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10th Conference
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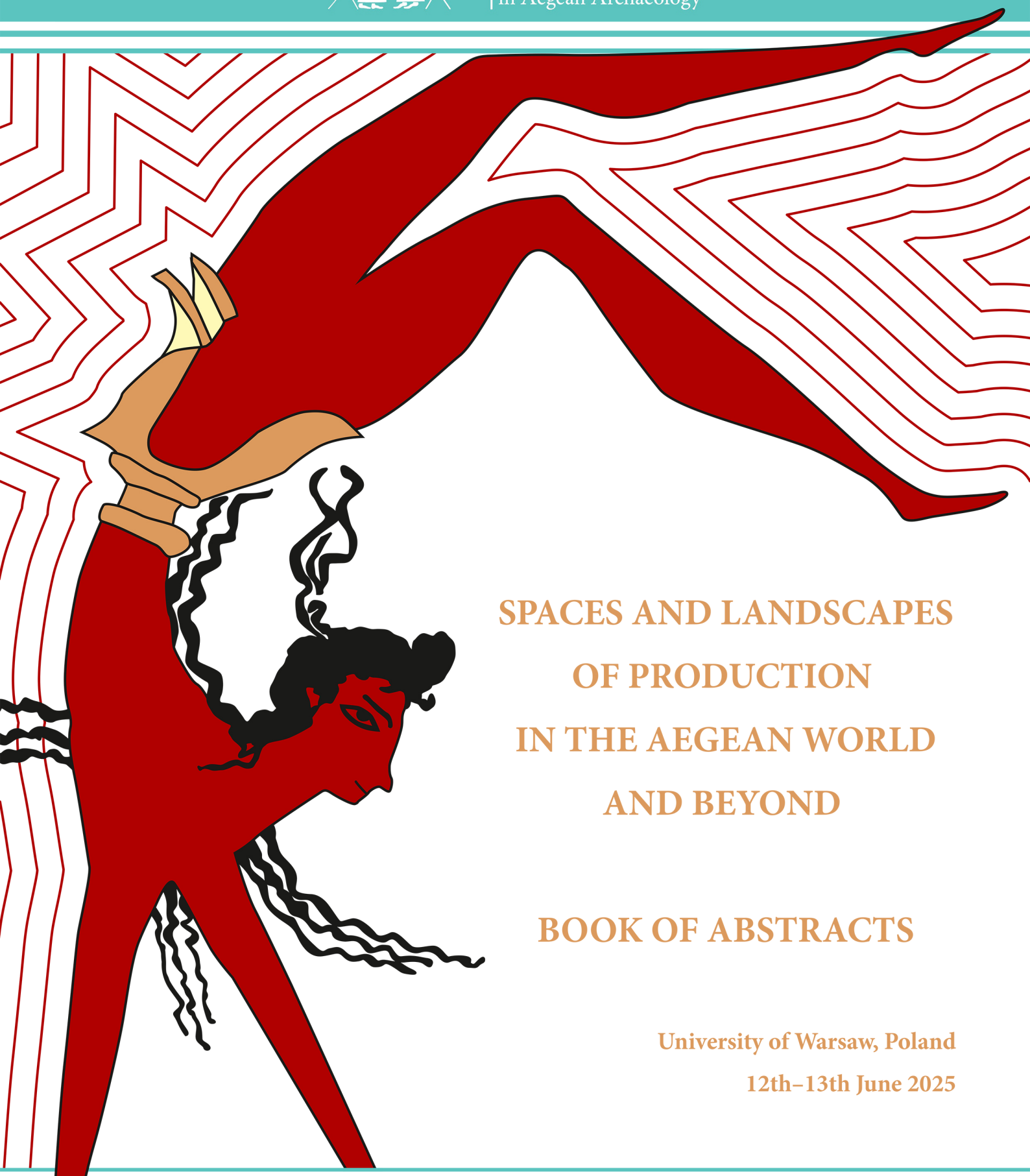

SPACES AND LANDSCAPES OF PRODUCTION IN THE AEGEAN WORLD AND BEYOND

BOOK OF ABSTRACTS

University of Warsaw, Poland

12th–13th June 2025

UNIVERSITY OF WARSAW

FACULTY OF ARCHAEOLOGY
University of Warsaw

DEPARTMENT OF AEGEAN AND TEXTILE ARCHAEOLOGY

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Spaces and Landscapes of Production in the Aegean World and Beyond

Book of Abstracts

Organising Committee

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Foreword

The *Spaces and Landscapes of Production in the Aegean World and Beyond* workshop seeks to explore the spatial dimensions of ancient production across multiple forms — including textiles, pottery, metalwork, perfumes, stonework, weapons, and glass, as well as foodstuffs and wine — and across all scales of analysis, from localized extraction or production sites to broad landscapes. By examining the spatial distribution of archaeological evidence, it aims to address the scale, technology, and organization (or, on the contrary, the disorganization) of production activities, as well as their social, political, economic, technological, environmental, and ritual context. While the primary focus is on the Neolithic and Bronze Age Aegean world, papers devoted to Egypt, Cyprus, the Near East, and Greek antiquity offer a comparative approach and cross-cultural and diachronic insights.

Topics addressed in the workshop include:

- Mapping the *chaîne opératoire* of specific production types, including spatial distribution within installations, settlements or landscapes;
- Spatial and social networks of producers, including connections across different stages of a single *chaîne opératoire* and interactions between different production types (cross-craft);
- Regional and diachronic variations in spatial strategies of production;
- Geospatial methods for investigating production contexts and landscapes, for instance regarding environmental opportunities and constraints, as well as the impact of production activities on ancient environments (for instance in terms of pollution);
- Theoretical and methodological considerations on the spatial manifestations of production, for instance regarding how the scale, the nature, the (dis)organization, and the social, political, and economic context of production activities translate into specific spatial patterns across various scales of analysis.

We are delighted to present the following two-day programme, which promises to set the scene for a stimulating and exciting discussion.

The Organizers
Sylviane Déderix & Stephanie Aulsebrook

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Thursday, 12th June 2025

10:00–10:25 **Introduction**

Sylviane Déderix; Stephanie Aulsebrook (University of Warsaw)

SESSION 1: Landscape & Regional Approaches

10:25–10:50 **Landscape of Production and/or Taskscape? Working Environments and Timelines in Aegean Bronze Age Contexts**

Ann Brysbaert (Leiden University)

10:50–11:15 **Potters Inside and Outside of the *Polis*. A Case Study of Spatial and Social Organisation of Potters' Labour in Metapontum (7th–3rd Centuries BC)**

Arianna Esposito (Université Bourgogne Europe, ARTEHIS); Francesca Tomei (Italian Ministry of Cultural Heritage)

11:15–11:35 **Coffee Break**

11:35–12:00 **The Ceramic Landscape of Central Macedonia, Greece: the Handmade Tableware Production and Circulation in the Late Bronze Age Tells**

Evangelia Vliora (Aristotle University of Thessaloniki); Evangelia Kiriatzi (Fitch Laboratory (British School at Athens)); Stelios Andreou (Aristotle University of Thessaloniki)

12:00–12:25 **Re-Evaluating Central Euboean Middle Bronze Age Pottery Production and Distribution**

Christopher Hale; Bartlomiej Lis (Institute of Archaeology and Ethnology (Polish Academy of Sciences))

12:25–12:50 **Analysis of Metal Production Sites in the Neolithic and Bronze Age: a Study of Distribution and Mining Techniques**

Hossam Hegazi (Egyptian Ministry of Tourism and Antiquities)

12:50–14:10 **Lunch Break**

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Thursday, 12th June 2025

SESSION 2: Intra-Site Approaches

14:10–14:35 **Mapping Craft Activities: Investigating Household Production in the Third Intermediate Period (1070–664 BC) Settlement in Tell el-Retaba (Egypt)**

Agnieszka Ryś-Jarmużek (University of Warsaw)

14:35–15:00 **Intra-Community Dynamics in Later Minoan Crete: Obsidian Consumption at Neopalatial Mochlos**

Tristan Carter (McMaster University, Hamilton, Ontario)

15:00–15:25 **Production and Ritual at Stelida's Peak Sanctuary: Stone Ladles, Metalwork, and Mortar Use**

Shannon Crewson; Tristan Carter (McMaster University, Hamilton, Ontario); Kristine Mallinson (University of Missouri); Panagiotis Karkanas (Malcolm H. Wiener Laboratory of Archaeological Science (American School of Classical Studies))

15:25–15:50 **Production in the Household Level: Examining Aspects of Domestic Activities Through the Case of the Minoan Strong Building at Kato Zakros, Crete**

Maria Kyritsi (Independent Researcher)

15:50–16:10 **Coffee Break**

16:10–16:35 **Countryside Production in Minoan Crete: an Assessment on Minoan "Villas"**

Maria Emanuela Alberti (University of Florence); Chiara Caleo (University of Pisa)

16:35–17:00 **Cool Kafkalla: Space Management and Agricultural Processing at Late Bronze Age Erimi-Pitharka in Cyprus**

Katarzyna Zeman-Wiśniewska (Cardinal Stefan Wyszyński University, Warsaw); Laerke Recht (Moesgard Museum)

17:00–17:25 **Functional and Spatial Analysis of Ceramic Stoppers from Petsas House, Mycenae: Production, Reuse, and Workflow in a LBA Pottery Workshop**

Sophie Cushman; Elizabeth Keyser; Kim Shelton (University of California, Berkeley)

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Friday, 13th June 2025

SESSION 3: Combining Archaeological and Written Sources

09:30–09:55 **Spaces of Production at Mycenae (LH IIIB) Through Texts and Contexts**

Maria Emanuela Alberti (University of Florence)

09:55–10:20 **Weapons, Work, and Words: Investigating the Knossos Arsenal and the Pylos Northeastern Building Through Linear B**

Lavinia Giorgi (Sapienza University of Rome)

10:20–10:45 **Tu-we-a Po-ti-ni-ja. The Production of Perfumes in Cult Contexts During the LH IIIB2–LH IIIC Early Aegean**

Isabella Valinoti (University of Pisa)

10:45–11:05 **Coffee Break**

SESSION 4: Modelling Complete *Chaînes Opératoires*

11:05–11:30 **Carving Connections: Soft Stone Seal Production and Cross-Craft Interactions in Late Minoan Crete**

Diana Wolf (Deutsches Archäologisches Institut (DAI) Athens)

11:30–11:55 **The Price of Process: a Contextual Analysis of Pictorial Krater Production in the Mycenaean Peloponnese**

Angelos Papadopoulos (College Year at Athens/Cyprus Institute); David Michael Smith (University of Liverpool)

11:55–12:20 **Dialogues in Textile Production: Insights from Akrotiri and Ur**

Laura B. Mazow (East Carolina University, Greenville)

12:20–12:45 **Connecting the Pots: Mapping Pottery Production of Archaic Corinth Through the Fragmentary Production Debris**

Bice Peruzzi (Rutgers University, New Jersey); Amanda Reiterman (University of California, Santa Cruz)

12:45–13:20 **Discussion**

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Prof. Maria Emanuela Alberti

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Spaces of Production at Mycenae (LH IIIB) Through Texts and Contexts

Through the Mycenaean Linear B records, we can grasp the complexity of the palatial organisation of production and the intricate relationships between the core administration and the various places and population sectors involved in the attested *chaînes opératoires* (e.g. Smith 1992–93; Killen 2008; Nosch 2014). However, the correspondences with the actual archaeological record are far less clear and have been the object of many discussions and hypotheses (e.g. Shelmerdine 1997; Dakouri-Hild 2012; Alberti *et al.* 2012).

The aim of this paper is twofold. Firstly, the ideal administrative production process will be reconstructed, illustrating the intimate connections between the taxation records (e.g. *a-pu-do-si*) and those concerning the control of production (e.g. *ta-ra-si-ja*): the emerging spatial networks bring together the villages in the countryside, the workshops in town, and the palatial "core" (e.g. De Fidio 1987, 2001, 2024; Halstead 2001; Whitelaw 2001; Killen 2008).

Then, the same networks will be investigated in the archaeological context of palatial Mycenae (LH IIIB), with special attention to the indicators of textile production, ivory and glass working, and jewellery making (Tournavitou 1988, 1997; Darcque 2005; Bennet 2008; Brysbaert 2011; Alberti 2024). As expected, the best documentation comes from the Ivory Houses and Area 36 of the Cult Centre (LH IIIB1 end), but also from the Artisans' Quarter and other areas of the citadel (LH IIIB2 end). Some examples, if needed, will also be taken from contemporary Thebes, Tiryns, and Pylos. The analysis of these contexts will address some of the following questions: How can we distinguish actual working places from areas where tools and products were stored? Can we identify some cases of cross-craft? Are the various administrative phases detectable on the ground?

Methodologically, it is stressed here that the combined use of textual and archaeological evidence enhances the possibilities of interpretation and helps in a more complete and nuanced reconstruction of ancient societies.

Website(s)

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https://unifi.academia.edu/MariaEmanuelaAlberti

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Countryside Production in Minoan Crete: an Assessment on Minoan "Villas"

The study of the production areas in the so-called "villas" is one of the topics that could help in understanding the role played by these buildings in the wider panorama of Minoan urbanism and economy.

The organization of production in Bronze Age Crete, both for the Protopalatial and Neopalatial periods, has been studied above all through the analysis of the general structure of the administrative organization, the complex dynamics between center and periphery and the operating hierarchy; nevertheless, the material evidence from suburban buildings is less known, mainly because of scarce or incomplete excavations.

For Minoan Crete, most of the work on the archaeological evidence of production deals with technological aspects and the correct identification of finds, directing attention to the archaeological indicators of work areas (Evely 2000; Alberti 2007). As far it concerns "villas", the typological range of the individuated structures, their difference of scale and the probable variation of the work organization involved have not yet been investigated systematically.

In order to understand the available evidence, many kinds of documentation should be considered: first the technological processes/*chaînes opératoires*, then the archaeological remains and finally the written records, if available.

This paper focuses on the Minoan countryside, and aims to analyse the difference between work areas in minor and major buildings, most of which have been identified as "villas": Epano Zakros, Vathypetro, Tourtouli, Zominthos, Haghia Varvara, Chalinomouri, and Choiromandres. For each structure, the study of the archaeological indicators of production will consider both their functional specialization and the quantity of the attestations (see Alberti 2007 and 2012). The questions we would like specifically address are: How are production activities represented in the different types of building? Can we detect different levels of production, from small units to large complexes? Can we better understand the system of production and the work organization?

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Landscape of Production and/or Taskscape?
Working Environments and Timelines in Aegean Bronze Age Contexts

In archaeological research we see a contrast between landscape studies and material culture studies. These grew out of different past traditions but seem persistent until today in both research emphasis and educational programmes. Such contrasts are not very productive and have been bridged in the more recent past by various large-scale projects. In this paper, I join both strands of research together as a way forward to get to the full image of people's input in and interaction with production and consumption. This entails their scouting for, and crafting of their own, or imported, resources, and levels of own, or exported, consumption patterns. Case studies to illustrate current thinking and my own on this theme are based on several research projects in the Aegean and East Mediterranean Late Bronze Age.

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Intra-Community Dynamics in Later Minoan Crete: Obsidian Consumption at Neopalatial Mochlos

It has long been argued that obsidian pressure blade production was an exclusive craft in Bronze Age Crete, and a mode of creating socio-economic distinction. Until now this hypothesis has been articulated at the inter-site level, juxtaposing those well-connected communities with evidence for this craft (e.g. Knossos, and Malia), with those settlements they supplied with ready-made tools. Studies of several Neopalatial houses at Mochlos now provide an insight to the organization of production at the *intra*-community level. Given that other skilled crafts employing non-local media (e.g. stone vases) were relatively exclusive, might it follow that obsidian blade production was concentrated in the hands of a few? The results of our study indicate that matters are more complex.

Firstly, the evidence indicates low-level in-house blade production throughout the settlement, albeit involving preformed and/or part-initiated cores, whereby the earliest, and most technically complex part of this knapping tradition was more restricted. These small-scale manufacturing assemblages typically come from ground floor rooms associated with food preparation. Secondly, when one considers blade production estimates, then there are several instances where manufacturing occurred at levels beyond domestic needs, perhaps to supply — and indebt/dominate — others in the region.

The one 'household' that stands out is Building B.2, Mochlos' ceremonial center, with 984 obsidian artifacts, the majority coming from the most architecturally ostentatious and socio-religiously important part of the structure. Taking a long-term, Early to Late Bronze Age perspective, we argue that high-level obsidian pressure blade production is a recurrent characteristic of this settlement, a craft that ultimately transcends quotidian production, the craft an emblem of the community within a broader socio-political context, indexical of their maritime prowess and connectivity, and directly connected to the site's well-known boat iconography.

Website(s)

https://scholar.google.ca/citations?user=p6BUvrsAAAAJ&hl=en&oi=ao

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Production and Ritual at Stelida's Peak Sanctuary: Stone Ladles, Metalwork, and Mortar Use

In 2019, excavations at Stelida, Naxos, revealed a Minoan-type peak sanctuary, offering new insights into the intersection of ritual and production in the Bronze Age Aegean. The relationship between cult and craft in Minoan society and other East Mediterranean Bronze Age cultures is well-established, as evidenced most notably by the stone, metal, and shell working at the Central Palace Sanctuary at Knossos. This paper explores three key aspects of potential production at the site: stone ladle manufacturing, metal production, and the use of local clay for mortar production and construction. Each of these practices gives us insight into the material procurement, craftsmanship, and the ritual significance of manufacturing practices at Stelida.

A significant find at the peak sanctuary was a complete cordiform stone ladle. This artefact, a well-known piece of Minoan ritual assemblages, belongs to a corpus of just over 30 examples from Greece. In addition to the complete ladle, several unfinished or preform ladles have been recovered, all potentially crafted from a local Naxian stone sourced from Kinidaros, approximately 12km east of the site. These finds suggest that Stelida may have been a production area for these ritual artefacts.

The presence of metallurgical waste, including slag and a small leaded copper bar, indicated that some of Stelida's metal artefacts were likely produced on site. This evidence, in addition to extensive burning and the sanctuary's naturally strong winds, suggests that metalworking could also have been an important part of ritual activity at the site. The sensorially evocative process of these objects' production — the heat, smoke, and transformation of raw materials — suggests that the act of crafting these objects was as significant as their use and dedication. Finally, the construction of the sanctuary itself utilized a locally sourced clay-based mortar. Understanding its composition and application provides further insight into the technological choices made by those who built and maintained the sanctuary. By exploring these three elements of production, this paper will contribute to our understanding of the connection between craft and ritual in the Bronze Age Aegean.

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Functional and Spatial Analysis of Ceramic Stoppers from Petsas House, Mycenae: Production, Reuse, and Workflow in a LBA Pottery Workshop

Small, reworked sherds, usually referred to as stoppers or lids, are a ubiquitous yet underappreciated feature of the archaeological record in the Aegean Bronze Age. These relatively unassuming objects can provide evidence for manufacturing tasks, storage and transport, and ceramic recycling in production contexts. In this paper, we present a collection of ceramic stoppers recovered from the Late Helladic pottery production workshop and residential complex of Petsas House, Mycenae. Industrial installations, thousands of finished vessels, and specialized finds including Linear B tablets and figural wall paintings point to relatively well-off occupants who were engaged in large-scale craft production outside the citadel of Mycenae. We establish a typology of stopper types, examine their correlation with different vessels produced at Petsas House, and place them in spatial and functional context.

We have identified two main types of stoppers in the Petsas House material, round and conical. These distinct forms indicate different functions. In this paper, we compare stopper sizes with standard vessel opening diameters to identify vessel types most suitable for use with the stoppers. Conical stoppers, primarily modified from kylix stems, likely served as plugs for stirrup jar spouts, while round stoppers, reworked from body sherds, functioned as resting covers or lids on wider-mouthed vessels. Both stopper types must have been used in the production process, as they are removable. Such an analysis provides insight into the intended function of stoppers, helping to clarify the various stages of production they represented. These functions could include the temporary storage of paint or slip and securing materials for transport throughout the complex during different phases of the manufacturing process. Some of the stoppers may also have entered Petsas House with vessels containing supplies needed for production as well as goods consumed by the residents of the complex. We then assess the spatial distribution of stoppers throughout the Petsas House workshop to investigate room function and spatial workflow patterns, revealing insight into the possible *chaîne opératoire* of pottery production at this site.

Finally, we examine the ware types of the reworked sherds used to create the stoppers to investigate patterns of reuse and recycling in the pottery production process. Our analysis of stopper type and fabric highlights the importance of recycling in craft production and indicates a preference for availability over quality in this process. Moreover, the reworking of existing sherds points to a small but significant stage in the complex *chaîne opératoire* of a Mycenaean pottery workshop. The taskscape at Petsas House probably involved all members of the household, including women and children. By examining the stoppers in more detail, we shed light on the secondary tasks that may have been delegated to more unskilled members of the household. In this way, the production of stoppers forms a significant aspect of the *community of practice* that can be identified at Petsas House.

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Potters Inside and Outside of the Polis. A Case Study of Spatial and Social Organisation of Potters' Labour in Metapontum (7th–3rd Centuries BC)

The TeMAES project (*Territoires multiples: agentivité et environnements socio-économiques*, EFA/RnMSH) aims to explore territorial issues through the prism of agency in the space-making and interfaces between individuals or social groups. It is based on an approach that focuses on two aspects, one geographical and the second one social. They constitute the main investigational paths for identifying the evolution of the urban space and topography, its relationship with the territory and its social landscape. We use the notion of "taskscape" (T. Ingold), in which landscape and social space produce a series of mutual intercorrelations and dependencies that cross with material production.

One of the TeMAES topics is looking at craft production areas, and more specifically ceramic production, to explore the spatial and landscape dimensions of craft spaces, especially related to the *chaîne opératoire*, within and outside the urban context, and the social identity of potters. The starting point of our analysis is the question of potters' districts and the distribution of areas of craft activity in relation to a "productive landscape" and urban development, in time and space, in a comparative perspective applied to the "colonial" milieu, to identify possible points of contact or divergence between the different western *poleis*. We will then focus on the case of Metapontum and its *chora*.

The choice of this Greek *apoikia* in southern Italy is a logical one, given the proliferation of research projects and the new issues they have raised (thanks largely to the 40 years of field research by J.C. Carter and his team), which allow us to reflect on the spatial integration of these activities, emphasizing different aspects of the *chaîne opératoire* and the labour required for various stages of the pottery-making operational sequence. Archaeological evidence shows that pottery production began in the Metapontine *chora* at four sites, probably as early as the 6th century, and then spread to around sixty sites. The spatial analysis in GIS, combining the cost distance and buffer analysis, will model the *taskscape* of activities and the use of the landscape for pottery-making in selected kiln sites in the *chora* and the *kerameikos* of Metaponto. By modelling archaeological and geographical data, we will demonstrate how the locational choice of the ceramic workshops was influenced by the distance to the raw material sources, especially clay and fuel, and the presence of agricultural sites, settlements and communication routes. Indeed, the agricultural residues, like olive pomace and fruit tree trimmings, were the kilns' primary fuel source and pointed out the tight connection between ceramic production and agriculture. Moreover, the routes allowed the movement of raw materials, ceramic products, technical knowledge, and labour. Another element influencing the locational choice of ceramic workshops may be the air pollution caused by the combustion of the fuel in the pottery kilns, which can be estimated by calculating the carbon emissions rates of the different kinds of fuel more commonly used for ceramic firing.

Through this study, we aim to understand whether craft production in the *apoikia* was organized in specialized districts in the urban and rural topography or whether the organization was more nuanced and determined by a mix of socio-economic and geographic factors.

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Weapons, Work, and Words: Investigating the Knossos Arsenal and the Pylos Northeastern Building Through Linear B

This paper focuses on the function(s) of two external buildings at the palaces of Knossos and Pylos, respectively the Arsenal and the Northeastern Building (NEB), during the Mycenaean period (LM/LH I-IIIB2), using an integrated analysis of archaeological evidence and Linear B documents found at these sites.

The Arsenal, located northeast of Knossos palace, has yielded many military items and Linear B documents recording weapons, including tablets (KN Sd, Sf, So, Sk series, KN R 1815, and 4482) and nodules (KN Ws 1704, 1705, and 8495). The lack of evidence of craft production within the building suggests that the Arsenal served as a storage and entry point for military equipment rather than a workshop.

The NEB, located northeast of the main palace building at Pylos, returned a variety of evidence, including finished and fragmentary objects, as well as Linear B and sealed documents on a wide range of topics such as personnel, foodstuffs, building materials, chariot and weapons parts. The presence of objects in different stages of manufacture has led scholars to believe that the NEB was a workshop. However, the lack of clear evidence for craft production suggests that the building served primarily as a warehouse with additional functions in reception and redistribution.

The two buildings share some aspects, such as their location relative to the palace, the archaeological evidence discovered, the type of the Linear B documents and the information recorded, as well as their functions as entry points for goods, storage, and perhaps redistribution.

This paper aims to reassess the suggested functions of the Arsenal and the NEB by using the Linear B documents that record javelins and spears as a case study. In the Arsenal, three nodules were discovered that record javelins and the work performance *o-pa*, which has been interpreted as the refining or refurbishing process within the production chain. Instead, the NEB yielded a nodule mentioning javelin shafts and two tablets listing spears and possibly their shafts. On the one hand, the administrative function of the nodules implies the entry of finished components of objects from the periphery into the palace. On the other hand, the relationship of *o-pa* with throwing weapon parts suggests that the finishing process indicated by *o-pa* should be considered as the assembly of different parts of objects made of different materials. Based on a combination of the archaeological and textual evidence, this paper proposes that the Arsenal and the NEB were not only storehouses and goods entry buildings, but also locations where composite objects, particularly weapons recorded in texts and found archaeologically, were assembled according to the *o-pa* working system.

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Re-Evaluating Central Euboean Middle Bronze Age Pottery Production and Distribution

The characterization of Middle Bronze Age society on the Greek mainland (ca. 2200–1600 BCE) as less complex, comparatively isolated, and impoverished was challenged by Lindsay Spencer's (2010) identification of an increasingly specialized potting tradition at Lefkandi (central Euboea). This tradition was characterized by standardized clay preparation methods, the use of the wheel, a firing technique resulting in consistent complete reduction, and plain surface treatments to produce one of the most recognizable, consistent, and high-quality MBA pottery types on the mainland - so-called Grey Minyan or Fine Grey Burnished (FGB) tableware. Furthermore, the growing dominance of very similar technically demanding *chaînes opératoires* and typologies at contemporary sites throughout Boeotia led Spencer to argue for a "strongly coherent regional production tradition in central Greece" with geographically dispersed producers connected through a community of practice and learning, enabling its transmission.

Spencer avoided characterizing this central Euboean pottery production as intensive in the absence of direct evidence for installations such as kilns, specific production spaces, and overall uncertainty about Lefkandi due to the limited exposure of MBA levels. However, new research on FGB pottery from throughout central Greece has provided proxy evidence for high-intensity and comparatively large-scale MBA central Euboean production. Neutron activation analysis conducted on pottery sourced from Pefkakia-Magoula, Mitrou, Eutresis, and Lefkandi, indicate that while small-scale production of FGB pottery did indeed occur at several locations and at different stages of the MBA (with some interesting diachronic trends), the vast majority of FGB pottery in all datasets throughout the MBA are imports from central Euboea. Moreover, whenever small numbers of wheel-finished FGB pottery have previously been subjected to petrographic and/or chemical analyses elsewhere in central Euboea, Magnesia, on Aegina and Kea, in the Argolid, Corinthia, and Attica, results consistently point to a central Euboea provenance. The wide distribution of these analytically confirmed central Euboean products and their strong correlation with a consistent *chaîne opératoire* resulting mostly in wheel-finished FGB pottery, macroscopically identified across an even larger footprint, requires a re-evaluation of the organization and scale of central Euboean pottery production and its distribution network.

This paper presents the first attempt at interpreting this new evidence for large-scale central Euboean MBA pottery production and distribution. This production will be compared against the better-known contemporary pottery production industry from Aegina, previously described as consisting of large numbers of small-scale production units (possibly households) adhering to common techniques and forming a significant community of practice. Important differences imply that central Euboean MBA pottery production may have been more centralized around fewer production units working at larger scale. Moreover, comparing the distribution pattern of MBA Aeginetan and central Euboean products reveals significant overlaps, but also important differences, reinforcing the larger comparative scale of central Euboean production and the close connectivity between MBA central Greek communities.

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Analysis of Metal Production Sites in the Neolithic and Bronze Age: a Study of Distribution and Mining Techniques

Mining was one of the most significant economic activities that evolved between the Neolithic and Bronze Age, marking the transition from using stone and bone tools to extracting and processing metals such as copper and bronze. This study aims to analyze metal production sites from these periods by examining their geographical distribution, technological advancements in mining and smelting, and their relationship with environmental and natural resources.

The research focuses on a comparative study of early mining sites, particularly those found in the Aegean region and the Near East, and how environmental and geographical factors influenced their locations. Additionally, Geographic Information Systems (GIS) will be employed to analyze the spatial distribution of these sites and their connections to early trade networks.

Furthermore, this study will explore the impact of mining on ancient societies, including its role in social and economic structures and how metals contributed to the formation of cross-cultural trade networks. Finally, the research will address methodological challenges in studying ancient mining sites and propose modern analytical approaches, such as archaeological excavations, geochemical studies, and spectral analysis techniques, to trace the origins of metal ores.

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Production in the Household Level: Examining Aspects of Domestic Activities Through the Case of the Minoan Strong Building at Kato Zakros, Crete

The paper focuses on the household-level organization of production during the Neopalatial period on Minoan Crete. The arrangement of productive activities within domestic units played a crucial role not only in ensuring household prosperity but also in strengthening broader economy and trade. Household production supplied the social hierarchy with a wide range of goods, including agricultural products, food preparation, textile production, winemaking, metallurgy, and more. This study examines the above aspects through the case of the Strong Building, a large architectural complex in the Neopalatial (LM IB) settlement of Kato Zakros, which had a residential character and appears to have housed, at least during its main phase of use, an extended bi-nuclear family. By analyzing architectural features, built installations, and movable finds, the study aims to explore the productive types hosted within this domestic unit. The household of the Strong Building appears to have achieved a high degree of self-sufficiency in several key activities, such as food processing and preparation, various stages of textile production, winemaking, and small-scale stone crafting, thus establishing it as one of the most robust households in Zakros. On a broader scale, the Strong Building seems to have been part of the settlement's production network, which supplied the central palatial authority with processed agricultural products. Meanwhile, the palace itself housed a range of specialized craft activities, including the production of high-quality and artistically significant bronze and stone objects, perfume making, glass and faience work, and the manufacture of distinctive ceramic vessels. These final products were not primarily intended for the local community — though in some cases, elite groups may have had access to them — but were rather designated for the palace's own use. Their possession and display by the ruling authority served as a means of consolidating and legitimizing its power, while their trade likely functioned as a kind of trademark of the site.

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Dialogues in Textile Production: Insights from Akrotiri and Ur

The successful completion of a fulled textile is a collaborative effort between a weaver and a fuller, as each craftsperson's work influences the outcome of the final product — its shape, size, and texture. Although weavers and fullers were independent specialists, they must have interacted during textile production. My recent study of the Ur III text "At the Fullers" provides an example of such a dialogue at the moment the woven textile passes from weaver to fuller.

Building on Kriga's (2003) study of *asaminthoi* at Bronze Age Akrotiri as possible industrial tools, and my own research on bath-shaped vessels as instruments for wool scouring and fulling, my presentation will demonstrate that Akrotiri provides evidence to examine the archaeological signature of this cross-craft interaction.

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The Price of Process: a Contextual Analysis of Pictorial Krater Production in the Mycenaean Peloponnese

The LH IIIA–B mainland pictorial krater represented a sought-after commodity for a specific clientele in the settlements of Late Bronze Age Cyprus and others on the Levantine coast; a shape, characterised by its narrative decoration, which formed part of a structured 'dining set' allowing, conceptually or in practice, the replication of Aegean consumptive behaviours in contexts beyond the Mycenaean core.

A recent episode of experimental archaeology undertaken by Angelos Papadopoulos has provided important insight into the multiple stages of manufacture embodied by this particular vessel type, as well as the time and skill commitment required by the potter-painter to successfully form and fire the shape and the risks inherent to the manufacturing process. The current paper expands on these observations to contextualise the cost, variously defined, of that process in its original Mycenaean setting. Taking the Argolid, and more specifically, the ceramic production centre at Berbati, as our focus, we attempt to reconstruct in detail the *chaîne opératoire* of krater production and consumption, from the acquisition and preparation of raw materials (suitable clays, mineral pigments, fuel, water), the active negotiation and organisation of taskspace for manufacture, through fabrication, decorative schema design and execution, and firing, to the complex overland routes and transport logistics employed in their delivery to, and eventual export from, the Late Helladic harbour at Tiryns, as well as the modes of their reception and eventual consumption by East Mediterranean groups.

This analysis, in addition, provides an opportunity to analyse in detail the value relationship between logistical and material cost and perceptions of prestige within the Mycenaean world, as well as the 'value of scarcity' among elite end users located at its periphery and how such cost-value concepts were reconciled and embodied in the use-life, use-contexts and eventual depositional and discard practices to which these objects were subject.

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Connecting the Pots: Mapping Pottery Production of Archaic Corinth Through the Fragmentary Production Debris

Much remains unknown about the process by which the potters of Corinth produced the distinctive — and remarkably standardized — ware that was distributed throughout the Mediterranean in the 7th and 6th centuries BCE. Excavations of the Potters' Quarter yielded no kilns but instead produced massive quantities of manufacturing debris in secondary deposits, which have allowed the identification of the site. These imperfect and unfinished ceramics nonetheless provide snapshots of transitory events in production that can help scholars reconstruct the potters' *chaîne opératoire* and, as a corollary, to envision the physical organization of workshop spaces. This study presents findings from our ongoing reanalysis of data from Agnes Newhall Stillwell's excavations in the 1930s. By connecting the micro-biographies of manufacturing debris, as well as tools, misfires, and try-pieces, it proposes a more complete version of the production chain that includes steps not visible on finished pots, such as the order of painting a vessel, practice work, mistakes, and accidents. The focus on discarded material sheds light on moments of quiet ingenuity and innovation by anonymous potters and offers a more nuanced portrait of Archaic Corinthian pottery manufacturing, which frequently is characterized as an "industry." This term carries modern connotations of high-volume production, efficiency, and standardization, yet our exploration suggests both the imperfect nature of the craft and the potters' almost scientific responses to the challenges they faced. They learned through trial and error, as they processed raw materials, adapted to fluctuating kiln conditions, and reacted to inevitable accidents. Their social and physical environment may be the solution to the paradox that Corinthian potters produced pots of such uniform appearance, despite so much improvisation in their process. Communities of potters, working side-by-side and collaborating on the Potters' Quarter plateau, continuously improved their technology and transmitted it through the generations from master to apprentices, fostering an informal standardization.

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Mapping Craft Activities: Investigating Household Production in the Third Intermediate Period (1070–664 BC) Settlement in Tell el-Retaba (Egypt)

Tell el-Retaba, located in Wadi Toumilat — the green corridor linking the Nile Delta with the Sinai Peninsula and Syro-Palestine — represents a provincial settlement that developed outside major urban centres during the Third Intermediate Period (1070–664 BC). Recent excavations conducted by the Polish-Slovak Archaeological Mission suggest that its inhabitants were primarily engaged in animal husbandry and fishing, with only limited involvement in agriculture. However, the presence of numerous tools within domestic structures indicates the existence of diverse craft-related activities.

The interpretation of the artefact assemblage presents significant challenges, primarily due to the fragmentary state of preservation and the frequent multifunctionality of the objects, which complicates the precise identification of their original function. Nevertheless, functional analysis has enabled the reconstruction of the craft activities in which they were utilised. Furthermore, these objects are often recovered from secondary contexts, preventing direct association with their original areas of use.

To address these methodological challenges, this study introduces a theoretical model grounded in the principles of activity area analysis. The model incorporates three key indicators of activity: movable artefacts, installations, and waste. Its primary objective is to establish a systematic framework for the objective reconstruction of past activities. Artefacts are assessed based on their depositional context, with only those retrieved from floor layers considered for analysis. However, beyond contextual placement, the nature of deposition is also evaluated, facilitating the categorisation of objects as discarded, left *in situ*, or stored for future utilisation. The data is subsequently analysed using a three-tiered classification system designed to assess its interpretative potential.

This model will be applied to data from two excavated areas within the Tell el-Retaba settlement. The results will provide insights into the spatial distribution of activity patterns within households, the potential specialisation of certain domestic units in specific forms of production, and the co-occurrence of different craft activities within the settlement.

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Tu-we-a Po-ti-ni-ja. The Production of Perfumes in Cult Contexts in the LH IIIB2–LH IIIC Early Aegean

The aromatics industry in the Aegean during LH IIIB2 and LH IIIC Early shows a clear pattern in the selection of production spaces. In particular, this study wants to shine a light on small work contexts linked to sanctuaries and sacred areas. Although most of the Mycenaean religion is still unknown, it is possible to trace certain types of practices thanks to Linear B sources interlaced with archaeological data. Aromatic substances have always been used in cult environments during various types of rituals and celebrations, so it was necessary to have on the spot a small supply of perfumes to use. Both related storage and production areas are identified within many Mycenaean centres. Here, we focus on the area of the Cult Centre in Mycenae in Argolis and on the site of Dimini in Thessaly.

Based on the identification of certain ceramic shapes that constitute the markers for the production of perfumes, it is possible to locate the laboratories where the figure of the Mycenaean *a-re-pa-zo-o* worked. It is also possible to reconstruct the entire *chaîne opératoire* and establish the production method used. The manufacture of aromatic substances was already known in Egypt and the Near East and shows similarities with the Aegean in the raw materials and skills as well as in the equipment used. The archaeological sites discussed in this study constitute a clear example of production connected to a cult environment. In Dimini, in particular, the processing of aromatic substances continued even after the destruction of the other palatial centres and throughout the LH IIIC Early, constituting an exceptional study case to better understand the transition to what would be the end of the Mycenaean period.

In conclusion, the study of perfumes and processing techniques has both a strictly scientific and a cultural anthropological aspect. On one hand, it examines material indicators such as the ceramic shapes used in each stage of activity, the employed raw resources, and the places chosen for production. On the other, it also investigates the reasons behind final choices related to a particular sphere, where immaterial and material, symbolic and chemical elements meet: the power and characteristics of the sense of smell and the many ways scents influence our psyche.

Some raw materials, such as iris and rose, have been used in the same way for centuries and we find them, in fact, even in perfume recipes in classical times.

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The Ceramic Landscape of Central Macedonia, Greece: the Handmade Tableware Production and Circulation in the Late Bronze Age Tells

The paper sheds light on the pottery production during the final period of the Late Bronze Age in the area, a period characterized by an interplay between traditional and innovative features in several technological aspects. The study examined the pottery from several of the mounds scattered throughout the Central Macedonian landscape organized in small regional clusters. A comprehensive methodological approach, which combines macroscopic typo-technological analysis with analytical techniques such as petrography and refiring tests, was employed to examine technological aspects, such as clay selection, manufacturing techniques, firing, and surface treatments, to gain insight into local production mechanisms and technological traditions as well as the circulation and consumption of specific wares inside and among communities. The integrated archaeological and scientific investigation facilitated the reconstruction of the handmade tableware local potting traditions and revealed interesting patterns concerning the intra- and inter-regional mobility dynamics in Central Macedonia, Greece. Besides, it shed new light on issues of cohesion and identity among the communities during the end of the Late Bronze Age.

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Carving Connections: Soft Stone Seal Production and Cross-Craft Interactions in Late Minoan Crete

This presentation explores the scope and organization of soft stone seal production in the Late Minoan (LM) period, aiming to contribute to a broader understanding of possible craft production networks in the Aegean Bronze Age. A key challenge in reconstructing the *chaîne opératoire* of LM seal manufacture is the scarcity of (published) archaeological workshop evidence. While the Middle Minoan seal cutter's workshop at Malia provides detailed insights into earlier production techniques — particularly for prism-shaped seals — these cannot be uncritically projected onto LM practices and seal types. This presentation undertakes to clarify some of the questions surrounding the operational sequence of LM soft stone seal production by examining material sourcing and manufacturing techniques based on an original comprehensive study of LM soft stone seals, on the one hand, and potential cross-craft interaction, on the other.

The first section examines the raw materials worked in LM seal manufacture, considering their sources and the extent to which these were directly or indirectly exploited for seal manufacture. Next, it synthesizes evidence for soft stone seal production, drawing from archaeological finds, tool mark analysis, comparative material from other periods, and experimental archaeology. It examines the tools and techniques used to carve standard LM seal shapes — lentoid, cushion, and amygdaloid — and considers whether the adoption of these forms at the onset of the Late Bronze Age may reflect changes in workshop organization or craft specialization. How standardized were the production processes, and what does this potentially reveal about the scale of seal manufacture?

Building on these aspects, the presentation reconstructs a comprehensive *chaîne opératoire* for LM seal production, emphasizing possible standardized working methods and the degree of craft specialization. The potential integration of seal manufacture with other industries, such as stone vessel production or ivory carving, is explored to assess whether LM seal engravers operated as specialized artisans or engaged in multiple craft activities. Furthermore, the spatial distribution of seal styles across Crete is analyzed to investigate workshop networks, the possible mobility of craftspeople, and patterns of production and exchange. Finally, the role of palatial institutions in organizing or regulating seal production is considered, shedding light on the political and economic dimensions of this craft.

By situating LM seal manufacture within broader spatial and economic frameworks, this contribution to the workshop aims to further discussions on the organization, scale, and cross-craft interactions of Aegean Bronze Age production activities.

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Cool Kafkalla: Space Management and Agricultural Processing at Late Bronze Age Erimi-Pitharka in Cyprus

Erimi-Pitharka, an archaeological site located in the Kouris Valley in the south-central region of Cyprus, is an interesting example to discuss spatial management in the processing of agricultural products in the Late Bronze Age. Finds associated with cereal and olive oil/wine production, such as groundstone tools, stone presses, stone weights, and numerous pithos fragments (giving the name to the site), suggest a focus on cereal, wine, and olive oil processing and storage at Pitharka, which was a local agricultural centre. New excavations have been conducted since 2022, directed by Dr. Laerke Recht (Moesgaard Museum, Denmark, previously University of Graz, Austria) and co-directed by Dr. Katarzyna Zeman-Wisnieska (Cardinal Stefan Wyszynski University, Warsaw). These have continued work in Area I/1A of the site, where there is a large central complex with workshop and storage sectors. Ongoing excavations have uncovered a specific arrangement of production spaces, including sunken architecture, along with several installations, and pithos and bathtub emplacements carved into the limestone kafkalla bedrock, related to liquids and storage. Furthermore, a fully subterranean cave, several metres deep, with carved chambers, was previously uncovered at the site. These specially designed and carved out spaces reflect intentional efforts aimed at optimising food production and storage, probably addressing local environmental challenges such as high temperatures, strong winds and bright light. However, they not only served specific functional purposes, such as creating stable conditions to preserve agricultural products, but also reveal a cultural engagement with the landscape, demonstrating a sophisticated understanding of space as a dynamic and adaptable resource. The inhabitants of Pitharka did not perceive the landscape merely as a passive backdrop for their production activities; by carving into the kafkalla bedrock, they transformed the natural terrain into a resource that could be shaped and used to meet their specific needs, illustrating their ability to adapt the environment to their purposes rather than being constrained by it.

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