area XX are 7.5YR 5/2 (brown), 5YR 6/2 (reddish gray), and 5YR 5/4 (reddish brown), while elsewhere in the palace the blocks are 10YR 7/4 (very pale brown) and 10YR 6/4 (light yellowish brown).

⁷¹ Devolder (forthcoming); Schmid and Treuil (forthcoming).

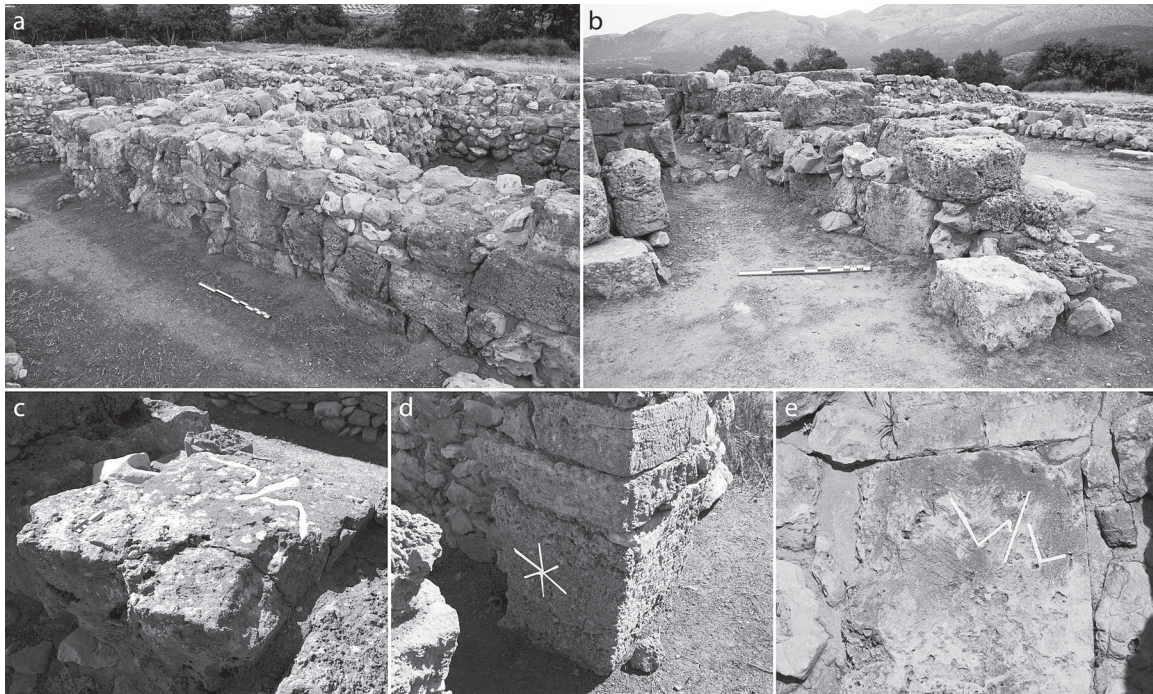


FIG. 15. View of heterogeneous masonry of sandstone blocks and limestone rubble stones and boulders in Areas XVII–XX: *a*, south wall of Room XIX 9, looking southeast; *b*, south wall of Room XX 1, looking east; *c*–*e*, Blocks 3, 19 and 9 bearing marks in the same area (the marks are highlighted in white).

Neopalatial walls of Areas XVII–XX.⁷² Thus, although indications for reuse are not always straightforward, it seems that at least some of the blocks—including cut sandstone—that compose the walls in Areas XVII–XX were reused from an earlier phase of the palace. This would explain the scarcity of masons' marks in this southwestern part of the building.

Similarly, the sandstone blocks used in the walls of Area VII bear only a few marks: eight are carved on seven blocks set in the western wall and in the pillars of the Pillar Crypt (Blocks 10, 11, 16, 22, 24, 45, and 58 in Room VII 4; see figs. 6, 13). The walls of Area VII are carefully built with trimmed sandstone blocks of consistent size and shape set in headers and stretchers (online fig. 6), and the configuration of Area VII reflects a carefully planned and coherent building project. This makes it doubtful that the blocks in Area VII were reused from an earlier phase of the palace and suggests instead that one single building team

was assigned the entire responsibility for extracting the blocks and constructing the Pillar Crypt and its neighboring rooms.

Whatever the reason for the scarcity of marks carved on the cut sandstone blocks of Area VII, it is interesting to note that the eight visible marks are concentrated in the Pillar Crypt itself (Room VII 4; see figs. 6, 13), with six of them on the pillars. Three of the eight marks are exceptionally deeply carved on the trimmed faces of blocks forming the pillars (two double axes and a trident on Blocks 16, 45, and 58). Such a concentration is striking in an architectural unit where marks are especially scarce. The assortment of the sign types in the Pillar Crypt is reminiscent of the signs in the western half of the palace, namely the star, double axe, trident, and *bras levés*, and perhaps it is not too far-fetched to suggest that the marks in the Pillar Crypt constitute some sort of signature of the individuals or teams who participated in the construction of the West Wing, Quartier d'apparat, and western part of the South Wing (see figs. 2, 6). Such a signature in the Pillar Crypt might indicate the involvement of several teams of stonemasons who laid their mark on the walls and pillars of one of the main rooms of the Neopala-

⁷² Blocks 16, 17, 23, and 26 (Devolder 2017a, fig. 2, table 1). Two other such blocks were also reused in the south wall of Neopalatial Rooms XVIII 1 and 2 in the same area.

tial building project.⁷³ Carefully built and accessible from the Central Court of the palace, the Pillar Crypt served as an interface between the Central Court and the western rooms of the West Wing. However, if the marks carved on Blocks 10, 11, 16, 22, 24, 45, and 58 were meant to commemorate the work of teams of stonemasons, their audience would not have reached far beyond the community of builders, since they were covered by the plastering of the blocks.⁷⁴

In sum, it seems that all blocks were marked in some areas, and almost none were marked in others. The scarcity in some areas may result from the reuse of Protopalatial remains or to the assignment of specific parts of the program to discrete building teams that made no use of marks since they executed all phases of an architectural unit from the quarry to the finished walls. The varying proportions of masons' marks in different parts of the building and the possibly different reasons for their scarcity in some areas underline the necessity to consider several options in explaining the distribution of the marked blocks.

Distribution of the Masons' Marks in the Neopalatial Palace at Malia

Begg's study of the masons' marks in the palace at Knossos indicated that signs were found in clusters in the building, some being confined to certain areas. This is especially obvious in groups of storerooms in the west wing of the Knossian palace and suggests that the marks there reflect different teams of workers assigned to distinct structural units.⁷⁵ In the palace at Malia, except for the branch signs carved on the eastern facade of the North-West Court, the same types of marks are not found systematically in neighboring walls or rooms (see fig. 6). This observation is also valid for the distribution of the subtypes defined by Olivier (see table 1). However, from a wider perspective, two broad ensembles are visible within the building.

The star, trident, double axe, and *bras levés*—and the barely present cross and snake—are carved on sandstone blocks incorporated in the walls that belong to the rebuilding of the West Wing, the construction of the Quartier d'apparat, and the construction of the South Wing of the palace in the Neopalatial period. Within this broad area, no obvious clusters appear (see fig. 6). One may only make two observations. First, in several places, two to four blocks set next to one another bear the same mark. Second, the *bras levés* sign appears frequently on blocks set in the west facade, whether they are used in the leveling course, plinth, or elevation, and regardless of their shape (see fig. 8). The blocks bearing the *bras levés* sign were thus used in a privileged way in the west facade, though not to the exclusion of blocks bearing other signs, since the trident, double axe, and star are also carved on blocks incorporated in this facade.

A second ensemble seems to be formed by the marks carved on the blocks in the walls of the North-West Court and Areas IV and V. With the exception of the star (in its deeply and shallowly carved versions), which is the most frequent sign in the building, none of the marks used in the West Wing, the Quartier d'apparat, and the western part of the South Wing is present in these areas (see figs. 2, 6). Instead, in addition to the star, only the branch, axle, and dumbbell are visible. It is very likely that a branch team was responsible at least for the eastern facade on the North-West Court when the palace was rebuilt and expanded during the Neopalatial period. The axle and dumbbell, appearing twice and once respectively, are not found in sufficient numbers to be interpreted meaningfully. Apart from the apparently distinctive meaning of the branch mark in this part of the building, the absence of the *bras levés*, double axe, trident, snake, and cross marks sets the construction of the sandstone walls in Areas IV, V, and the North-West Court apart. However, as underlined at the beginning of this article, these walls are part of the same Neopalatial building program as the West Wing, Quartier d'apparat, and South Wing, as evidenced by the common planning and the structural connections between the walls of Area IV and the Quartier d'apparat. In both ensembles, the star signs used for marking the procurement of blocks and for indicating finely trimmed surfaces suggest that the team or individuals using this sign got the largest share of the Neopalatial building program.

The distribution of signs in the palace of Malia, therefore, seems to distinguish Areas IV and V and the North-West Court from the West Wing, Quartier

⁷³ Worth mentioning here is the coping stone of a niche in the Isopata Royal Tomb at Knossos, on which four signs were carved next to each other on one face of the block (branch, double axe, trident, and wheel) (Evans 1906, 167, fig. 146). Several of these signs also appear on other cut-stone blocks in the tomb, and in this case again it is likely that they mark the participation of different teams of workers in the same building project. It is unclear whether these marks were visible after the completion of the construction of the tomb, since Evans (1906, 166) indicates that "[i]t is difficult to know if the walls were plastered or left in stone."

⁷⁴ Charbonneaux 1928, 362.

⁷⁵ Begg 2004b, 221–22.

d'apparat, and western part of the South Wing, although both of these areas belonged to the same Neopalatial building program. The branch and star signs carved in the walls of Areas IV and V and the North-West Court, with few occurrences of other signs, suggest that two main teams worked in these areas. The star team, it appears, deeply carved their sign on the blocks they procured from the quarries and lightly carved their sign on the blocks they assembled and trimmed. The branch team, represented only by shallowly carved signs, assembled and trimmed the stones at the construction site. In the Quartier d'apparat, West Wing, and western part of the South Wing, the distribution of the marks suggests that several quarrying teams produced the necessary blocks. When these blocks arrived at the construction site, the blocks produced by the different teams were counted and became part of a common block pool to be used as needed by wall builders. This procedure would explain the scattered distribution of the signs. The scattered distribution, in turn, tends to show that the teams who worked in the quarries were not responsible for the construction of discrete sections of the building. One cannot exclude that quarrying teams were also involved in the construction of the walls, but the distribution of the marks does not indicate that any one team was responsible for all tasks associated with the production of a specific architectural unit in the building program, from the procurement of the blocks through the construction and finishing of the walls.

CONCLUSION

The detailed observation of the blocks bearing masons' marks in the Neopalatial palace at Malia demonstrates that such marks are physical symbols that represent their makers. The teams or individuals represented by the marks were involved in different stages of the construction of ashlar sandstone walls; deeply carved marks identify the quarry workers, and shallow marks identify those who positioned and trimmed the blocks. Unlike the interpretations of masons' marks at Knossos, where Evans and Hood suggest that earlier marks are generally broader and more deeply carved than later, shallower ones, at Malia the depth or shallowness of the carving is not related to the chronology of the marks but rather to their function and to separate phases of the construction process.

The broadest and deepest marks were carved in the quarry, most likely immediately after the extraction of the block. Since sandstone ashlar blocks were extracted in different quarries along the shore of Malia,

it would have been more efficient to carve the marks at the quarry site and to count the number of blocks bearing each mark once they had reached a common destination. The production of each quarrying team could then be easily assessed and the workers be remunerated accordingly. The scattered distribution of the different types of deeply carved marks in the building, though showing a general pattern (the West and South Wings and the Quartier d'apparat on one side and Areas IV and V and the North-West Court on the other), indicates that quarrying teams did not produce blocks for specific parts of the palace. When the blocks arrived on the construction site, they were distributed in the building according to the size, shape, and quality needed for specific walls within the edifice. It is also likely that some of the blocks were shaped on the construction site to fit specific walls, as is the case for the blocks whose marks were partly destroyed during shaping (see fig. 10; online fig. 4). Shallow chiseled marks are represented by two signs only, the star and the branch, and are probably related to the positioning and fine trimming of the blocks. The shallowness of the carving was most likely aimed at making the sign disappear easily when the wall was coated with plaster.

Additional shallow marks, in this case representing the cross and star signs, occur on the altar discovered in Room XVIII 1 at the south end of the South Wing. The ritual paraphernalia found in this room indicates its role as a sanctuary,⁷⁶ and the marks on the altar have been taken by some authors as an indication of their religious function (online fig. 7).⁷⁷ The context as well as the position of the cross and star marks on the surface of the altar provide strong evidence to suggest that in this specific case the marks had a religious function. Indeed, they are carefully positioned in the centers of the two sides on which they occur as though for intentional display, despite being shallowly carved. The excavators do not mention remains of plaster on

⁷⁶ Chapouthier et al. 1962, 9–13, figs. 1–3.

⁷⁷ Sakellarakis 1967, 287–88. Begg (2004a, 18–19) suggests that the presence of the star and cross marks on the altar and on the sandstone pillar (Block 23) of Silo 2 nearby, with the star facing east and the cross facing south in both cases, may indicate that “the sanctuary was somehow linked functionally and conceptually with the granary complex”. The fact that the pillar of Silo 2 was not visible, hidden by the walls of the silo and the cereals it contained, prevents any practical association between the sanctuary and the silos, but it does leave the possibility open for a conceptual link, bearing in mind the rarity of the cross mark and its association with the star.

the altar, and none was identified after careful examination of the restored piece in 2017. The ritual function of the marks on the altar thus seems most convincing, and I question whether the term “masons’ marks” is appropriate. Perhaps the carving of marks on the blocks, especially the pillars, of the Pillar Crypt (Room VII 4) reflects the intertwining of both secular and ritual purposes (see fig. 13). The stonecutters may have been eager to mark blocks in Room VII 4 as much to commemorate their participation in the Neopalatial building program as to be compensated for their work.

It may be significant that at Malia the marks are a Neopalatial feature while at Knossos their use goes back to the MM IB phase of the Protopalatial period. As stated, the signs carved on the sandstone blocks of the palace at Malia were also the most frequent at Knossos (see online appx., table 1), and one may suggest that the appearance of such marks at Malia could reflect the participation of Knossian builders in the Neopalatial building program. Sandstone was extracted from the Protopalatial period onward at Malia and was used in the walls of various Protopalatial architectural complexes from which masons’ marks are absent (i.e., Quartier Mu, the Dessenne Building, and the Hypostyle Crypt).⁷⁸ The reconstruction and expansion of the Neopalatial palace at the transition between the MM III and LM IA phases may have required the participation of specialized craftsmen not present at Malia or, perhaps more simply, a workforce larger than that available locally. The availability of human and material resources may have played an essential role in supporting guilds of masons who actively contributed to the development of elite architecture at Knossos and who traveled to other palatial or secondary centers.⁷⁹ The signs represented by the masons’ marks carved on the Neopalatial walls of the palace at Malia are consistent with the presence of Knossian quarrying and building teams, although it is unknown whether such mobility reflects Knossian patronage or free specialists traveling on their own volition.⁸⁰ It is unclear whether the two signs (a shallow

carved star and a possible arrow) visible on blocks that form the pillars in the Neopalatial House Δβ at Malia were carved by the same craftsmen who worked in the palace,⁸¹ but it is perhaps telling that masons’ marks are concentrated in the main edifice at Malia, despite the many elaborate buildings erected at this site during the Neopalatial period. This concentration may again point to the commission at the palace of nonlocal, perhaps Knossian, craftsmen whose work then influenced domestic buildings at Malia.

If this analysis of the masons’ marks carved on the sandstone blocks in the palace at Malia seems to corroborate the secular function already advocated by several authors, it is important to underline the potential multivalence of the marks and their purpose.⁸² In carving signs that would allow them to take credit for their work, the builders may have had a primary interest in remuneration, but their claim was perhaps also vested with symbolic meaning related to the pride of achievement.⁸³ The diverse connotation of marks that may have initially had a purely secular purpose may account for some cases where a symbolic meaning seems to prevail, as in the case of the altar discovered in Room XVIII 1 and the walls and pillars of the Pillar Crypt (Room VII 4) (see fig. 13; online fig. 7). Perhaps the Linear A inscription carved on the upper face of the sandstone block in the wall to the southwest of the North-West Court is to be understood in this way.⁸⁴ This ashlar block (Block 27; see fig. 6; online appx., table 2) proved to be the longest one in

of Knossos” in the development of Minoan frescoes, Driessen suggests that Knossos similarly served as a main center for the development of “palatial” architecture, and that builders from Knossos traveled to other sites. For Knossian patronage in explaining the mobility of stonemasons in Minoan Crete, see Bevan and Bloxam 2016. On the understated importance of free craftsmen in the eastern Mediterranean Bronze Age, see Warburton 2007, 192–93.

⁸¹ The sign of the branch and of the double axe were shallowly carved on two sandstone blocks in House E at Malia, but it has been suggested that they were reused (Deshayes and Dessenne 1959, 96–7). Two blocks in the western and eastern sandstone pillars in House Δβ bear a star and perhaps an arrow, respectively (Bradfer-Burdet and Pomadère 2011, 105 n. 15; Demargne and Gallet de Santerre 1953, 49, pl. 22.3).

⁸² Shaw 2009, 78.

⁸³ An idea best summarized by Begg (2004a, 20): “[The] signs assert a collective claim to the creation or ownership of workmanship, either for payment or to commemorate what that particular team had accomplished.”

⁸⁴ Godart 1973; Olivier 1980, 224 n. 301.

⁷⁸ Amouretti 1970, 9–10; Devolder (forthcoming); Schmid and Treuil (forthcoming).

⁷⁹ Driessen 1989–1990, 21; Begg 2004b, 221; Devolder 2013, 127.

⁸⁰ Driessen (1989–1990, 20) stresses “the similarity between construction techniques, building materials, building plans, room types, architectural details and decoration” in many edifices over the island of Crete and beyond. Building on the view of Cameron (1975, 356–70) about the primal role of a “School

the palace (3.04 m). The inscription may have been already carved at the quarry to ensure magical or divine protection of the block throughout the building process. Alternatively, it is perhaps not preposterous, in the absence of a clear understanding of the inscription, to interpret it as commemorating the outstanding achievement represented by the successful extraction, fashioning, transport, trimming, and setting in position of such a large block, a feat accomplished by stonecutters who took credit for their work by carving a deep star sign on the upper face of the block.

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