

# ASHLAR

## Exploring the Materiality of Cut Stone Masonry in the Eastern Mediterranean Bronze Age

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### **Ashlar Masonry in Mycenaean Greece: An Overview**

James C. Wright (Bryn Mawr College)

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In this paper I will survey the evidence for the use of cut blocks of limestone (*poros*) masonry in Mycenaean architecture from the late Middle Bronze Age through the period of the palaces. I will consider origins, masonry traditions, sources, and disposition. The paper will examine regional uses of ashlar, especially in pre-palatial contexts, as well as interpolity uses based on the examination of ashlar in palatial and other monumental edifices.

### **A Game of Stones: An Inventory and Distributional Analysis of the Consumption of Worked Stone within Neopalatial North Central Crete**

Emilie Hayter (University College London)

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During the palatial phases of Minoan Crete, stone was strategically used in monumental and other elaborate architecture, with particular types and variations of stone purposely chosen and utilized to satisfy specific visual or structural requirements. This indicates that worked stone provided a significant communicator of social meaning within the built environment. The investment of time, labor and skill in acquiring, and working stone into finely finished ashlar and orthostates for the construction of large architectural building projects confirm its value. Architecture has often been employed as evidence in interpreting Cretan political structure, through architectural details and room types, yet the component architectural stone is largely treated as a passive backdrop to the trade networks, religious activities and sophisticated administration managed from the palatial centers. Despite the quantities and varieties of quarried and finely worked stone used in highly structured ways within building complexes, stone material is commonly overlooked by researchers as an expressive medium and interpretive resource.

This talk presents the results of an intensive macroscopic inventory of worked architectural stone use primarily at the site of Knossos, focusing on Neopalatial construction materials, as used in different parts of the site (palatial, funerary, and non-palatial contexts). The on-site macroscopic and photographic inventory was combined with image recording through use of a handheld Dino-Lite microscope, to identify and document compositional and textural differences among the stone surfaces. The captured images were analyzed through software allowing image processing with varied measurement options (used for counting grain size and density, etc.). This systematic macroscopic inventory of stone was also conducted at the north central hinterland sites of Tylissos, Vathypetro, Nirou Chani and Amnisos. These additional case studies will importantly allow a comparative perspective, permitting insight into similar and contrasting patterns of stone use within specific contexts and different mediums. This in turn allows a play off between palatial and non-palatial sites, whereby these dimensions of variation can be analyzed contextually.

Other aspects that will be considered are the access to certain stone resources and quarry locations and the significance of their proximity to sites as well as inter-site relationships and territorial relations which affect the exploitation of specific stone sources. On an island-wide scale it is important to understand regional differences within the stone resource landscape of Crete, how this affected stone selection and the construction of Minoan architecture on a local level. Understanding the standardization of use of stone types within certain areas, and different buildings at these sites, will offer an understanding of whether stones were brought together from one or more quarries, to inform on planning, organization and the knowledge involved. Dino-Lite images and descriptions were taken from potential Minoan quarries and stone exposures around the Knossos valley, allowing a comparison of the variety of stone available within that area with the

samples from the site. This offers an idea of the range of variation within the locally available stone resources that the Minoans had access to, and an indication of how they were using the landscape.

Conducting a widespread distributional analysis on stone as it is seen macroscopically, integrating material characteristics with mechanical strength, weathering resistance, availability and locality of resources, workability, suitability for certain functions and how these affect their selection, all provide different understandings of the value of specific stone resources. The interpretation of how the material, structural, visual and sensory characteristics of stone resources affected their manipulation allows new insights into Minoan value systems and strategies for the presentation and differentiation of status and power.

### **Ashlar in Ras Shamra-Ugarit. Uses, Functions, and Techniques**

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From the beginning of the excavations of Ras Shamra and Minet el-Beida, under the direction of Claude Schaeffer, the abundant use of cut stone masonry in domestic, public and funerary architecture during the Late Bronze Age received much attention. Clearly, the most valuable data on architecture is provided by the archaeology and the environmental studies while textual evidence plays a secondary role.

The presentation will start with a brief review of the history of the research and the evolution of the approaches employed by different scholars – from the interpretations of the first excavators and architects, the architectural studies (and building techniques) by Olivier Callot, the urbanistic analyzes of Marguerite Yon, and the technical studies carried out recently by Jean-Claude Bessac (at Ras Ibn Hani, Ras Shamra, Mqaté, and Minet Helou). Next, the results of a study on the various uses and roles of ashlar masonry in Ugarit will be addressed. The results of a technical study and discussion of the types and provenance of stones used with special emphasis on the quarries and extraction method, traces left by tools and *gestes* of craftsmen will follow, being reviewed for a large number of architectural contexts. Subsequently, the preliminary results of a comparative study between the techniques used to produce cut stone architecture and stone statuary (stelae in the collection of the Louvre museum) will be presented. Finally, the perspectives of future research such as the establishment of a typo-chronology, the development of technical and comparative studies will be outlined.

### **Accommodations to Building Design and Labor Organization for Cut Stone Masonry in Mycenaean Greece**

Kyle A. Jazwa (Duke University)

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In this paper, I examine the use of cut stone thresholds in Late Bronze Age, mainland Greece and evaluate its impact on buildings' design, organizational planning, and construction. I focus on cut stone thresholds specifically because they are non-load-bearing architectural elements and, thus, do not necessarily require any alteration of the remaining superstructure for construction and supporting purposes. With a carefully targeted, comparative study of Mycenaean doorways and the associated building elements, I reveal much about the accommodations to design and the *chaîne opératoire* of cut stone masonry. Specifically, this comparative analysis offers new insights into the possible identities of the cut stone masons, the division of labor in the construction of monumental architecture, the relative order of construction, and the degree to which the use of cut stone thresholds affects the overall building design. It also demonstrates variability in the implementation of cut stone masonry in monumental buildings throughout Greece.

Cut stone thresholds are found at several sites throughout Mycenaean Greece, such as Mycenae, Tiryns, Gla, Thebes, and the Menelaion. Although few, these structures are typically "monumental" in character and possess architectural qualities that directly parallel contemporary domestic architecture. I begin the talk by presenting a brief overview of all excavated and published cut stone thresholds in Mycenaean Greece, detailing their dimensions and form. Next, I consider attributes of the overall construction and spatial organization of the walls and rooms in which cut stone thresholds are found. These are compared to the spatial qualities and building techniques in structures without cut stone thresholds. Using these data sets and the dimensions of stone thresholds, I calculate the proportional values of the

thresholds relative to other constituent parts of the structures in which they were found, including the wall width, length, room size, secondary doorways. Such values are then compared to the proportions (using the doorways, rather than thresholds) found in a sample of contemporary structures that do not feature cut stone thresholds. With such a comparison, I evaluate the degree to which construction practices and building design were altered to accommodate the cut stone thresholds.

Among the results of this study is a new understanding of the degree of integration of the cut stone masons in the labor force for each building's construction. Close cooperation between the specialist masons and the non-specialist builders is suggested when the following is evident: a) The widths of the wall and threshold are equal; in other words, the wall was designed to accommodate the threshold, or vice versa; and/or, b) the wall in which the threshold is placed has a consistent thickness relative to the walls with primary doorways of contemporary structures at the same site, suggesting no deviations in typical wall construction to accommodate the cut stone threshold. Because the construction of the building and the cut stone thresholds is done in different construction stages, this analysis speaks to the degree of cooperation between these specialists and the non-specialists and may provide indirect evidence for a system of measurement that was used to help convey this information between parties.

With similar comparative, statistical analyses, this study demonstrates the variability in the degree to which cut stone masons and cut stone masonry were included in overall planning and building design at important settlements within mainland Greece. Although the finished form of architectural units, such as the palatial megaron, appear similar at several sites, local variation in the construction and use of specialist laborers is demonstrated. By revealing the specific accommodations to building construction for non-load bearing cut stone thresholds, we can better understand the act and performance of construction throughout Mycenaean Greece.

### **The Materiality of Ashlar Masonry on Late Bronze Age Cyprus**

Kevin Fischer (University of British Columbia)

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The Late Bronze Age on Cyprus (ca 1650–1100 BCE) was a period of dramatic social change, economic intensification and specialization, and increasing integration into the politico-economic system of the Near East and eastern Mediterranean. At the same time, we see the emergence of the island's first cities and large-scale monumental buildings. By structuring social interaction in new ways these built environments played an integral role in social transformation, including the creation, performance and reproduction of elite power. A defining feature of Late Cypriot monumental space is the use of ashlar masonry. Using evidence from a number of sites, including the new excavations at Kalavassos-*Haghios Dhimitrios*, this paper explores various dimensions of the materiality of ashlar masonry from the selection and shaping of stone, to the strategic use of various ashlar types in monumental place-making, and the role it played in the experience of contexts of interaction at various scales. More than simply an indication of control over material and human resources, ashlar masonry was a meaningful and symbolically-charged component of monumentality and Cypriot elite identity, which continued to have efficacy beyond the end of the Late Bronze Age.

### **The Ruling Stones? Early Appearance of Ashlar Masonry in the Southern Levant**

Nurith Goshen (The Israel Museum, Jerusalem)

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In the first half of the second millennium, as part of a (re)urbanization process, monumental architecture including fortifications, palaces, and temples came to dominate the urban landscape of the southern Levant. In this period, for the first time, builders introduced ashlar masonry into the architectonic vocabulary of the region. As in north Syrian examples from the same period, cut stones were used for gate construction (Shechem; Gezer) and for central buildings (the palaces of Tel el-Ajjul, Lachish, and Tel Kabri).

The use of ashlar masonry in monumental architecture is considered a prestigious building technique, imbued with symbolic display of power. In this paper I bring together known examples of early monuments of the southern Levant and review them within the framework of eastern Mediterranean building methods. Bringing into consideration the size and types of stones used, their constructive role in architecture, and the energetic investment generated by their incorporation in the building, a surprisingly diverse picture emerges,

and no clear systematic process of knowledge transfer and innovation acceptance can be outlined. Rather, if it can be demonstrated that south Levantine builders were informed of north Syrian construction methods and styles, their application of such knowledge strongly reflects site-specific preferences.

Furthermore, it seems that only limited prestige was attached to cut stone in the southern Levant at the beginning of the second millennium. Not only did builders preferred local and easily acquired stones and at times used cut stone in an almost arbitrary manner, but in several cases – both in the southern Levant and beyond – once the construction was completed, they concealed the stones under plaster. Conspicuous consumption of ashlar masonry was performed during construction, if at all. Current knowledge of southern Levantine early ashlar masonry suggests that the Middle Bronze Age was an experimental phase when ashlar masonry was slow to be adopted, and instead, more economic and traditional local construction techniques were favored.

### **Building in Stone and Mudbrick: The Monumental Architecture of Ebla in Middle Bronze I-II**

Frances Pinnock (Sapienza University of Rome)

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The beginning of the Middle Bronze Age in Syria witnessed an important change in building techniques: the foundations of public edifices became more evident and usually employed two outer courses of undressed stones, and a filling of smaller stones, pebbles and earth, on which the mudbrick structures stood. These foundations were covered with a thick clay plaster, and were thus not visible. A more astounding innovation was the introduction of large orthostates, mainly to line the outer gates, but also some of the inner gates. In my contribution I will analyze all the occurrences of this technique at Ebla, comparing them with similar contemporary occurrences in northern Syria and southeastern Anatolia. I will propose some hypothesis about their structural function and, possibly, ideological meaning.

### **Ashlar as a Marker of Disruption: A Case Study at Gournia (Crete)**

D. Matthew Buell (Concordia University) and John C. McEnroe (Hamilton College)

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The first circular describing this international workshop points out many of the economic, social, political, and symbolic implications of the adoption of ashlar masonry. It begins, “Cut stone masonry...characterizes monumental architecture... [It] is imbued with symbolic meaning and corollary to wholesale changes in the societies of the Bronze Age Eastern Mediterranean... Seen against the backdrop of long-distance interactions that connect these regions from the third millennium onwards... [ashlar] is taken as one of the main indications of knowledge transfer within the region.” A large and growing body of literature supports this characterization of the social significance of ashlar masonry at the regional, trans-regional, and trans-cultural scales. At the local scale, however, many residents of an individual town might have had a different perspective. The sudden introduction of ashlar can also be a marker of disruption. In this paper we examine the circumstances associated with the introduction of ashlar masonry at the extensively excavated Minoan town of Gournia in east Crete where we have been carefully studying the architecture since 2010 as part of the Gournia Excavation Project directed by L. V. Watrous.

Ashlar masonry first appeared at Gournia in the Late Minoan IB period (ca 1500 BCE), roughly a century after the flourishing town had reached its maximum size. Indeed, the remains of that earlier town constitute much of what the modern visitor to the site sees today. In Middle Minoan III-Late Minoan IA, the palace, which had originally been constructed in the Protopalatial period, was rebuilt; a series of new monumental houses was constructed; public courtyards were expanded and monumentalized; new industrial facilities sprang up in a distinct industrial district at the northwestern edge of the town; and a sophisticated new street system provided the community with access, drainage, light, social space, and tied the town together into a cohesive unit. Suddenly, at or near the end of the Late Minoan IA period, much of this town was destroyed or seriously damaged. We are still in the early stages of documenting the sweeping extent of that destruction, and we are not yet sure of its cause.

This is the context into which the ashlar masonry at Gournia was introduced. In the aftermath of the Late Minoan IA destruction at Gournia, new ashlar facades replaced the earlier west and south facades of the palace. These facades were strategically placed in high-traffic, high-visibility areas including the public

courtyard, the west court, and the southwest court. The interior of the palace was gutted, and an ashlar-faced court was built near the center of the 400-year-old building. Although piles of ashlar blocks just outside the palace and in the vicinity of House Dd hint that there may have been other ashlar buildings at the site, the palace was clearly the central monument of the Late Minoan IB building program. Unlike the situation in the preceding Late Minoan IA town, the Late Minoan IB palace with its ashlar facades contrasted vividly with the rest of the town where we see evidence of contraction, dislocation, and disruption. Many houses were abandoned, much of an entire residential block was left in disrepair, and streets were allowed to fall apart. For a brief time, the ashlar-clad palace flourished in the midst of the crumbling town. Perhaps this is not surprising: as the Canadian journalist Naomi Klein notes, power frequently thrives on disaster. And at Gournia this twilight of palatial authority did not last long. Before the Late Minoan IB period ended, possibly following another site-wide destruction, ashlar – no longer a palatial prerogative – were removed from the palace, repurposed, and incorporated into the walls of houses, suggesting that the power and authority of the palace had been significantly diminished before the end of the Late Minoan IB period. Soon the palace, along with what remained of the town, was burnt to the ground.

### **‘Mycenaean’ Façade Construction in the Western Mesara (Crete)**

Joseph W. Shaw (University of Toronto)

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Investigators in the past have suggested that certain ashlar-faced Late Minoan IIIA2 buildings at Hagia Triada in Crete have ‘Mycenaean’ characteristics, especially in their plans, reflecting a Mycenaean take-over of Crete. In order to test this identification, I have selected for comparative analysis Minoan (e.g. Knossos, Phaistos, Malia, Kommos) and mainland Mycenaean (e.g. Mycenae, Pylos, Thebes) ashlar facades, and, specifically, building techniques used in them, including the builders’ choice for the positioning of horizontal half-timber reinforcements set into the lower part of an ashlar wall. Here, I also discuss the four relevant LM III structures in the Western Mesara: the Shrine (Sacello), Building P, and Building ABCD at Hagia Triada, and Building P at nearby Kommos.

The result of this investigation is that the so-called ‘Mycenaean’ structures, now including the Shrine and Kommos’ Building P, *all* have their horizontal timber bases at measurably low, predictable levels, whereas other, earlier structures represent Minoan tradition. These are measurably higher, most likely reflecting the earlier custom of orthostates which were larger, sometimes taller, and, therefore, had their horizontal timbers set at a higher level. Thus, a new criterion for differentiating ‘Minoan’ from ‘Mycenaean’ in Late Minoan III Crete has been created, based on the building technique used, and not just on similarities in plan.

### **On the Walls of Akrotiri in the Late Bronze Age**

Erika Notti (IULM University)

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Mason's marks are a typical feature of Cretan architecture, but they are also found on ashlar blocks at the site of Akrotiri on the island of Thera, which was buried under a thick layer of volcanic debris during a catastrophic eruption in the Late Bronze Age (Late Minoan IA/Late Cycladic I). The material culture of the site is the outcome of a dynamic tradition firmly rooted in the Cycladic period (mid-fifth millennium BCE), remains of which were reached in soundings throughout the site. Nevertheless, by the Late Bronze Age all aspects of material culture, such as pottery, frescoes, architecture and particularly writing *stricto* and *lato sensu* show the strong influence of Minoan Crete.

Clairy Palyvou’s research on the architecture of Akrotiri-Thera mentioned over 80 mason’s marks, for which sketches and essential observations were provided. Based on photographs, facsimiles and field observation, I compiled the physical and paleographic evidence of the marks. Besides parallel lines occurring in groups of up to three marks, the Akrotiri mason’s marks show sign types such as crosses, branches, Λ-shaped signs and a trident. The physical characteristics of mason's marks on Minoan sites have been interpreted by Evans and Pernier as possible chronological indicators. The marks at Akrotiri comply with such a picture. At Akrotiri, the signs were incised on ashlar blocks of tuff, which were mostly used in so-called ‘atypical Theran houses’, such as the Xeste 4 building. There seems to be a relation between the signs and

the physical characteristics of the blocks onto which they were cut, and in most cases it is obvious that the same tool was used to both dress the stone and cut the sign. This paper therefore intends to compare the Akrotiri corpus with evidence collected on other sites. Occurrences of so-called minor epigraphy are of particular significance, from a paleographic point of view and for the fact that they reflect a certain degree of familiarity with writing. Considering that writing appears to have been a distinctive feature in the context of cultural exchange in the Aegean region during the second millennium BCE, special attention will be devoted to the diffusion of writing practices during the Late Bronze Age and to the discovery of true inscriptions on blocks.

### **Cutting a New Cultural Mosaic?**

#### **Reassessing the Adoption and Adaptation of Ashlar Masonry in the Southern and Eastern Aegean**

Rodney D. Fitzsimons (Trent University)

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Current discussions of “Minoanisation” tend to place heavy emphasis on the adoption and adaptation of the wide range of “imported” or “non-local” artefactual, artistic, administrative, and technological cultural traits throughout the region. Recent research in this area has benefitted greatly from the incorporation of theoretical and methodological approaches long advocated by anthropologists working in the French tradition of the *chaîne opératoire*, with the resulting emphasis on process and performance. This approach yields extremely promising results and provides stimulating new questions that have dramatically transformed the way we both understand and explore the socio-political landscape of the Middle and Late Bronze Age Aegean.

In stark contrast the corresponding dissemination of Minoan and Minoanising building traits has received relatively little attention to date beyond the basic identification and enumeration of supposed non-local constructional elements in the landscape. This state is especially surprising as architecture lends itself quite easily to study from myriad perspectives and serves as perhaps one of the best classes of material culture in which archaeologists can seek clues to social identity. This situation, which is by no means unique to the Aegean, owes largely to the fact that, with the exception of Akrotiri, none of the relevant settlements in the region has received a detailed and systematic analysis of its built environment. As a result, we have neither a firm grasp of the diachronic development and character of each local building tradition, nor an adequate understanding of the larger, contemporary architectural landscapes into which these foreign features were incorporated. Three distinctive and significant aspects involved in the transmission of architectural motifs tend to be overlooked. First, “imported” features of the built environment are inherently immobile, meaning that their transmission can only result from the movement of actual individuals, as opposed to raw materials and/or finished products. Second, because in most instances those features of the built environment that are being transmitted tend to be drawn from what most scholars consider a ‘palatial’ architectural vocabulary, their incorporation into the pre-existing, local landscape tends to require a much more substantial level of investment (and perhaps deliberate decision-making) than is necessary for other “imported” features. And third, unlike the Minoanisation of local pottery traditions, which appear to have been rather lengthy processes that underwent intensification, expansion, and elaboration over the course of several generations, the era of the Minoanised architectural landscape seems to have been of a much more limited duration.

Drawing upon these observations, this paper seeks to elucidate the significance of the adoption and adaptation of Minoan and Minoanising architectural motifs in the southern and eastern Aegean, with a particular focus on the introduction and implementation of cut stone masonry and the suite of “imported” design and constructional features with which it is associated. Unlike previous discussions on the topic, however, its focus will fall less on the ultimate origin of such “foreign” architectural elements, but rather on the significant changes that the adoption and adaptation of such motifs wrought on the local physical, economic, and socio-political landscapes.

**Tool Traditions and Ashlar Masonry in Late Bronze Age Cyprus and Mycenaean Greece**Nicholas Blackwell (Indiana University)

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This paper investigates the types of tools that Late Bronze Age stone workers employed on Cyprus and the Greek mainland, areas with well-known examples of cut stone masonry. Despite regular contact between the eastern Mediterranean and Aegean throughout the second millennium BCE, there is little evidence for shared tool traditions between Cyprus and Mycenaean Greece. Their joint consideration here, rather, illuminates the degree to which Minoan traditions influenced stone-working practices beyond Crete.

Diachronic and regional tool patterns in Cyprus and the Greek mainland are presented in consideration of the ashlar masonry of these areas. While localized craft developments are discernible, both areas also suggest particular links to Minoan tool traditions. Different Cretan-inspired implements occur in the Cypriot and Mycenaean tool repertoires, highlighting their connection to Crete but not necessarily with each other. The adoption of Minoan practices (however limited and modified) varied by region, as suggested by the evidence that Cypriots and Mycenaeans selectively and independently modified Cretan tool types and possibly stone-cutting techniques. This conclusion does not exclude the prospect of Minoan workers spreading certain stone-working traditions throughout the eastern Mediterranean and Aegean, yet the opposite scenario may be more likely.

**Stone Tools and Cut Stone Masonry Techniques in the Aegean and Eastern Mediterranean Bronze Age. Materials, Technology and Transfers**Athina Boleti (CNRS, UMR 7041, ArScAn, Protohistoire égéenne)

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The use of stone tools has often been pointed out alongside bronze ones in Bronze Age Aegean contexts. However, despite available data indicating a prominent role and, in some cases, long-lasting traditions, it was never thoroughly addressed. This paper wants to fill this gap by assessing the role of stone tools in cut stone masonry techniques in the Aegean Bronze Age.

The synthetic and comparative study of stone tools from Early, Middle and Late Bronze Age Aegean sites is used for reconstructing stone-working techniques related to the extraction of stone blocks and the construction of ashlar masonry. The examination of the physical and mechanical properties of the materials makes it possible to assess the level of skill and the energy required for cut stone extraction, shaping and assembling into walls. Provenance studies shed light on the circulation of materials and techniques. Such observations are then used to examine the question of external influences versus local development.

The term 'stone tools' here encompasses both one-piece tools such as handheld (unshafted) hammers and chisels, as well as shafted and other composite tools which combine stone and other materials such as metal, wood or bone. The use of abrasive powders in combination with saws and drills is also taken into consideration, with a special emphasis on emery stone. A particularly hard and/or abrasive stone, emery was used almost uninterruptedly throughout the Aegean Bronze Age. Available data indicate that it was used in the form of hammers and chisels already in the Early Bronze Age, in the Cyclades mainly. But from the Middle Bronze Age onwards, emery tools that can be associated to stone-working are also found in contexts outside of the Cyclades, in Crete and mainland Greece especially. While emery pounders are associated with the shaping of blocks made of hard volcanic rocks in Late Cycladic I Akrotiri-Thera, abrasive powder containing emery was used with drills in Minoan and possibly Mycenaean sites for stone shaping and sculpture. Given that emery sources exist on the Aegean islands (mainly Naxos, Paros, and Samos) and in neighboring Asia Minor, emery diffusion and use patterns can provide a useful insight into issues related to local development and external influences. Comparison with other eastern Mediterranean contexts, mainly Egypt and Anatolia, will set the research questions in a wider framework.

### **Poetics of Architectonics, Politics of Stone: Ashlar Masonry in the Borderlands of the Hittite Empire**

Ömür Harmansah (University of Illinois at Chicago)

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Building in ashlar masonry and the cladding of monumental buildings with orthostates are important aspects of Middle and Late Bronze Age landscapes in Northern Syria and the Anatolian plateau. Particularly with the rise of the Hittite Empire during the Late Bronze Age (ca 1600-1175 BCE), the Syro-Anatolian cities and the rural sanctuary sites witnessed the technological innovation of the use of ashlar masonry and orthostates, allowing the development of an inter-regionally shared architectonic aesthetics of wall surfaces which were eventually opened to become surfaces of verbal and pictorial representation through the incorporation of carved reliefs and inscriptions. The materiality of the cushion-like, bulbous surfaces of Hittite ashlar in the Central plateau (at sites such as Boğazköy, Ortaköy and Eflatunpınarı) and the flatter and sharper blocks of the north Syrian monuments (Tilmen Höyük, Ain Dara, Temple of the Weather God in Aleppo) dramatically differed in their architectonic aesthetics.

The study of this new architectural practice, however, requires a careful contextualization of each monument in its local landscape of technological production. Such work includes the study of geological landscapes, quarries, and monuments in relation to each other. During the 2010-2016 seasons of Yalburt Yaylası Archaeological Landscape Research Project, a diachronic archaeological survey in Turkey's western Konya Province, the team identified and documented the well-preserved Hittite fortress of Kale Tepesi that features a massive ashlar fortification wall. The fortress is associated with the quarry at the site of Yıldız Tepe near the village of Karaköy. This quarry is a marl outcrop where galleries of large ashlar blocks were harvested for the construction of the Kale Tepesi fortress, distant of only a few kilometres. Survey team identified fragments of green gabbro hammers scattered across the quarry. More significantly, in 2016, a single-period Late Bronze Age settlement was identified at the site of Bağlar Mevkii on the lower slopes of Yıldız Tepe. The preliminary results of the ceramics analysis suggest that the small single-period site may have been inhabited by the artisans of the Yıldız Tepe quarry. These sites give us an extraordinary chance to understand the socio-technological mechanics behind the construction of a fortress in the Hittite Empire. This paper will discuss the architectonic aspects of the three sites while comparing the evidence to the well-known and nearby Yalburt Yaylası Hittite Sacred Pool complex, where ashlar blocks were used to inscribe one of the lengthiest and most politically charged imperial inscriptions at the time of Tudhaliya IV (1237-1209 BCE).

### **Materiality of Power through Orthostates at Mycenaean Kalamianos**

Daniel J. Pullen (Florida State University) and Phil Sapirstein (University of Nebraska)

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We have identified a special connection between Kalamianos, a Mycenaean harbor town on the Saronic Gulf, and the palatial centers in the Argolid, some 50 km to the west. We suggest that Kalamianos was developed as an imperial outpost during the Mycenaean palatial period – a walled harbor town strategically located to exploit increased opportunities for maritime trade in the Saronic Gulf following the decreasing of the role of Kolonna on Aegina.

Built on one of the higher elevations within the Circuit Wall, Building Complex 7-I/III/X, enclosing an area of 520 m<sup>2</sup>, is the largest of the ca 50 well-preserved buildings at Kalamianos documented by the Saronic Harbors Archaeological Research Project. The builders of 7-I/III/X made use of several palatially inspired features in its construction, including stone column bases, a grid of well-built structural supports in the form of piers, antae, and interior corner blocks, and enlarged, dressed blocks at places of articulation that the builders wished to emphasize on the exterior of the structure. These stones, among the largest blocks used at Kalamianos, fit the definition of 'orthostates' in that their thickness/depth is much more reduced than their height, while their length is several times that of their thickness. Because of their thinness, these blocks form only the outer portion of two-skinned walls. They are found at exterior corners and adjacent to the two entrances into the interior, as well as along the walled pathway 7-XII that leads up to 7-I/III/X from the ancient harbor. Still, the orthostate blocks are often isolated in walls otherwise constructed from rubble, and no ashlar construction is evident anywhere in the site. The orthostate blocks in 7-I/III/X and 7-XII are further distinguished by being cut from the white or banded limestone that is found along the openings of the numerous fissures that cross the site, in contrast to the gray limestone procured from the exposed bedrock and which forms most of the masonry.

The features and size of 7-I/III/X place it in Darcque's category of 'intermediate buildings', and except for palatial sites, only the Menelaion and Gla have structures of this scale and elaboration. These palatially inspired building features are not found elsewhere at Kalamianos. Several other complexes such as 4-VI, 4-XIX, 5-VIII, and 9-IV/VI, and additional structures whose plans are only partially preserved, do feature very large blocks, but although they may be characterized as monumental architecture, their total area is only about 250-400 m<sup>2</sup>. Also, individual stones in these buildings are not as massive as the orthostates in 7-I/III/X and 7-XII, and most examples are roughly cubical, occupying the full width of the wall. Oriented along prominent facades, such as probable roadways or facing the shore, the large blocks both reinforce junctions with internal walls and formed corners. From the outside, these walls would have presented a similar though scaled-down impression of 7-I/III/X: a syncopation of large, orthostate-like blocks among rubble construction.

Whether the builders of 7-I/III/X were local masons imitating architecture in the Argive palatial centers or, as perhaps suggested in the Linear B tablets, masons supplied by the palatial centers to establish the site, the display of orthostates and other construction features in 7-I/III/X was meant to demonstrate that the occupants of this structure had direct connections to the palatial center(s) to the west and through which they obtained their status and power. Additional elements of the design, such as the gridded, cell-like plans of most Kalamianos buildings find parallels in Argive palatial centers. The use of the orthostates, then, can be understood as a symbolic projection of the political ties and power of the occupants of Building 7-I/III/X.

### **Approaching Ashlar Masonry through Minoan and Mycenaean Iconography: Architectural Functions, Urban Contexts and the Problem of Color and Material**

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From the Middle Neolithic onwards, the art of the prehistoric Aegean displays built architecture. Ashlar masonry, however, is only attested in images dating from the 17<sup>th</sup> to the 13<sup>th</sup> century BCE, during the palatial periods of the Aegean. Ashlar and related mural styles are depicted in a large variety of artistic media: mural paintings, metal, stone, ivory, and faience objects, objects inlaid with various materials, seal glyptic, pictorial pottery as well as three-dimensional terracotta models. In this paper, ashlar masonry is explored through the lens of iconographic sources from Minoan Crete and the Mycenaean Greek mainland. More specifically, the following issues will be discussed:

First, because Aegean representations of architecture were highly conventionalized and, especially during the Neopalatial period, reflected standard pictorial formulae, a wide variety of ashlar masonries depicted in a broadly realistic manner can be defined. Consequently, one may wonder if it is possible to distinguish ashlar murals from cyclopean masonry and from brickwork walls. Similarly, do we succeed in identifying orthostates in Aegean iconography? Also, was the chequerboard pattern so characteristic of real architectural façades used as an iconographic formula for indicating ashlar masonry?

Second, what functions can be attributed to the ashlar structures depicted in Aegean iconography? Interior walls (in large-scale mural paintings), exterior façades of urban/'palatial' buildings, city walls and city gates, enclosure walls of temenos-like sanctuaries, enclosure walls of small 'tree-shrines', stone altars, floor pavements and pillars in interior rooms reveal the diversity of cut stone masonry represented in the figurative arts, and will be defined and thoroughly discussed.

Third, based on its architectural functions and the urban contexts of its representations in Minoan and Mycenaean iconography, what was the meaning of ashlar masonry? Did this elaborate masonry possess an elitist, 'palatial' symbolism, or did it constitute some sort of standard architectural style in the realm of imagery? Was the delimiting and fortifying character of this masonry of major significance? Can the presence of ashlar masonry in architectural representations allow differentiating between palaces, 'villas' and simple houses? Hence, had the representation of ashlar masonry any ideological and social meaning, or was such purpose beyond the aim of Aegean art?

The fourth, final and seemingly harmless question addressed in this paper is the following: what did ashlar masonry really look like? The comparison of the richly polychrome façades depicted in Aegean

iconography with the mostly plain architecture uncovered during archaeological excavations is indeed striking. But what could explain such a discrepancy? Is it the plastering and painting of ashlar façades in the Aegean Bronze Age, or the aesthetics of color and material in Minoan and Mycenaean arts?